

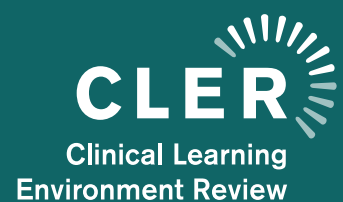


# CLER NATIONAL REPORT OF FINDINGS 2021



ACGME

Accreditation Council for  
Graduate Medical Education



# DEDICATION

The Accreditation Council for Graduate Medical Education thanks the designated institutional officials at its accredited Sponsoring Institutions, as well as the executive leaders of the participating hospitals, medical centers, and ambulatory care sites for graciously hosting this set of Clinical Learning Environment Review Site Visits. We appreciate the effort that went into arranging the visits and ensuring open access to residents, fellows, faculty members, and other staff. It was a privilege to spend time in your organizations, and we recognize your dedication to continually improving graduate medical education and patient care.

©2021 Accreditation Council for Graduate Medical Education

## SUGGESTED CITATION:

Suggested citation: Koh NJ, Wagner R, Newton RC, Kuhn CM, Co JPT, Weiss KB; on behalf of the CLER Evaluation Committee and the CLER Program. *CLER National Report of Findings 2021*. Chicago, IL: Accreditation Council for Graduate Medical Education; 2021. doi: 10.35425/ACGME.0008

ISBN Digital: 978-1-945365-40-9

# TABLE OF CONTENTS

---

FOREWORD ..... 7

INTRODUCTION: CHARACTERIZING THE PRESENT AND INFORMING THE FUTURE ..... 9

OVERVIEW OF THE CLER PROGRAM ..... 13

METHODOLOGY ..... 17

OVERARCHING THEMES ..... 27

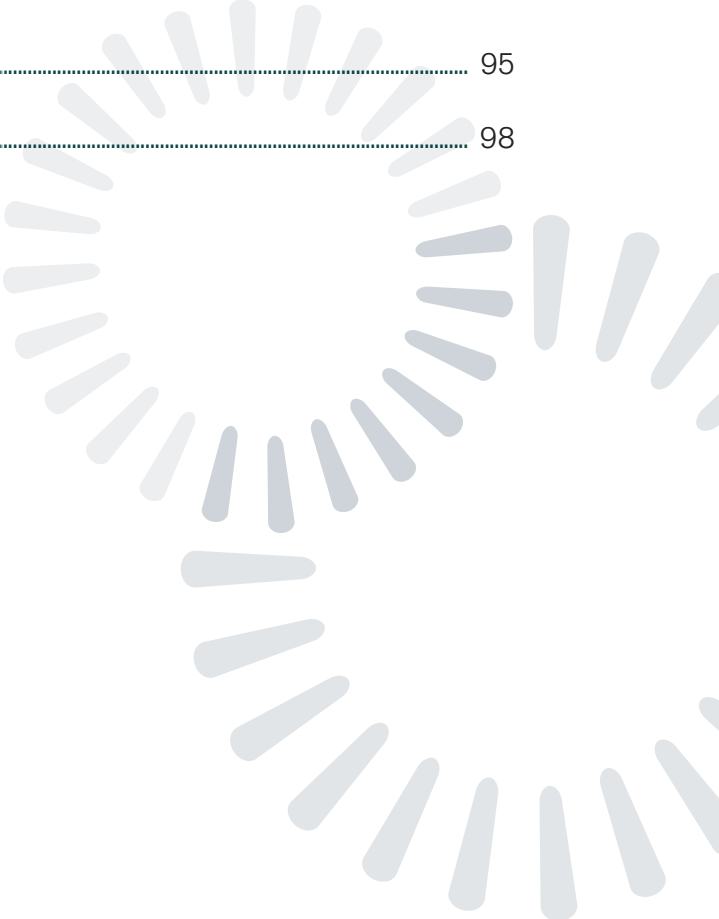
CHALLENGES AND OPPORTUNITIES IN SELECTED CLER FOCUS AREAS ..... 35

DETAILED FINDINGS ..... 43

TRENDS IN THE CLER FOCUS AREAS ..... 75

LESSONS LEARNED AND FUTURE DIRECTIONS ..... 95

APPENDICES ..... 98



# Acknowledgments

The Accreditation Council for Graduate Medical Education (ACGME) acknowledges the many individuals involved in the Clinical Learning Environment Review (CLER) Program and in developing this report, including the CLER Program staff who collectively arranged and conducted the site visits, collated and analyzed the data, and provided editorial input; the members of the CLER Evaluation Committee who reviewed the results and offered their insights as to the impact of the findings; and the reviewers who generously offered their time to read early drafts and provide feedback. The ACGME thanks them for their dedication and commitment to improving graduate medical education and patient care.

(Names in alphabetical order)

## CLER EVALUATION COMMITTEE MEMBERS 2017 - 2020

Catherine M. Kuhn, MD, Current Co-Chair

John Patrick T. Co, MD, MPH, FAAP,  
Immediate Past Co-Chair

Kevin B. Weiss, MD, Co-Chair

Jenny J. Alexopoulos, DO

Michael Apostolakos, MD

Vamsi Aribindi, MD

James P. Bagian, MD, PE

Lindsay Dale, MD

Rosemary Gibson, MSc

Linda A. Headrick, MD, MS, FACP

Robert Higgins, MD

Sherry C. Huang, MD

Marcia Hutchinson, MD

Lynne M. Kirk, MD, MACP

Anai N. Kothari, MD, MS

Tanya Lord, PhD, MPH

David Markenson, MD, MBA, FAAP, FACEP,  
FCCM, FACHE

David Mayer, MD

Lucie E. Mitchell, DO, MS

Douglas E. Paull, MD, MS, FACS, FCCP,  
CHSE, CPPS

Lakshmana Swamy, MD, MBA

Andrew M. Thomas, MD, MBA

Marjorie S. Wiggins, DNP, MBA, RN, FAAN, NEA-BC

Ronald Wyatt, MD, MHA, DMS (Hon)

## CLER PROGRAM STAFF 2017 - 2020

Octavia Bailey

Mark R. Bixby, MD, FAAFP

Isabelle Bourgeois, MPA

Jennifer J. Buescher, MD, MSPH

Robert Casanova, MD, MHPE

Baretta R. Casey, MD, MPH, FAAFP

Marian D. Damewood, MD, FACOG

Kevin C. Dellsperger, MD, PhD

Robin Dibner, MD

David L. Dull, MD, MMM, FAAPL

Staci A. Fischer, MD, FACP, FIDSA

Patrick Guthrie

Paula Hensley, MPH

Kristen Ward Hirsch  
John A. Hopper, MD  
Sharhabeel Jwayyed, MD, MS  
Catherine Kallal, MD  
Elizabeth Kimball, MA  
Nancy J. Koh, PhD  
Kathryn E. McGoldrick, MD, MAH, FCAI (Hon)  
Clifton McReynolds, PhD  
Terrie Mendelson, MD  
Joshua Mirôn, MA  
Robin C. Newton, MD, FACP  
Morgan Passiment, MS  
Douglas E. Paull, MD, MS, FACS, FCCP,  
CHSE, CPPS  
Daniel Picard, MD  
Kathy B. Porter, MD, MBA, FACOG  
Dale Ray, MD, MMM  
Laura Riordan, MS  
Melissa Schori, MD, FACP, MBA  
Tara Shedor  
Stephen Smith, MD  
Mike Strickland, MFA  
Hongling Sun, PhD  
Marie Trontell, MD  
Paul Uhlig, MD, MPA  
Robin Wagner, RN, MHSA  
Elizabeth Wedemeyer, MD  
Kevin B. Weiss, MD  
Esther Woods

Martha S. Wright, MD, MEd  
James R. Zaidan, MD, MBA  
Jose Zayas, DO, FAAP

## OTHER ACGME STAFF

Kara Etolen-Collins  
Paul Foster Johnson, MFA  
Laney McDougal, MS  
Olivia Orndorff, MSLIS  
Cassie Pritchard, MPP

## REVIEWERS

Tejal Gandhi, MD, MPH  
Thomas Hansen, MD, MBA, FAAFP  
Thomas J. Nasca, MD, MACP  
Karen Nichols, DO  
Steven H. Rose, MD  
Stephen Weber, MD  
Claudia J. Wyatt-Johnson, MA

# CLER in the Time of the COVID-19 Pandemic

The novel coronavirus (COVID-19) brought a shock to international health care systems throughout the world. Among those affected were the US health care systems that serve as clinical learning environments (CLEs) for Sponsoring Institutions accredited by the Accreditation Council for Graduate Medical Education (ACGME) and their residency and fellowship programs. Of note, the Clinical Learning Environment Review (CLER) Program site visits that form the basis of this report were conducted between June 2017 and February 2020—before the pandemic.

In considering how to frame this report, the CLER Evaluation Committee noted the findings rest on their own merit, independent of the complexities introduced by the pandemic. Therefore, the reader is asked to view this report through two different lenses. First, consider the findings as a reflection of the learning environments for residents and fellows pre-pandemic. Second, consider how these findings might have been affected by the unique and often extremely challenging changes that occurred as the pandemic reached and sometimes overwhelmed the CLEs and the communities they serve. When viewed through either lens, these findings present new information that suggests both challenges and opportunities for graduate medical education (GME), the health care systems that host GME, and the patients they serve.



# Foreword

Karen Nichols, DO, Chair, ACGME Board of Directors

The past year has provided the graduate medical education (GME) community with a clear message as to the environment's impact on the experiences of residents and fellows. The COVID-19 pandemic has rapidly shaped and reshaped the way in which patient care is delivered. The ACGME's CLER Program provides a continual reminder of how our nation's CLEs can influence physicians in training as they develop in their chosen specialties and subspecialties. This *CLER National Report of Findings* provides a unique view of the hospitals, medical centers, ambulatory care sites, and other clinical settings that serve as CLEs—drawing upon the information gleaned from a cycle of site visits that concluded just as the pandemic entered the United States. It provides an excellent cross-sectional evaluation of how our CLEs are shaping the learning experience of resident and fellows in the six CLER Focus Areas of interest to the ACGME Board of Directors.

One of the highlights of this report is the new insight it provides on well-being. For the ACGME Board of Directors, clinician well-being has been one of our top priorities over the past few years. This report is the first comprehensive assessment of the ways in which health care organizations serving as CLEs are addressing this important issue.

The report also contains other key findings. Most notably, when compared with information from the first *National Report* in 2016, it reveals steady improvement in the ways CLEs are engaging residents and fellows in efforts to address patient safety. It has been just over 20 years since the release of the Institute of Medicine's report, "To Err Is Human."<sup>1</sup> While this *National Report* continues to show an ongoing gap in achieving full involvement of GME in their CLEs' efforts to address patient safety, the trends are very encouraging.

Finally, one of the exciting aspects of this report is that it occurred during the period in which the ACGME and the American Osteopathic Association (AOA) were transitioning to a single GME accreditation system in the United States. Therefore, this report is the first *National Report* to include a number of CLEs from Sponsoring Institutions that in the past were part of the AOA

GME system and are new to ACGME accreditation. It is gratifying to note that in embracing both medical traditions, the ACGME has been able to rapidly extend a uniform benefit of this formative learning to the entire GME community.

One of the exciting aspects of this report is that it occurred during the period in which the ACGME and the American Osteopathic Association (AOA) were transitioning to a single GME accreditation system in the United States. Therefore, this report is the first *National Report* to include a number of CLEs from Sponsoring Institutions that in the past were part of the AOA GME system and are new to ACGME accreditation. It is gratifying to note that in embracing both medical traditions, the ACGME has been able to rapidly extend a uniform benefit of this formative learning to the entire GME community.

The CLER Program continues to help the ACGME Board of Directors, the GME and CLE community, and the public understand how to improve the important relationship between the environment and its impact on learning. We look forward to seeing the positive actions this report will catalyze and to the new information from the CLER COVID protocol currently underway.

## REFERENCES

1. Linda T. Kohn, Janet M. Corrigan, and Molla S. Donaldson, eds. 2000. *To Err Is Human: Building A Safer Health System*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/9728>.



# Introduction: Characterizing the Present and Informing the Future

Thomas J. Nasca, MD, MACP, President and Chief Executive Officer, ACGME and Kevin B. Weiss, MD, Chief Sponsoring Institutions and Clinical Learning Environment Officer, ACGME

It has been five years since the release of the first *CLER National Report of Findings*. That first report focused on the larger Sponsoring Institutions, encompassing data from 297 clinical sites. In contrast, this *National Report* presents findings from 566 CLEs associated with both large and small ACGME Sponsoring Institutions. It provides a number of insights as to how hospitals, medical centers, ambulatory care sites, and other clinical settings serve as teaching environments for the approximately 145,000 resident and fellow physicians participating in more than 12,000 ACGME-accredited programs. This report has several unique features that will inform the ACGME, the GME community, and the public about these important environments where learning occurs in the context of providing patient care. First, both larger and smaller Sponsoring Institutions concurrently participated in CLER site visits in a single time period for the first time. Second, the report presents trends across several of the CLER Focus Areas for a subset of approximately 240 CLEs that have completed three CLER visits. Third, the report includes findings from institutions that achieved ACGME accreditation through the transition to a single GME accreditation system and had progressed past the Initial Accreditation period. Lastly, the report reflects findings of the newest CLER Focus Area, Well-Being.

The findings demonstrate that CLEs exhibit some common features with regard to the Focus Areas, irrespective of CLE bed size (i.e., acute bed count), geographic location, or the type of ownership of the clinical site. The findings also suggest there are some notable differences seen in the CLER Focus Areas based on CLE characteristics. For example, there were significant differences in the percentage of residents and fellows who reported (1) participating in a quality improvement project linked to one or more of the clinical site's quality improvement goals, (2) following a standardized process for hand-offs between shifts that included a standardized written template for communication, and (3) that based upon their experience at the clinical site, faculty members often or always disclose whether or not they have potential conflicts of interests during each of their clinical rotations. Over time, the CLER Program will seek to both understand these differences and identify successful approaches, albeit potentially different approaches, to optimizing the various CLEs across the range of ACGME-accredited Sponsoring Institutions.

As noted earlier, this report provides a first look at trends across three time periods for a subset of Sponsoring Institutions whose principal CLE participated in three successive CLER visits. The size and scope of this analysis is aided by a small set of questions that remained the same in all three cycles of CLER visits. Some interesting observations emerged from this view. Specifically, there has been demonstrable improvement in GME involvement in addressing patient safety. Patient safety has been a major focus of the CLER visits and the attention to this important and critical area of health care is reflected in the signs of improvement. With regard to structural changes, overall, CLEs appear to have dramatically increased their attention to resident and fellow access to and use of patient safety event reporting systems. For example, in Cycle 1, approximately one third of the CLEs indicated they tracked the number of patient

safety event reports submitted by residents and fellows; in Cycle 3, this had increased to 80.0%. Similarly, there has been a nearly 20 percent relative increase in the percentage of residents and fellows who reported into their CLE's patient safety event reporting system.

This report also highlights areas in need of additional attention—specifically in engaging residents and fellows in patient safety event analysis, which has not improved across the three cycles. The lessons learned from the CLER Program's *Pursuing Excellence in Clinical Learning Environments (Pursuing Excellence) Pathway Leaders Patient Safety Collaborative*,<sup>1</sup> and the Program Directors' Patient Safety and Quality Educators Network (a collaborative effort of the ACGME, Project ECHO, and the Organization of Program Director Associations) provide an evidence base and new approaches to addressing this challenging and important finding.

The findings related to health care disparities, while more modest, indicate for the first time that CLEs are starting to recognize the importance of this issue. During the site visits, more CEOs and their executive teams were starting to have open discussions on the need to examine risks for health care disparities within the populations served in the CLE. It is important to remember these findings reflect conversations held with the CLE executive leaders prior to the start of the COVID-19 pandemic. It will be informative to see how the commitment to and success in elimination of disparities may improve in the next cycle of visits given the high degree of visibility of health care disparities revealed by the pandemic.

For several of the CLER Focus Areas, the report presents trends that represent no change, and in some cases trends in an undesirable direction. These findings will be the source of important reflection and possible intervention as they are further studied.

The report also identifies some new challenges. In examining the approximately 50% of residents and fellows interviewed who reported encountering a physician (attending physician or consultant) who made them feel uncomfortable when requesting assistance, the report notes this was more prevalent among the residents who were earlier in their post-graduate education and training. These findings indicate suboptimal educational experiences, inadequate implementation of appropriate supervision and mentoring, and challenges to the culture of safety and patient care.

Along similar lines, one third of residents and fellows interviewed reported that they would “power through” to hand-off even if they were impaired by fatigue, revealing this is also more common among those in their early years of post-graduate education and training.

One of the key areas highlighted in this report is the new CLER Focus Area of Well-Being. Well-being is one of the four elements of the Quadruple Aim and is integral to the ACGME's mission.<sup>2</sup> In 2017, the ACGME joined with the National Academy of Medicine (NAM) and other members of the health care and medical education community in ongoing efforts to address clinician well-being and resilience—specifically the challenges posed by the rapid changes both in health care organizations and in patient needs.<sup>3</sup> This report presents the first national data that characterizes many aspects of well-being within the nation's CLEs. In gathering the data, the CLER Field Representatives focused on four priority areas as delineated in the *CLER Pathways to Excellence, Version 2.0*:<sup>4</sup> work/life balance; fatigue; burnout; and support of those at risk of or demonstrating self-harm.

While the report reveals a number of interesting findings on well-being, two issues are particularly noteworthy. The first is not formally reflected in the findings, rather it relates to observations of the CLER Field Representatives. As part of the site visit protocol, the CLER team asked to meet with the individuals responsible for leading the CLE's efforts to address well-being. The Field Representatives informally noted that a variety of individuals with a range of roles and responsibilities attended these meetings. They noted the well-being representatives could often speak to isolated well-being activities for individuals or professions. However, absent from these conversations was a cohesive effort on the part of the CLE to implement a common strategy to address the well-being of the clinical care team. The other issue relates to the finding noting the types of interventions being planned or implemented in the CLEs. The finding noted examples of new efforts to identify individuals at risk, especially efforts to identify residents and fellows, and efforts to build resilience in the clinical care team. There were few examples of CLEs that were able to describe a strategy or substantive efforts to address the system-based factors that were creating challenges to well-being.

As with just about everyone else during 2020-2021, the COVID-19 pandemic has caused the ACGME CLER team to reflect on opportunities to better understand the impact of this catastrophic societal challenge. In response, the CLER Program has launched a specially designed site visit to understand the pandemic's impact on the CLEs.<sup>5</sup>

Looking forward, the CLER Program is seeking to use the knowledge from this and prior reports to inform a metamorphosis and transformation of thinking in how to best assess, understand, and inspire the CLEs of ACGME-accredited Sponsoring Institutions. This will include efforts to advance the CLER site visit program's configuration to build on the experiences of the CLER COVID protocol, possibly retaining some of the new features, such as a sampling approach to selecting Sponsoring Institutions and CLEs visited, maintaining the new model of additional advanced notification for scheduling, incorporating new surveys for executive leadership, and possibly integrating some component of remote interviews. Any changes to the site visit protocol will still need to retain in-person visits to facilitate walking rounds. The impromptu conversations that happen on the walking rounds of the floors and service areas of the CLEs provide essential perspectives and insights from other members of the clinical care team (e.g., nurses, pharmacists, social workers, respiratory technicians) and additional members of the GME community who do not participate in the formal group meetings.

One of the key areas highlighted in this report is the new CLER Focus Area of Well-Being... In 2017, the ACGME joined with the National Academy of Medicine (NAM) and other members of the health care and medical education community in ongoing efforts to address clinician well-being and resilience—specifically the challenges posed by the rapid changes both in health care organizations and in patient needs.<sup>3</sup> This report presents the first national data that characterizes many aspects of well-being within the nation's CLEs.

As modeled in the *Pursuing Excellence* initiative, the CLER Program will continue to seek opportunities to use the information gained from this report and future visits to provide GME and CLE leadership with the knowledge and tools to advance improvements in their CLEs. The aggregate information in this and past *CLER National Reports* will also serve as an evidence base to inform the upcoming major revision of the ACGME Institutional Requirements.

Of final note, the CLER Program will also undertake efforts to transform its body of work to increasingly focus on an outcomes-oriented perspective of CLE performance. There are currently a number of efforts nationally to assess the quality of care provided in the many types of CLEs that host GME. NAM recognizes attention to health care outcomes to be a major priority if the US to achieve the goal of better health at lower cost.<sup>6</sup> Through the CLER Program, the ACGME will explore the resources available to better align and integrate GME performance with this national direction of measuring health care quality outcomes. While this effort is in its early stages, over time, this will be an essential tool to aid the ACGME's ability to provide the best possible formative feedback to the GME community and CLEs to optimize learning and patient care in the framework of the Quadruple Aim.

## REFERENCES

1. Passiment, Morgan, Robin Wagner, and Kevin B. Weiss, for the *Pursuing Excellence in Clinical Learning Environments: Pathway Leaders Patient Safety Collaborative*. 2020. "ACGME Summary Report: The Pursuing Excellence Pathway Leaders Patient Safety Collaborative." Published September 30, 2020. doi:10.35425/ACGME.0006.
2. Bodenheimer, Thomas, and Christine Sinsky. 2014. "From Triple to Quadruple Aim: Care of the Patient Requires Care of the Provider." *The Annals of Family Medicine* 12 (6): 573–76. doi.org/10.1370/afm.1713.
3. <https://nam.edu/initiatives/clinician-resilience-and-well-being/>
4. CLER Evaluation Committee. 2019. "CLER Pathways to Excellence: Expectations for an Optimal Clinical Learning Environment to Achieve Safe and High-Quality Patient Care, Version 2.0." Chicago, IL: Accreditation Council for Graduate Medical Education. doi:10.35425/ACGME.0003.
5. <https://www.acgme.org/Newsroom/Blog/Details/ArticleID/10707/ACGME-e-Communication-November-9-2020/>
6. Whicher, Danielle, Mahnoor Ahmed, Sameer Siddiqi, Inez Adams, Claudia Grossmann, and Kristin Carman. 2020. "Health Data Sharing to Support Better Outcomes: Building a Foundation of Stakeholder Trust." NAM Special Publication. Washington, DC: National Academy of Medicine.

# Overview of the CLER Program

Robin Wagner, RN, MHSA; Robin C. Newton, MD, FACP; Nancy J. Koh, PhD; and Kevin B. Weiss, MD on behalf of the CLER Program

## INTRODUCTION

The ACGME established the CLER Program in 2012<sup>1</sup> to provide GME leaders and executive leaders of hospitals, medical centers, ambulatory care sites, and other clinical settings with formative feedback aimed at improving patient care while optimizing learning in the six cross-cutting CLER Focus Areas:<sup>2,3</sup> patient safety; health care quality (including health care disparities); care transitions; supervision; professionalism; and the newest Focus Area of well-being.<sup>a</sup>

By conducting periodic site visits and providing formative feedback to clinical sites that serve as CLEs for resident and fellow physicians, the CLER Program aims to stimulate conversations and motivate CLEs to build upon their strengths and internally address opportunities for improvement. The CLER Program refers to CLEs as living and breathing entities—the embodiment of all of the individuals within these settings that influence and imprint upon these early learners. The CLER Program’s formative approach recognizes that, although there are shared elements, each site that serves as a CLE for resident and fellow physicians has a unique set of internal and external factors that influence the development and implementation of that CLE’s strategic goals aimed at improving patient care.

The CLER Program is separate and distinct from nearly all accreditation activities. Two essential elements connect the CLER Program with the rest of the accreditation process: (1) each Sponsoring Institution contacted for a CLER visit is required to complete the visit; and (2) the chief executive officer and the leader of GME (specifically the designated institutional official) of the clinical site must attend the opening and closing sessions of the visit.

Of note, in the first cycle of CLER visits, the CLER Program was in the process of building its infrastructure. As such, it began with visits to CLEs of the larger Sponsoring Institutions—those with three or more core residency programs. The second cycle started with repeat visits to the CLEs of the larger Sponsoring Institutions, and about midway through, began visits to the smaller Sponsoring Institutions—those with two or fewer core residency programs. This asynchrony in the second cycle resulted in two separate *National Reports of Findings*.<sup>4,5</sup> The third cycle of visits was the first time both larger and smaller Sponsoring Institutions were included from start to finish, allowing for this single report that reflects a larger cohort of participants and a larger denominator of responses to the CLER Field Representatives’ queries.

By conducting periodic site visits and providing formative feedback to clinical sites that serve as CLEs for resident and fellow physicians, the CLER Program aims to stimulate conversations and motivate CLEs to build upon their strengths and internally address opportunities for improvement.

<sup>a</sup> This new Focus Area, introduced in the *CLER Pathways to Excellence Version 1.1*, is an expansion of the Focus Area originally titled “duty hours, fatigue management, and mitigation,” and has evolved to address four interrelated topics: work/life balance; fatigue; burnout; and support of those at risk of or demonstrating self-harm.

## PROTOCOL ADAPTATIONS FOR THE THIRD CYCLE OF VISITS

The CLER Field Representatives in this cycle used Protocol 3.0, which was similar but not identical to the protocol used in the first and second cycles of visits.<sup>5,6,7</sup> When appropriate, this protocol maintained the adaptations from Protocol 2.0 needed to address smaller Sponsoring Institutions, including:

- For the small proportion of Sponsoring Institutions where the visit was exclusive to the ambulatory care setting, the protocol questions and scenarios were modified to fit the setting while keeping the essence of the questions to allow for comparability across settings.
- In Sponsoring Institutions with one residency or fellowship program, if the program director was also the designated institutional official, the program director attended the executive leadership meetings and assigned a designee (often an associate program director) for the program director interview session
- In Sponsoring Institutions with one or two program directors, while the interview sessions for the program directors were separate from the sessions with faculty members, the results were combined in the verbal and written reports to maintain anonymity.

In Protocol 3.0, many of the questions remained consistent. However, in their commitment to a model of continual quality improvement, CLER Program staff members also modified some questions and added new questions to explore important topics in greater depth. For a more detailed description of the protocol, please see the Methodology section of this report (pp. 17-26).

## THE CLER EVALUATION COMMITTEE

The CLER Evaluation Committee provides oversight and guidance to all aspects of program development. The committee is composed of members with expertise in patient safety and health care quality improvement, as well as GME and executive leadership of hospitals and medical centers (e.g., chief medical officer, chief nursing officer). The committee also includes postgraduate physician representation and public members.

For this report, the committee reviewed the data resulting from the site visits and worked with CLER Program staff members to identify overarching themes and prioritize key findings—presented here in the form of challenges and opportunities. The committee members bring an external voice in response to the findings. Their views and commentary on the significance of the key findings and overarching themes are reflected in the discussion sections of this report.

## REPORTING THE FINDINGS AND ORGANIZATION OF THE REPORT

Similar to prior reports of findings, this report presents several different perspectives, including overarching themes, highlights of the challenges and opportunities in the CLER Focus Areas of patient safety and well-being, detailed findings, and a section on trends.

Protocol 3.0 was also the first to include a subprotocol—exploring the operative and procedural areas of a subset of the larger Sponsoring Institutions. Findings from the subprotocol have been published separately and are available on the ACGME website.

## REFERENCES

1. Weiss, Kevin B., James P. Bagian, and Thomas J. Nasca. 2013. "The Clinical Learning Environment: The Foundation of Graduate Medical Education." *JAMA* 309 (16): 1687–88. doi.org/10.1001/jama.2013.1931.
2. CLER Evaluation Committee. 2017. "CLER Pathways to Excellence: Expectations for an Optimal Clinical Learning Environment to Achieve Safe and High Quality Patient Care, Version 1.1." Chicago, IL: Accreditation Council for Graduate Medical Education.
3. CLER Evaluation Committee. 2019. "CLER Pathways to Excellence: Expectations for an Optimal Clinical Learning Environment to Achieve Safe and High-Quality Patient Care, Version 2.0." Chicago, IL: Accreditation Council for Graduate Medical Education. doi:10.35425/ACGME.0003.
4. Koh, Nancy J., Robin Wagner, Robin C. Newton, Baretta R. Casey, Hongling Sun, and Kevin B. Weiss, on behalf of the CLER Program. 2018. "Detailed Findings from the CLER National Report of Findings 2018." *Journal of Graduate Medical Education* 10 (4s): 49–68. doi.org/10.4300/1949-8349.8.2s1.35.
5. The CLER Evaluation Committee and the CLER Program. 2019. "CLER National Report of Findings 2019: Initial Visits to Sponsoring Institutions With 2 or Fewer Core Residency Programs." Chicago, IL: Accreditation Council for Graduate Medical Education. doi:10.35425/ACGME.0001.
6. Koh, Nancy J., Robin Wagner, and Kevin B. Weiss, on behalf of the CLER Program. 2016. "The Methodology for the CLER National Report of Findings 2016." *Journal of Graduate Medical Education* 8 (2s1): 15–19. doi.org/10.4300/1949-8349.8.2s1.15.
7. Koh, Nancy J., Robin Wagner, Hongling Sun, Kevin B. Weiss, on behalf of the CLER Program. 2018. "The Methodology for the CLER National Report of Findings 2018." *Journal of Graduate Medical Education* 10 (4s): 13–18. doi.org/10.4300/1949-349.8.2s1.15.

---

## CLER PROGRAM

Octavia Bailey; Mark R. Bixby, MD, FFAFP; Isabelle Bourgeois, MPA; Jennifer J. Buescher, MD, MSPH; Robert Casanova, MD, MHPE; Baretta R. Casey, MD, MPH, FFAFP; Marian D. Damewood, MD, FACOG; Kevin C. Dellsperger, MD, PhD; Robin Dibner, MD; David L. Dull, MD, MMM, FAAPL; Staci A. Fischer, MD, FACP, FIDSA; Patrick Guthrie; Paula Hensley, MPH; Kristen Ward Hirsch; John A. Hopper, MD; Sharhabeel Jwayyed, MD, MS; Catherine Kallal, MD; Elizabeth Kimball, MA; Nancy J. Koh, PhD; Kathryn E. McGoldrick, MD, MAH, FCAI (Hon); Clifton McReynolds, PhD; Terrie Mendelson, MD; Joshua Mirôn, MA; Robin C. Newton, MD, FACP; Morgan Passiment, MS; Douglas E. Paull, MD, MS, FACS, FCCP, CHSE, CPPS; Daniel Picard, MD; Kathy B. Porter, MD, MBA, FACOG; Dale Ray, MD, MMM; Laura Riordan, MS; Melissa Schori, MD, FACP, MBA; Tara Shedor; Stephen Smith, M; Mike Strickland, MFA; Hongling Sun, PhD; Marie Trontell, MD; Paul Uhlig, MD, MPA; Robin Wagner, RN, MHSA; Elizabeth Wedemeyer, MD; Kevin B. Weiss, MD; Esther Woods; Martha S. Wright, MD, Med; James R. Zaidan, MD, MBA; Jose Zayas, DO, FAAP





# Methodology

Nancy J. Koh, PhD; Robin Wagner, RN, MHSA; Robin C. Newton, MD, FACP; Hongling Sun, PhD; Clifton McReynolds, PhD; and Kevin B. Weiss, MD, on behalf of the CLER Program

## INTRODUCTION

This report details findings of the third set of CLER site visits to 566 ACGME-accredited Sponsoring Institutions conducted by the CLER Program from June 20, 2017 to February 19, 2020.<sup>a</sup> The aggregated findings in this report reflect a mixed methods approach (i.e., both quantitative and qualitative information gathering and analysis), which was used by the CLER Program to form a comprehensive base of evidence on how the nation's CLEs engage residents and fellows in the CLER Focus Areas.<sup>1</sup>

In addition to the findings from the third set of CLER visits, this report includes a look at changes on a selected set of measures in each of the CLER Focus Areas (i.e., three- and two-point analysis). This analysis highlights both progress and challenges in CLEs over time. These findings can enhance and extend understandings of the complex and dynamic nature of CLEs and help inform conversations on how to continually improve physician education and training to ensure high-quality patient care within these learning environments.

## SELECTION OF CLINICAL LEARNING ENVIRONMENTS

In 2017, there were 766 ACGME-accredited Sponsoring Institutions. Within these institutions were nearly 1,800 major participating sites, which are the hospitals, medical centers, ambulatory care sites, and other clinical settings where residents and fellows learn and train. This report contains findings from 566 CLEs that are affiliated with 566 Sponsoring Institutions that collectively oversaw 9,724 ACGME-accredited residency and fellowship programs (93.7% of all ACGME-accredited programs) and 105,398 residents and fellows (92.7% of all residents and fellows in ACGME-accredited programs).<sup>b</sup> Appendix A provides additional information on the general characteristics of these Sponsoring Institutions (e.g., type of Sponsoring Institution, number of programs) compared to all ACGME-accredited Sponsoring Institutions.

For Sponsoring Institutions with two or more clinical sites that served as participating sites, the CLER Program visited one site due to resource limitations. This selection was based on two factors: (1) which CLE served the largest possible number of programs for that Sponsoring Institution; and (2) whether that CLE had the availability of both the DIO and the CEO for the opening and exit interviews.

For the majority of the Sponsoring Institutions, the CLER site visit occurred at the hospital or medical center that served as the major participating clinical site for the Sponsoring Institution. At many of these sites, the CLER Field Representatives spent time in both inpatient and affiliated ambulatory care practices. For a small

<sup>a</sup> The findings from visits to the smallest sites of Sponsoring Institutions (i.e., preventive medicine programs and single fellowship programs) are omitted from this report. Due to the COVID-19 pandemic, these sites did not receive a visit in the third set of CLER site visits.

<sup>b</sup> Source: The ACGME annual data report. The ACGME annual data reports contains the most recent data on the programs, institutions, and physicians in graduate medical education as reported by all medical residency Sponsoring Institutions and ACGME-accredited programs.

proportion of the Sponsoring Institutions, the site visit was conducted exclusively in the ambulatory care setting, including teaching health centers administered by the Health Resources and Services Administration. Additionally, for a small number of Sponsoring Institutions, the site visit was exclusive to an ambulatory care site if the major participating site in an inpatient setting had been visited for a CLER site visit for a different Sponsoring Institution.

## CLER SITE VISIT PROTOCOL

The CLER site visit protocol included a structured schedule of events for each visit (*Figure 1*). In general, the CLER Program designed its site visit protocol to be the same for all CLER site visits regardless of the number of core residency programs at a Sponsoring Institution. In recognizing that the visits to the smaller Sponsoring Institutions involved spending time in both inpatient and affiliated ambulatory care practices or solely in an ambulatory care setting, the CLER Program modified the protocol and site visit process as needed to accommodate these conditions and other unique aspects of the smaller Sponsoring Institutions. Overall, these modifications were minor (e.g., length of the site visit, site visit agenda) and are noted appropriately in the sections that follow.

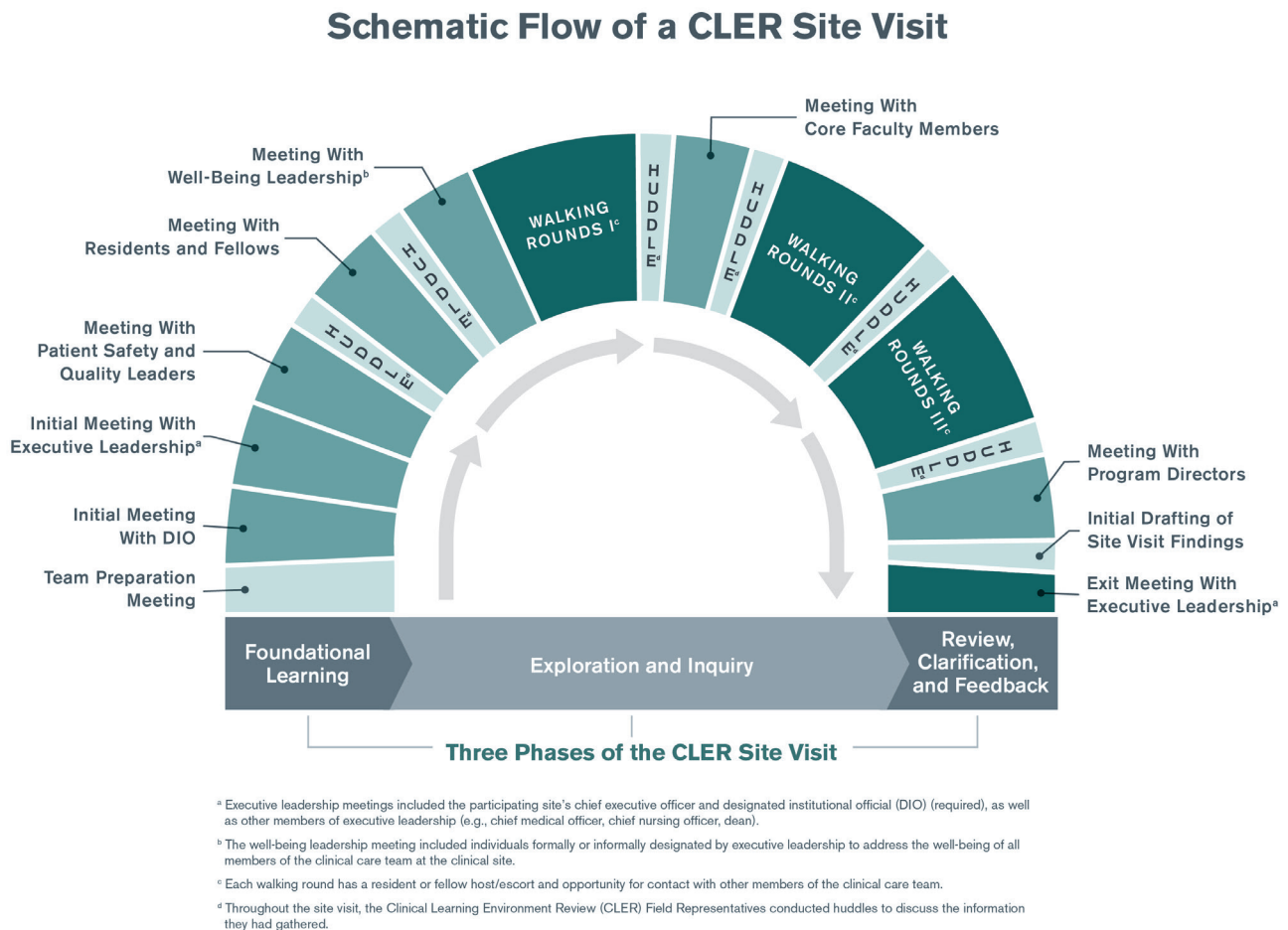


Figure 1. Schematic Flow of a Clinical Learning Environment Review (CLER) Site Visit

CLER Program staff members notified clinical sites of the CLER site visit at least 10 working days in advance. This relatively short notice was intended to maximize the likelihood of gathering real-time information from interviewees.

The number of CLER Field Representatives and visit length varied according to the number of programs and residents and fellows at the site, with teams comprising two to four CLER Field Representatives and visits lasting two to three days. A salaried employee of the ACGME led each CLER site visit team. Additional team members included other CLER Field Representatives, ACGME staff members, or trained volunteers from the GME community.

For site visits that involved time in both inpatient and affiliated ambulatory care practices, the site visit agenda allowed time for the CLER Field Representatives to travel between the inpatient site and the main ambulatory care clinical site.

For the majority of the visits, the CLER Field Representatives conducted group interviews in the same order: (1) an interview with the DIO; (2) an initial group interview with the CEO, members of the executive team (e.g., chief medical officer, chief nursing officer), the DIO, and a resident/fellow representative; (3) a short interview with patient safety and quality leaders; (4) a group interview with residents and fellows; (5) a group interview with well-being leadership; (6) a group interview with faculty members; (6) a second interview with patient safety and quality leaders; (7) a group interview with program directors; and (8) an exit meeting with the CEO, members of the executive team, the DIO, and a resident/fellow representative. Following specific guidelines, each clinical site provided the CLER Field Representatives with a list of all individuals attending the group interviews before the site visit. The CLER team conducted all group interviews in a quiet location without interruption and ensured that the interviews did not exceed 90 minutes.

The purpose of the initial meetings with executive and patient safety and quality leaders was to allow the CLER team to become familiar with the basic language and culture of the CLE's current activities in the six CLER Focus Areas. This information helped inform subsequent interviews and observations during the CLER visit.

The purpose of the meeting with well-being leadership was to gain an understanding of the CLE's efforts to ensure the well-being of its clinical care providers (e.g., physicians, nurses, and other health care professionals) in order to provide safe patient care. The meeting included individuals formally or informally designated by executive leadership to address the well-being of all members of the clinical care team at the clinical site.

The resident and fellow group interviews comprised one to 32 peer-selected participants per session. Specifically, residents and fellows at the Sponsoring Institution, excluding chief residents, voted for their peers to attend the group interviews. The participants broadly represented ACGME-accredited programs at the clinical site with proportionally more individuals from larger programs. The CLER team primarily interviewed residents and fellows in the post-graduate year 2 (PGY-2) or higher to ensure that interviewees had sufficient clinical experience to assess the learning environment. PGY-1 residents in a transitional year residency program were permitted to attend.

For the group interviews with faculty members and program directors, the CLER Program instructed the DIO to invite participants to attend the group interviews. In the faculty member group interviews, each session comprised one to 32 clinical faculty members who broadly represented the residency and fellowship programs

at the CLE. Program directors were not permitted to attend the faculty member meetings. Group interviews with program directors comprised one to 32 leaders of ACGME-accredited core residency programs at each clinical site; sessions included associate program directors when program directors were not available.

For CLEs with more than 30 programs, two separate sets of interviews were conducted with residents and fellows, faculty members, and program directors, with no more than 32 participants attending an individual session.

Additionally, the CLER site visit team conducted a set of walking rounds, escorted by senior or chief residents and fellows, to observe various patient floors, units, service areas, and ambulatory care sites. The CLER Program asked the DIO to select residents and fellows, preferably from a range of different specialties, to guide each CLER Field Representative. For the majority of the visits, residents and fellows who participated in the resident and fellow group meetings or served as the resident/fellow representative in the executive leadership meeting were not permitted to serve as escorts for the walking rounds. In CLEs with a small number of residents and fellows, the resident and fellow escorts on the walking rounds were permitted to serve as escorts more than once and could also attend the resident and fellow group meeting.

The walking rounds enabled the CLER site visit team to gather feedback from physicians, nurses, and other health care professionals (e.g., pharmacists, radiology technicians, social workers) in the clinical setting. Each CLER Field Representative conducted two to six sets of walking rounds per clinical site, with each walking round lasting 60 to 105 minutes. For larger CLEs, CLER Field Representatives conducted an additional fourth walking round lasting 60 minutes.

Throughout each visit, the CLER team conducted huddles to discuss the information they had gathered. Later during the visit, they held a team meeting to synthesize their findings, reach consensus, and prepare both an oral report and a draft of a written narrative report. At the exit meeting, the CLER team shared its oral report with executive leadership, which covered initial feedback on the six CLER Focus Areas. The written report, delivered approximately six to eight weeks after the site visit, reflected the same topics but with a more comprehensive and detailed set of observations. The intention of both the oral and written report was to provide formative information that would help executive leaders assess their practices in the six CLER Focus Areas, inform resident and fellow education and training, and guide improvements in the CLE to ensure high-quality patient care.

## DATA SOURCES

### Survey Instruments

To conduct the group interviews, the CLER Field Representatives used a structured questionnaire developed under the guidance of experts in GME and/or the six CLER Focus Areas. The questionnaires contained both closed- and open-ended questions. For the visits exclusive to the ambulatory care setting, the protocol questions and scenarios were modified to fit the setting while keeping the essence of the questions to allow for comparability across settings.

After the questionnaires were initially content validated by expert review, the CLER Program field tested the instruments on seven CLER site visits. At the conclusion of each of these visits, the items were refined as part of an iterative design process; with each iteration, the CLER Program reviewed and revised the items as necessary based on feedback from interviewees and interviewers.

## Walking Rounds

The CLER Program designed the walking rounds to facilitate random, impromptu interviews with residents, fellows, nurses, and other health care professionals across a number of clinical areas (e.g., inpatient areas, emergency departments, ambulatory care settings) where residents and fellows were educated and trained based on the Sponsoring Institution's ACGME-accredited specialty and subspecialty programs.

The aims of the walking rounds were to (1) triangulate, confirm, and cross-check findings from the group interviews, and (2) glean new information on residents' and fellows' experiences across the six CLER Focus Areas. The walking rounds provided important information that could either confirm or conflict with the information gathered in the group interviews.

## CLER Site Visit Reports

The CLER Field Representatives synthesized findings from each visit in a written report, working from a formal template developed and refined in the early stages of the CLER Program. The template assisted the CLER site visit team in ensuring that each of the six CLER Focus Areas was fully addressed in the oral and written reports for each clinical site. The reports also included a brief description of the clinical site and any of its notable aspects. All members of the CLER site visit team reviewed and edited each report for accuracy and to achieve consensus on the findings.

In the smaller Sponsoring Institutions, the results from both the group interviews with faculty members and program directors were combined in the oral and written reports to maintain anonymity.

## Other Sources of Data

Several other sources of data were used to augment the site visit data, including the ACGME annual data reports<sup>c</sup> and the 2018 American Hospital Association (AHA) Annual Survey Database.<sup>d</sup> The ACGME reports provided information on the Sponsoring Institutions, programs, and physicians in GME, including the number of ACGME-accredited programs, number of residents and fellows matriculated, and university affiliation. The AHA data offered CLE information, including type of ownership (e.g., non-government, not-for-profit versus investor-owned, for-profit) and size, as measured by the number of staffed acute care beds.

# DATA COLLECTION

## Group Interviews with an Audience Response System

CLER Field Representatives conducted group interviews with residents and fellows, faculty members, and program directors using a computerized audience response system (ARS) (Keypoint Interactive version 2.6.6, Innovision Inc, Commerce, MI) that allowed for anonymous answers to closed-ended questions. The ARS data were exported into a Microsoft Excel spreadsheet and then into a software package for statistical analysis. CLER Field Representatives documented responses to open-ended questions qualitatively. The three surveys—one each for residents and fellows, faculty members, and program directors—consisted of 45, 17, and 32 closed-ended questions, and 24, 16, and 27 open-ended questions, respectively. Of note, one question in the resident and fellow survey did not apply to visits exclusively in the ambulatory care setting and thus was omitted from the survey instrument used on these visits.

---

<sup>c</sup> The ACGME annual data reports contains the most recent data on the programs, institutions, and physicians in GME as reported by all ACGME-accredited Sponsoring Institutions and ACGME-accredited programs.

<sup>d</sup> The AHA Annual Survey Database includes data from the AHA Annual Survey of Hospitals, the AHA registration database, the US Census Bureau population data, and information from hospital accrediting bodies and other organizations.

## Group Interviews with No Audience Response System

CLER Field Representatives documented all responses qualitatively for group interviews with the DIO (19 questions); CEO, members of the executive team, the DIO, and the resident/fellow representative (18 questions); patient safety and quality leadership (38 questions); and with well-being leadership (16 questions).

## DATA ANALYSIS

### Descriptive Statistics

Descriptive statistics were used to summarize and describe distribution and general characteristics of Sponsoring Institutions, CLEs, and physician groups interviewed. For Sponsoring Institutions, characteristics included Sponsoring Institution type (e.g., teaching hospital, medical school) and the number of ACGME-accredited residency and fellowship programs per institution. CLE characteristics included type of ownership (e.g., non-government, not-for-profit), number of licensed beds, and total staff count. Demographic information included gender and medical specialty of physicians who participated in the group interviews.

### Analysis of Audience Response System Data

Analyses were conducted at both the individual (e.g., resident and fellow) and the CLE level. For the individual-level analyses, results are based on the total sample of individuals surveyed, presented as percentages. For CLE-level analyses, results show differences between CLEs after individual responses were aggregated at the CLE level and are presented as medians and interquartile ranges. These two levels of analysis provided a national overview of the state of CLE engagement in the six CLER Focus Areas and revealed how CLEs compared on these outcomes.

Chi-square analysis was used to compare resident and fellow responses and to identify any relationships in responses by (1) gender, (2) residency year, and (3) specialty grouping. Chi-square analysis was also used to explore if differences were associated with the following CLE characteristics: (1) regional location; (2) bed size; and (3) type of ownership. Categories in the annual AHA survey informed grouping of CLE-specific variables (e.g., bed size). *P* values of .05 or less were considered statistically significant. All statistical analyses were conducted using SPSS Statistics version 22.0 (IBM Corp, Armonk, NY).

### Analysis of CLER Site Visit Reports

Specific findings based on responses to non-ARS questions and interviews on walking rounds were systematically coded in NVivo qualitative data analysis software version 11 (QSR International Pty Ltd, Doncaster, Victoria, Australia) following the principles of content analysis. Three members of the CLER Program staff, trained in qualitative data analysis, generated a master codebook through an iterative process by (1) independently applying codes to the data, (2) peer-reviewing coding, (3) discussing coding discrepancies, and (4) reaching agreement on the codes through consensus. The results were recorded as frequency counts for further descriptive analysis. Overall percentages and percentages stratified by CLE region, bed size, and type of ownership are reported.

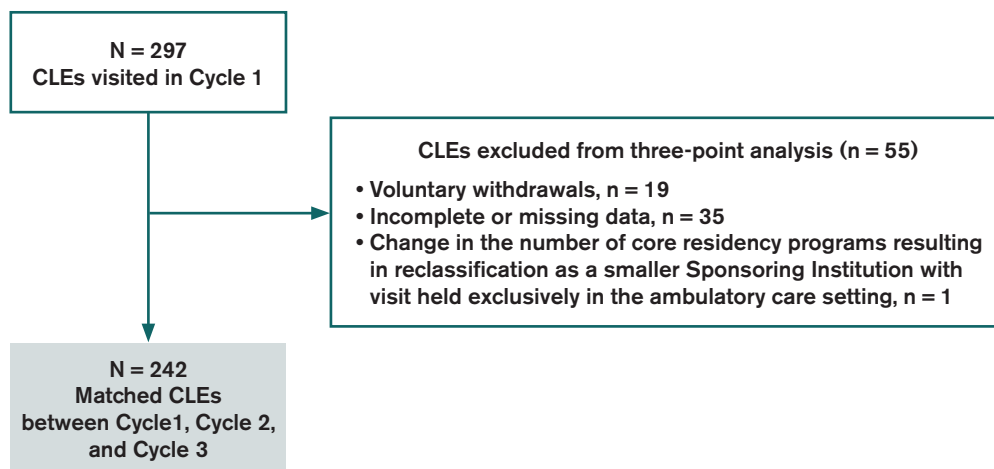
### Three-Point Analysis of Selected Measures in the CLER Focus Areas

A selected set of measures in each of the CLER Focus Areas was examined to explore change over time since the first cycle of visits for matched observations (i.e., the same CLEs in all three cycles of visits). The final data set for the three-point analysis comprised 242 CLEs; reasons for exclusion included changes in accreditation status (e.g., Voluntary Withdrawal), changes in the number of core residency programs, and incomplete



or missing data (see *Figure 2*). The measures examined were the same in all three cycles of visits (i.e., the questions remained constant between Cycles 1, 2, and 3).

The Kolmogorov-Smirnov test was used to test for normality in the data. Based on the results of the Kolmogorov-Smirnov test and tests of symmetry, non-parametric tests were employed in the three-point analysis. The Friedman test was conducted to determine if there were differences in the median percentage based on responses to closed-ended questions (i.e., ARS data) that were aggregated at the CLE level. The Wilcoxon signed rank test (and the sign test when the data were nonsymmetrical) was conducted as a post-hoc analysis to determine which cycles were significantly different. The Cochran's Q and Friedman tests were conducted to compare changes in the qualitative findings based on coded extractions from the CLER Site Visit Reports. *P* values of .05 or less were considered statistically significant. SPSS Statistics version 22.0 was used to conduct statistical analyses.



*Figure 2.* Matched Clinical Learning Environments (CLEs) Between Cycle 1, Cycle 2, and Cycle 3 of Clinical Learning Environment Review Site Visits

### Two-Point Analysis of Selected Measures in the CLER Focus Areas

For the two-point analysis, a selected set of measures in the CLER Focus Areas was examined to explore change over time for matched observations between Cycle 2 and Cycle 3. The final data set for the two-point analysis comprised 504 CLEs; reasons for exclusion included changes in accreditation status (e.g., Voluntary Withdrawal), changes in the number of core residency programs, and incomplete or missing data (see *Figure 3*). As part of its commitment to a model of continuous quality improvement, the CLER Program added these measures to the site visit protocol in Cycle 2 to explore important topics in greater depth. The measures examined remained constant between Cycle 2 and Cycle 3.

The Kolmogorov-Smirnov test was used to test for normality in the data. Based on the results of the Kolmogorov-Smirnov test and tests of symmetry, nonparametric tests were employed in the two-point analysis. The Wilcoxon signed rank test (and the sign test when the data were nonsymmetrical) was conducted to compare changes in median percentage based on responses to closed-ended questions (i.e., ARS data) that were aggregated at the CLE level. The McNemar and marginal homogeneity tests were conducted to compare changes in the qualitative findings based on coded extractions from the CLER Site Visit Reports. *P* values of .05 or less were considered statistically significant. SPSS Statistics version 22.0 was used to conduct statistical analyses.

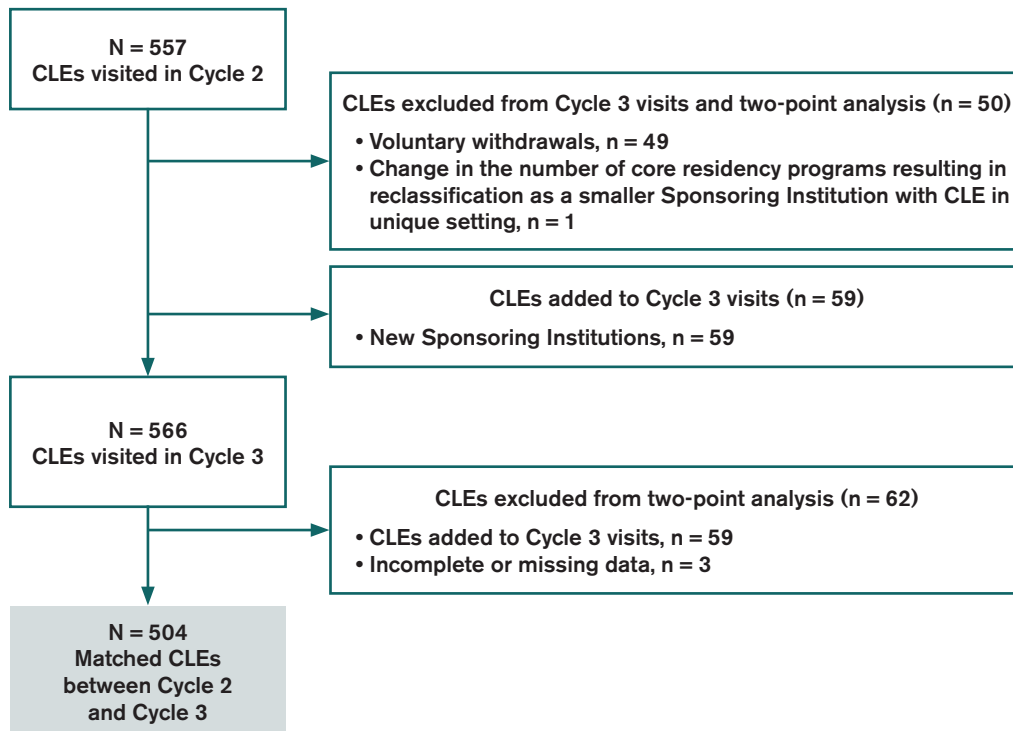


Figure 3. Matched Clinical Learning Environments (CLEs) Between Cycle 2 and Cycle 3 of Clinical Learning Environment Review Site Visits

### Development of Overarching Themes and Findings in the CLER Focus Areas

The overarching themes and findings by CLER Focus Areas were determined in three stages. First, the CLER Program staff members asked each CLER Field Representative to identify the overarching themes (i.e., broad, high-level observations) and key findings in the CLER Focus Areas based on their summative experiences and observations through a key informant survey. The CLER Program staff members systematically analyzed the content of all responses to discern common themes and note salient concepts. The approach to analysis was inductive in that the themes emerged from the content of the responses.

Next, the CLER Field Representatives reviewed and commented on the results and offered additional findings by consensus. Based on feedback from the CLER Field Representatives, the CLER Program staff members revised the summary of results and presented them to the CLER Evaluation Committee. Lastly, the members of the CLER Evaluation Committee reviewed the results and developed a set of commentaries on the importance of the findings and their impact on patient care and physician education. The work of the committee was achieved by consensus.



### **Use of Terms to Summarize Quantitative and Qualitative Results**

For the purposes of this report, a specific set of descriptive terms is used to summarize quantitative results from both the ARS and the CLER Site Visit Reports: few (< 10%); some (10%-49%); most (50%-90%); and nearly all (> 90%).

The summary of qualitative data (i.e., responses to open-ended questions during group interviews and conversations on walking rounds) is based on the CLER Field Representatives' assessment of the relative magnitude of responses. The following set of terms is intended to approximate the quantitative terms above: uncommon or limited; occasionally; many; and generally.

## **TRIANGULATION AND CROSS-VALIDATION**

Triangulation of the findings enhanced overall accuracy in the conclusions. The findings were cross-validated for consistency and corroboration using multiple sources of complementary evidence and analytic techniques. For example, the ARS results were more meaningful when supplemented by critical qualitative information and vice versa. Multiple sources of data provided greater insight and minimized inadequacies of individual data sources when a finding was supported in multiple places. This mixed methods approach provided a richer, more balanced, and comprehensive perspective by allowing for deeper dimensions of the data to emerge.

## **LIMITATIONS**

As with any formative learning process, limitations to the CLER Program warrant consideration in using the information in this report. Perhaps most important, these findings do not suggest cause and effect.

Second, although this aggregated set of findings is designed to be highly representative, it is based on a series of sampled populations and thus may not be generalizable to all CLEs. As previously mentioned, the CLER teams interviewed a sample of residents, fellows, faculty members, program directors, and other clinical and administrative staff members for each visit, with the aim of broad representation across all programs (e.g., proportionally more individuals from larger programs). Although the goal was to achieve a broad degree of representativeness, the sample may or may not reflect the entire population. Given that the CLER Program provides formative assessment, this approach to sampling allowed for a broad and in-depth understanding of socially complex systems such as CLEs. The CLEs that were not included in this sample may represent different experiences and consequently could yield different conclusions as the CLER Program considers them in the future.

## REFERENCES

1. CLER Evaluation Committee. 2017. "CLER Pathways to Excellence: Expectations for an Optimal Clinical Learning Environment to Achieve Safe and High Quality Patient Care, Version 1.1." Chicago, IL: Accreditation Council for Graduation Medical Education.

---

## CLER PROGRAM

Octavia Bailey; Mark R. Bixby, MD, FAAFP; Isabelle Bourgeois, MPA; Jennifer J. Buescher, MD, MSPH; Robert Casanova, MD, MHPE; Baretta R. Casey, MD, MPH, FAAFP; Marian D. Damewood, MD, FACOG; Kevin C. Dellsperger, MD, PhD; Robin Dibner, MD; David L. Dull, MD, MMM, FAAPL; Staci A. Fischer, MD, FACP, FIDSA; Patrick Guthrie; Paula Hensley, MPH; Kristen Ward Hirsch; John A. Hopper, MD; Sharhabeel Jwayyed, MD, MS; Catherine Kallal, MD; Elizabeth Kimball, MA; Nancy J. Koh, PhD; Kathryn E. McGoldrick, MD, MAH, FCAI (Hon); Clifton McReynolds, PhD; Terrie Mendelson, MD; Joshua Mirôn, MA; Robin C. Newton, MD, FACP; Morgan Passiment, MS; Douglas E. Paull, MD, MS, FACS, FCCP, CHSE, CPPS; Daniel Picard, MD; Kathy B. Porter, MD, MBA, FACOG; Dale Ray, MD, MMM; Laura Riordan, MS; Melissa Schori, MD, FACP, MBA; Tara Shedor; Stephen Smith, M; Mike Strickland, MFA; Hongling Sun, PhD; Marie Trontell, MD; Paul Uhlig, MD, MPA; Robin Wagner, RN, MHSA; Elizabeth Wedemeyer, MD; Kevin B. Weiss, MD; Esther Woods; Martha S. Wright, MD, Med; James R. Zaidan, MD, MBA; Jose Zayas, DO, FAAP

# Overarching Themes

Catherine M. Kuhn, MD; John Patrick T. Co, MD, MPH, FAAP; and Kevin B. Weiss, MD, on behalf of the CLER Evaluation Committee

*Note: The data in this report were collected prior to March 2020. Many of the challenges identified in this section have been further accelerated by the COVID-19 pandemic which has dramatically amplified the need for rapid innovation and adaptation while placing stress on the health system's ability to maintain quality patient care, patient safety, and workforce well-being.*

## INTRODUCTION

As in prior *CLER National Reports of Findings*, this third report reveals a number of overarching themes that cut across the six CLER Focus Areas.<sup>1</sup> Of note, the CLER protocol for this third cycle of visits did not directly assess for these themes. Rather, they are based on the CLER Field Representatives' overall observations for the most recent cycle of CLER visits. The development of these themes is described in detail in the Methodology section (pp. 17-26).

The overarching themes appear in the following shaded boxes and are numbered for easy reference within the report; these numbers do not suggest order or importance. Each theme is accompanied by a discussion section, authored by the CLER Evaluation Committee, which highlights the theme's relevance to the GME community and the CLEs in which residents and fellows learn and train.

## OVERARCHING THEMES

### Theme 1

Clinical learning environments continue to face significant challenges in changing their health systems at the speed and magnitude needed for sustained improvements in patient care. There are a few clinical learning environments in which executive leadership effectively engages the GME community in the design of solutions to address these challenges.

### Discussion

The US health care environment continually seeks to innovate while sustaining high quality and safe patient care. Managing innovation while maintaining safety and quality requires engaging every member of the patient care team and health system workforce. Over the past few years, US health care has experienced a number of accelerated changes. There has been a dramatic increase in mergers and acquisitions of hospitals and related health care entities, resulting in increasingly large and complex health care organizations. There has also been rapid entry of private equity in ownership of physician group practices, particularly among certain specialty-based clinical practices. One of the notable outcomes of these trends is a rapidly developing workforce of physicians who are directly employed by health care organizations.<sup>2</sup> In addition, during the past decade, US health care organizations have nearly finalized the transition from primarily paper-based to electronic-based health records, with all the well-

described benefits and challenges associated with this change.<sup>3</sup> US health care is also rapidly increasing the use of technology to promote both telemedicine and distance learning.

This report examines key aspects of the clinical learning environment during this rapid evolution of the US health care system and exposes the challenges and opportunities related to how CLEs engage their residents and fellows in individualized learning while simultaneously planning for and implementing system changes to respond to the need for innovation.

Residents and fellows are on the front line of patient care and are therefore a valuable source of information about the practicality of proposed solutions to improve care. It is therefore important that CLE leadership work with GME leadership to engage residents and fellows in developing and testing proposed solutions to ensure optimal implementation and sustainability of patient care improvement that is most proximate to the patient experience. Residents and fellows are also source of new talent, new ideas, and innovation in the patient care workforce. Ensuring residents and fellows have experience in systems-based identification and problem solving can only serve to benefit health systems as they rapidly evolve.

This overarching finding of rapid change in our nation's health care environments is offset by the unfortunate finding that there are few CLEs where executive leadership is effectively engaging their GME community in designing solutions to address the need for innovation and change. Traditionally, the GME community (primarily the DIO, program directors, faculty members, residents, and fellows) have been viewed as a source for implementing change. This same community has less frequently been viewed as a resource or partner in problem solving to achieve CLE goals.

The finding noted a few of the CLEs visited appeared to be engaging residents and fellows in the early stages of innovation. These CLEs possess a strategic advantage by expanding input from the front lines of patient care. This approach to engagement is a benefit with few downsides. However, efforts to improve GME engagement also comes with challenges.

Over the past several years, the CLER Program's *Pursuing Excellence* initiative<sup>4</sup> has been exploring the benefits and challenges of bringing GME leaders, and specifically DIO leaders, into a closer relationship with the executive leaders of their CLEs. The eight Sponsoring Institutions participating in the Innovators Collaborative of *Pursuing Excellence* have reported major benefits from more closely engaging with their health system leadership (e.g., expanded efforts in faculty development and increased interprofessional learning). To date, they have shared their experiences with the GME community through several workshops and have a series of publications forthcoming.<sup>5,6,7</sup>

Preparing the GME community to actively engage in all aspects of innovation requires the CLE's leaders to invest in developing leaders within GME. In addition to their clinical expertise, GME faculty members, residents, and fellows need to understand and develop skills to be able to address important concepts such as: (1) principles of meta-leadership; (2) principles of leading in a crisis; and (3) principles of resilient leadership. Additionally, GME leaders need to ensure that each of their programs is addressing resident and fellow competence in knowledge, skills, and attitudes related to systems-based practice.

Enhancing input from the GME community requires the CLE's executive leaders to more formally engage with GME leaders in strategic decision making and warrants consideration of including GME leaders as part of the CLE's executive leadership team. In these times of rapid change, the *Pursuing Excellence* initiative indicates the

nation's CLEs would benefit from improving engagement with their GME communities as they seek to navigate through numerous systems-level challenges.

## Theme 2

In general, clinical learning environments do not appear to engage all their residents and fellows in their organization's efforts to design, evaluate, and improve patient safety and health care quality, including health care disparities.

### Discussion

The CLE's lack of efforts to engage residents and fellows in efforts to improve health care quality and patient safety was one of the earliest themes to emerge from the CLER Program. While, over time, CLER reports have revealed some demonstrated improvement in this area, there appear to be challenges to bringing about rapid change and improvement. Educating and training the next generation of physician leaders in how to fully engage in patient safety and health care quality improvement needs to be viewed as foundational to physician practice. Physicians educated and trained in patient safety and quality improvement have the ability to lead, co-lead, and otherwise participate effectively in interprofessional efforts to eliminate health care disparities, improve the quality and value of patient care, and decrease risk/harm to patients.

Over the past several years, the CLER Program has revealed some of the challenges CLEs face in engaging residents and fellows in patient safety and quality improvement. For many CLEs, resident and fellow engagement in patient safety and quality improvement is primarily GME-centered versus CLE-centered learning—accomplished through single, event-based activities rather than longitudinal, competency-based approaches to teaching these important concepts. In these situations, residents and fellows often complete only one or two steps of a four-part quality improvement cycle during their educational programs and never get to see the effort as a whole. In addition, there has also been an overall lack of investment in faculty development to build the capacity to mentor/coach residents and fellows in patient safety and quality improvement. Each of these challenges could likely be overcome if the CLE's leadership re-envisioned how it engages GME and recognizes how doing so will help them achieve their goals of optimizing patient care.

One of the most important actions that could accelerate change is for the GME community to recognize and regard patient safety and health care quality improvement as essential functions of the CLE, thereby creating an imperative to ensure that residents and fellows rapidly acquire knowledge and skills in these areas. Often, physicians view work in this area as administrative work that is separate from (or additional to) their clinical responsibilities rather than a critical and integral component of clinical care.

Patient safety and health care quality improvement is centered on patient care, patient care teams, and systems-based thinking and solutions. When resident and fellow experiences in addressing patient safety and health care quality are confined to GME-based activities that do not integrate with the CLE's efforts in this area, they will, by design, fail to achieve optimal learning or optimal improvements in patient care. Therefore, in addition to having CLE leaders reach out to more actively engage their residents and fellows in patient safety and quality improvement, outreach needs to come from GME as well. It is essential that GME leaders engage the CLE's patient safety and quality leadership and staff members in co-creating the resident and fellow patient safety and quality improvement learning experiences, with joint accountability for the outcomes. Improving

patient safety and health care quality requires interprofessional engagement that is team oriented if the efforts are to result in sustainable systems-based solutions.

As noted on the previous page, one of the fundamental challenges to CLE and GME leadership is the predominant view that resident and fellow learning about patient safety and health care quality improvement is best accomplished through event-based experiences (e.g., residents engage in a patient safety event analysis, submit a patient safety event report, or participate in a piece of a quality improvement activity). Competency-based learning in patient safety and health care quality improvement needs to reflect progressive longitudinal learning on a developmental trajectory that spans the entirety of the resident's and fellow's educational program. Successful educational programming in patient safety and health care quality improvement needs to be a series of events and learning experiences that are co-designed and implemented with input from key stakeholders of both the CLE and GME leadership.

The overarching theme noted above poses a key challenge for CLEs to ensure that resident and fellow participation in patient safety and quality improvement activities reflect complete learning cycles—similar to that of a plan/do/study/act quality improvement cycle. All too often, residents and fellows submit a patient safety event report without subsequently engaging with the CLE in the event analysis (do) or design of follow-up actions (study) to affect improvement. Incomplete learning cycles, like incomplete quality improvement cycles, have little likelihood of creating sustainable learning or improvement in patient care.

CLE investment in faculty development in patient safety and health care quality is essential. However, not every faculty member needs to be an expert in patient safety and health care quality improvement. The *Pursuing Excellence* initiative and the ACGME's pilot work in creating a Program Directors Patient Safety and Quality Improvement Educators Network have demonstrated that both the CLE and GME benefit from fostering different groups of faculty members with different degrees of proficiency and engagement. The first group are the experts—a few faculty members who have significant knowledge and experience in patient safety and health care quality improvement. These experts do not necessarily need to come exclusively from within the specialty or the physician community. When viewed through a multidisciplinary interprofessional lens, there may be significant expertise already residing within the CLE. The second group (also relatively small) are those with sufficient skills to serve as mentors or coaches for residents and fellows. For this group, the CLE and GME may also benefit from drawing on expertise from across the professions. Once the first two groups are established, the majority of faculty members need only to be conversant in the general concepts of patient safety and health care quality improvement, provide a supportive and safe culture of inquiry, and actively assist residents and fellows in developing strong relationships with their faculty mentors and coaches. With this three-group approach in mind, the task of faculty development becomes less onerous and more achievable.

As noted in prior CLER reports, there are compelling reasons to focus on enhancing resident and fellow engagement in improving patient safety and health care quality. Residents and fellows are uniquely positioned to identify near misses and opportunities for improvement, and to appropriately test and trial any plans for system redesign to address challenges prior to widespread implementation. In keeping with the thoughts above regarding faculty development, every resident and fellow does not need to be an expert in patient safety and health care quality improvement. However, each resident and fellow does need to be competent in the skills of how to design, evaluate, and improve patient safety and health care quality if at minimum they are to continually improve their own personal practice and patient outcomes.

If CLE and GME leadership do not work together to actively engage residents and fellows while they are in their educational programs, these learners may go on to independent practice believing that physician involvement in improving patient safety and health care quality is not important or necessary. This CLE/ GME partnership is essential to avoid perpetuating the structural silos that disconnect the physician workforce from the CLE's imperative to provide safe, high-quality patient care.

### Theme 3

In addressing well-being, many clinical learning environments are focused on individual responsibility and resilience. Few clinical learning environments appeared to address systems-based factors that adversely impact the well-being of the clinical care team and the safety and quality of patient care.

#### Discussion

The primary role of every health care organization is to provide safe, high-quality patient care. It has been proposed that there should be four aims to quality improvement in health care: better health outcomes; better care; lower cost; and joy in work.<sup>9</sup> This CLER report includes the newest Focus Area of well-being and provides the first national assessment of how CLEs are addressing the challenge of creating clinical care environments that support the well-being of their clinical staff members, including learners (specifically residents and fellows).

The findings from this first CLER assessment of the Focus Area of well-being support other national findings noting a high degree of burnout associated with those who provide clinical care.<sup>9</sup> It is well known that much of the burnout observed in US health care organizations is rooted in challenges associated with systems-based structures and processes. Some of the well described systems-based challenges include inadequate staffing of various members of clinical care team; the increasing complexity and acuity of patient case mix across different settings; inefficient or ineffective patient care workflow designs; inefficient or ineffective deployment of resources (e.g., electronic health records); asymmetry in work intensity across different members of the clinical care team; and increasing volume and complexity of non-clinical administrative demands on clinical care providers, including residents, fellows, and faculty members.

Although many of the problems being identified as negatively affecting well-being are systems based, the findings from this report suggest most of the current solutions are focused on assessing individuals, providing individual or group support, and helping individuals to develop resilience. This report noted that only a small number of CLEs appear to have developed approaches that address their entire workforce, solving for some of the systems-based root causes that impede well-being. Most of the CLE well-being efforts that were identified in this cycle of CLER visits focused on physicians, more specifically residents and fellows. This may be due to the GME community's interest in supporting well-being. At the same time, it is important to view well-being as essential for the entire clinical care team.

Creating programs to assist residents and fellows in addressing burnout and other issues affecting well-being is important work, and the focus on managing harm to residents, fellows, and other members of the health care team is an important priority, yet it is only a partial solution. CLEs will ultimately benefit from broadening their scope to identify and address systems-based factors that are adversely affecting the well-being of all



members of the care team. Doing so has the potential to increase staff safety, morale, and job satisfaction that will likely translate directly into improvements in quality of care, patient safety, and staff and faculty recruitment and retention. This in turn will likely improve the CLE's reputation in the community as both a source of good patient care as well as a caring and responsible community asset.

As this is the first set of CLER visits under this new Focus Area of well-being, it is important to recognize the earnest efforts to date to assist individuals in managing the impact of health systems' challenges on their well-being. It is also important to recognize the need to dramatically enhance efforts to improve well-being through systems-based solutions. Later in this report, the section on challenges and opportunities addresses important key findings in the area of well-being in greater detail, including highlighting some of the GME-based efforts to date in this area. Given the high degree of national interest in clinician well-being, there is hope that when the CLER Program conducts its next cycle of visits, there will be evidence of rapid progress in aligning the efforts to assist individuals with expanded efforts to identify and implement systems-based solutions to improving well-being.

## REFERENCES

1. CLER Evaluation Committee. 2017. "CLER Pathways to Excellence: Expectations for an Optimal Clinical Learning Environment to Achieve Safe and High Quality Patient Care, Version 1.1." Chicago, IL: Accreditation Council for Graduation Medical Education.
2. Kane, Carol K. 2019. "Updated Data on Physician Practice Arrangements: For the First Time, Fewer Physicians Are Owners Than Employees." *American Medical Association Policy Research Perspectives*, May, 1–16.
3. Palabindala, Venkataraman, Amaleswari Pamarthy, and Nageshwar Reddy Jonnalagadda. 2016. "Adoption of Electronic Health Records and Barriers." *Journal of Community Hospital Internal Medicine Perspectives* 6 (5): 32643. doi.org/10.3402/jchimp.v6.32643.
4. Wagner, Robin, Kevin B. Weiss, Morgan L. Passiment, and Thomas J. Nasca. 2016. "Pursuing Excellence in Clinical Learning Environments." *Journal of Graduate Medical Education* 8 (1): 124–27. doi.org/10.4300/JGME-D-15-00737.1.
5. Passiment, Morgan, Pavan Zaveri, Elias I. Traboulsi, Kalli Varaklis, Anita Blanchard, Robert B. Baron, Laurinda Calongne, et al. 2020. "CLER Pursuing Excellence: Designing a Collaborative for Innovation." *Journal of Graduate Medical Education* 12 (4): 512–17. https://doi.org/10.4300/JGME-D-20-00712.
6. Traboulsi, Elias I., Anita K. Blanchard, Morgan Passiment, Dewesh Agrawal, Robert B. Baron, Laurinda Calongne, Diane Hartmann, et al. 2021. "Driving GME Integration With Health System Strategic Priorities." *Journal of Graduate Medical Education* 13 (1): 153–60. https://doi.org/10.4300/JGME-D-20-01540.1.
7. Arora, Vineet M., Glenn Rosenbluth, Amanda O'Rourke, Rita M. Pappas, Aaron C. Hamilton, Richard J. Vath, and Anita K. Blanchard. 2021. "Integrating Clinical Learning Environment Staff and Learners Into the Pursuit of Quality, Safety, Equity, and Value." *Journal of Graduate Medical Education* 13 (2): 294–300. https://doi.org/10.4300/JGME-D-21-00197.1.
8. Bodenheimer, Thomas, and Christine Sinsky. 2014. "From Triple to Quadruple Aim: Care of the Patient Requires Care of the Provider." *The Annals of Family Medicine* 12 (6): 573–76. doi.org/10.1370/afm.1713.
9. National Academies of Sciences, Engineering, and Medicine. 2019. *Taking Action Against Clinician Burnout: A Systems Approach to Professional Well-Being*. Washington, D.C.: National Academies Press. doi.org/10.17226/25521.



## CLER EVALUATION COMMITTEE

Catherine M. Kuhn, MD, Current Co-Chair, Durham, NC; John Patrick T. Co, MD, MPH, FAAP, Immediate Past Co-Chair, Boston, MA; Kevin B. Weiss, MD, Co-Chair, Chicago, IL; Jenny J. Alexopoulos, DO, Tulsa, OK; Michael Apostolakos, MD, Rochester, NY; Vamsi Aribindi, MD, Houston, TX; James P. Bagian, MD, PE, Ann Arbor, MI; Lindsay Dale, MD, Richmond, VA; Rosemary Gibson, MSc, Arlington, VA; Linda A. Headrick, MD, MS, FACP, Columbia, MO; Robert Higgins, MD, Augusta, GA; Sherry C. Huang, MD, New Brunswick, NJ; Marcia Hutchinson, MD, Savannah, GA; Lynne M. Kirk, MD, MACP, Chicago, IL; Anai N. Kothari, MD, MS, Maywood, IL; Tanya Lord, PhD, MPH, Concord, NH; David Markenson, MD, MBA, FAAP, FACEP, FCCM, FACHE, Washington, DC; David Mayer, MD, Columbia, MD; Lucie E. Mitchell, DO, MS, Birmingham, AL; Douglas E. Paull, MD, MS, FACS, FCCP, CHSE, CPPS, Chicago, IL; Lakshmana Swamy, MD, MBA, Boston, MA; Andrew M. Thomas, MD, MBA, Columbus, OH; Marjorie S. Wiggins, DNP, MBA, RN, FAAN, NEA-BC, Portland, ME; Ronald Wyatt, MD, MHA, DMS (Hon), Atlanta, GA



# Challenges and Opportunities in Selected CLER Focus Areas

Kevin B. Weiss, MD; Catherine M. Kuhn, MD; and John Patrick T. Co, MD, MPH, FAAP, on behalf of the CLER Evaluation Committee

## INTRODUCTION

In this third *CLER National Report of Findings*, the CLER Program continues to provide the nation with a periodic snapshot of the CLEs that host resident and fellow physicians, continuing to elucidate the important interface between learning and patient care. As in prior *National Reports*, the findings reveal both strengths and opportunities for improvement. In particular, they highlight those areas where GME plays a key role in ensuring the CLE achieves its goals for delivering safe, high-quality patient care. For example, this third cycle of visits revealed several strengths:

- Most CLEs reported tracking the number of patient safety event reports submitted by residents and fellows.
- Approximately 80% of residents and fellows reported participating in a quality improvement project of their own design or one designed by their program or department.
- Across CLEs, most residents and fellows reported following a standardized process for handling transitions of care during hand-offs between shifts.
- Across CLEs, most residents and fellows reported an overall culture of adequate supervision.

These examples are encouraging and can serve as models or catalysts for action to address the challenges and opportunities for improving the CLE that are associated with the findings in this report.

This section presents the views of the CLER Evaluation Committee on the significance of the findings in two of the six CLER Focus Areas: patient safety and well-being. The committee members chose to highlight patient safety both for the seriousness of the issues and the opportunity to share examples of how new approaches and dedicated efforts to improve resident and fellow engagement in patient safety can make a difference. The committee selected well-being for several reasons. First, it is a new Focus Area for the CLER Program—having expanded over the years from a focus on fatigue management, mitigation, and duty hours to a more comprehensive assessment of the CLE that addresses four interrelated topics: work/life balance; fatigue; burnout; and support of those at risk of or demonstrating self-harm. Importantly, it is an opportunity to speak to an issue garnering national attention in the US health care system and its implications for GME and the future physician workforce.

The shaded boxes that follow present selected findings based on both quantitative and qualitative results drawn from the CLER site visits. (Refer to the Methodology section on pp. 17-26 for more information on the specific terminology used in describing the findings.) As with the section reporting on the overarching themes (pp. 27-33), the CLER Program staff members presented the CLER Evaluation Committee with a summary of results in these two CLER Focus Areas—patient safety and well-being—to review in the development of this section. The findings that follow are numbered for easy reference within the report. These numbers do not suggest order or importance.

## PATIENT SAFETY

### Patient Safety Finding 1

In general, residents, fellows, and nurses lacked clarity and awareness of the range of reportable patient safety events. When queried, residents, fellows, and nurses also appeared to vary in their understanding of how the clinical learning environments used the reporting of adverse events and near misses/close calls to improve systems of care.

### Patient Safety Finding 2

Across clinical learning environments, a limited number of residents, fellows, and faculty members participated in interprofessional, interdisciplinary, systems-based improvement efforts, such as patient safety event reviews and analyses.

### Discussion

This report re-emphasizes what was seen in the prior CLER reports in the area of patient safety—that there is a large performance gap in how residents and fellows engage in the patient safety initiatives within their CLE. It is reassuring that overall there now appears to be a general awareness of the importance of, and the value in, engaging residents and fellows in CLE activities to improve patient safety. From the perspective of the CLE, resident/fellow engagement results in more patient safety event reports from providers who are in close contact with their patients. Engaging residents and fellows also increases the number of members of the clinical team that can participate in analyzing patient safety events and thereby improve care. Through increased engagement, residents and fellows are learning the value of working with CLEs to improve the effectiveness and efficiency of patient care through system-based solutions.

For this section on challenges and opportunities, the CLER Evaluation Committee focuses on two important findings, drawing upon the CLER site visit experience as well as the recent work of the National Collaborative for Improving the Clinical Learning Environment (NCICLE) and the *Pursuing Excellence* Pathway Leaders Patient Safety Collaborative.<sup>1,2</sup> One finding is the need for GME and CLE leadership to prioritize engaging all residents and fellows in patient safety event analysis starting in their first year in the CLE. Of note, this needs to be meaningful engagement so as to inspire residents and fellows on the value of engaging in efforts to improve patient safety. While their first experience needs to happen in the first year, there needs to be a longitudinal approach to developing these skills. The other finding is the need for the GME community and other members of the clinical care team to broaden the range of what they view as reportable patient safety events. The CLER Evaluation Committee believes these two issues are key levers to advancing the patient safety culture within CLEs, enhancing GME, and improving patient care.

In 2017, NCICLE, a collaborative of organizations interested in improving the clinical learning environment, released a guidance document for engaging new clinicians in patient safety. The document outlines four basic components of engagement, including recognizing and reporting events, analyzing events, participating in improvement efforts, and understanding culture (see *Figure 1*).<sup>1</sup> The CLER Program used this framework as the foundation for the *Pursuing Excellence* Pathway Leaders Patient Safety Collaborative to test the value of engaging residents and fellows early in their education and training. This Collaborative of nine ACGME-accredited Sponsoring Institutions focused on patient safety event analysis, rather than event reporting, as the

key lever for engaging residents and fellows. The results of this Collaborative were notable and suggested that if residents and fellows become involved early in their clinical education and training in meaningful patient safety event analysis, they will, in general, be more engaged in patient safety and more likely to report patient safety events. The results seem to be intuitive; residents and fellows are more likely to want to engage in a CLE's patient safety program if they perceive they are valued as problem solvers and not just reporters of events.

Some of the ways to increase resident and fellow engagement in patient safety are to ensure all participants recognize the important roles they play in addressing patient safety—that the CLE's patient safety program values resident and fellow participation and that the GME leadership values the expertise of the CLE's patient safety program staff members. Other lessons learned from the *Pursuing Excellence* Pathway Leaders Patient Safety Collaborative note it is important that resident and fellow engagement is based on real and recent events that are relevant to residents and fellows—ideally events that are related to their field in health care, that the analysis involves interprofessional collaboration with other members of the health care team, and that small group (rather than large group) analysis provides greater opportunities for meaningful input. Residents and fellows are also more likely to engage if their faculty members are interested in and prioritize patient safety—adjusting clinical workflow to allow residents and fellows be able to participate in patient safety initiatives—recognizing this may require accommodating the workflow of other (interprofessional) members of the health care team.

The first finding notes that, across many of the CLEs, the members of the clinical care team were uncertain as to the full range of reportable events. As the findings of this report demonstrate, few residents and fellows indicated they have reported a near miss event. Across all members of the clinical care team, there appears to be a general lack of awareness of the broad range of types of events that benefit from documentation, especially those events that are either near misses or unsafe conditions (e.g., preventable harm). Much of the learning across CLEs appears to be based disproportionately on harm, often serious harm, events. It is important for residents and fellows to recognize, report, and know how to analyze the full spectrum of patient safety events from unsafe conditions to serious harm. If residents' and fellows' experience in patient safety is limited to reporting and analyzing harm events, they will not develop the skills to be able to participate in or lead proactive analyses that develop solutions to prevent harm from occurring in the first place or understand how to prioritize limited resources in addressing patient safety.

These findings reflect that CLEs often find it challenging to demonstrate to the clinical care team (including GME learners), that there were sustainable improvements that resulted from analyses of patient safety event reports. The findings also suggest that there are many ways by which both GME and CLE leadership are making efforts to engage residents and fellows in patient safety, including simulation activities, lecture series, and morbidity and mortality conferences that have been reconfigured to emulate a true patient safety event analysis, such as a root cause analysis. While these activities support education about patient safety, they are not substitutes for the primary goal of engaging residents and fellows in real, interprofessional patient safety event analyses.

## WELL-BEING

### Well-Being Finding 1

A limited number of clinical learning environments appeared to have a formal strategy to promote, improve, and sustain the well-being of the clinical care team to ensure safe patient care.

### Well-Being Finding 2

Across many clinical learning environments, efforts to address well-being appeared to focus on individual resilience and wellness with an emphasis on physical and mental health (e.g., nutrition, exercise, gym membership, meditation) rather than systems-based solutions to improve the well-being of the clinical care team.

### Well-Being Finding 3

Across many clinical learning environments, when well-being efforts existed, they appeared to be siloed and initiated by individual programs, professional groups, service lines, or units with separate activities for residents and fellows.

### Well-Being Finding 4

Across clinical learning environments, members of the clinical care team reported that burnout among faculty members and nurses was more prevalent than other members of the clinical care team. Burnout was reported among residents and fellows, it was less prevalent compared to faculty members and nurses.

### Well-Being Finding 5

A limited number of clinical learning environments appeared to have a systematic approach to preventing, recognizing, and effectively mitigating burnout among physicians. When clinical learning environments were engaged in efforts to address burnout, many were at varying stages of implementing solutions. It was uncommon for clinical learning environments to have assessed the effectiveness of these efforts.

## Discussion

### ***Anchoring well-being efforts in a comprehensive strategy***

The findings from this cycle of CLER visits suggest that well-being is a priority for many of the nation's CLEs. The results also indicate a paucity of CLEs have developed and implemented formal strategies to address these issues. While many CLEs indicated they offer a variety of independent activities and resources to address well-being, they appear to do so absent formal comprehensive strategies.

A comprehensive strategy is important for two reasons: (1) the majority of clinical care is delivered by interprofessional teams of providers where stressors on one or more members of the team in turn affect others; and (2) clinical care teams function within larger CLE systems of care. So while individuals may take advantage of offerings to build their resilience, there are other major stressors impacting these individuals that can only be addressed at the system level. Additionally, a comprehensive organizational strategy better positions the CLE to ensure equity in well-being among the various health professions and across the entire workforce.

CLEs need to address both the whole workforce and the subgroups. Absent a comprehensive strategy, efforts to shore up one subgroup will break down due to the stressors on the other members of the workforce relied upon to collectively provide safe care.

Optimizing the well-being of the entire clinical care team is essential for providing safe, high-quality patient care and requires ongoing commitment at the highest levels of the CLE. Governance and executive leaders of CLEs can best demonstrate that commitment by developing formal strategies that create a long-term vision of what well-being means to the organization and the patients it serves. To succeed, these strategies need to be supported by plans that include specific, measurable, attainable, relevant, and timely (“SMART”) goals and ongoing evaluation and assessment of progress towards them.

Comprehensive, organization-wide strategic well-being efforts may also benefit from common measurement and data sharing across the institution and serve as a useful source for identifying successful practices within a CLE. In these circumstances, the CLE’s leadership would use well-being data in a manner similar to the way it uses other metrics for quality improvement within the organization.

### ***Building a strategy that centers on system-based solutions for optimizing well-being***

Finding 2 notes that many CLEs approach well-being by offering physicians and other clinical staff members access to a variety of activities and resources aimed at building individual resilience. Common examples are availability of exercise facilities, meditation and yoga instruction, and access to wellness programs. Providing resilience resources appears to be an important initial step and one that is relatively easy to establish. However, there are limitations to focusing primarily on wellness activities.

CLEs that address well-being primarily through wellness activities may be missing the more urgent systems-level issues, such as inefficient workflow design, inadequate staffing, and sub-optimally designed electronic health record systems. These issues place significant stress on all members of the clinical care team. As such, well-being programs aimed primarily at building individual resilience may be viewed by the workforce as superficial and a means to avoid the larger and more impactful concerns related to system breakdowns. Failure to address the system-level issues impedes team building and erodes team members’ abilities to reflect and learn—all of which negatively impact patient care.

The findings also note that many CLE efforts in well-being have been developed and implemented for special areas within the CLE (such as oncology or burn units) or for one sector of the clinical care team (such as residents and fellows), with little offered to the remaining units or team members. There are important justifications for developing special efforts to support subpopulations of the workforce. The heavy burden of illness in some units (e.g., oncology units) is a chronic stressor to the care teams on that unit. In addition, unique groups such as residents and fellows may benefit from special attention because they lack the years of experience that serve as a foundation for other members of the care team and so may be more vulnerable to stressors. However, in focusing on special units or unique groups it is important to connect these efforts to a comprehensive strategy that ensures equity is a key attribute of the CLE’s strategic approach to well-being.

The findings also identified a notable amount of burnout<sup>a</sup> reported across the CLEs. Burnout was also reported to be prevalent across the various members of the clinical care teams. Given the large number of studies in this area, this finding is expected.<sup>3,4</sup> Nevertheless, it is noteworthy that residents and fellows appear to currently be enveloped in teams where there is a high degree of burnout.

While studies of the effect of the environment on resident/fellow fatigue and burnout are still forthcoming, it makes intuitive sense that the presence of burnout in GME faculty members and other members of the clinical team adversely affects resident and fellow education and training, well-being, and ability to deliver safe patient care. For these reasons, CLEs that principally address burnout as a resident/fellow issue will likely not succeed absent interventions for faculty members and other members of the health care team.

There are multiple complex underlying issues driving the current level of burnout in the health care workforce.<sup>4</sup> Some of these include the rapid evolution of health systems and changes in technology, the changing expectations of patients seeking care, productivity pressures, and inefficiencies in health care payment and workflow.

CLEs may find it challenging to develop systems-based approaches to addressing burnout and optimizing workforce well-being, as it may require a detailed understanding of optimal workflow, placing maximums on patient care volumes and intensity, and identifying and implementing successful practices for sharing patient care among the members of the clinical care team. For these situations, the quality improvement framework offers a tested model for approaching these systems-based issues as it addresses structure, process, and outcomes as essential components of any comprehensive improvement strategy.

While the findings indicate the numbers are limited, it is encouraging to see there are CLEs addressing the challenge of developing systems-based approaches to mitigating burnout among physicians. Avoidance of burnout in both physicians and other members of the clinical care team is known to be associated with both increased well-being of the care team member, and importantly with improved patient care.<sup>3</sup> Therefore, the finding that there are a small number of CLEs approaching this issue as a system concern is important and encouraging as it is essential to address physician burnout from its root cause. All members of the clinical care team benefit from a culture that avoids viewing burnout as a failure of individuals and remains ever vigilant in avoiding care team burnout by continually identifying and solving systems-based issues that lead to care team satisfaction and well-being. A clinical team that trusts that leadership is focused on prevention can themselves best focus on optimizing patient care.

Given the high degree of CLE leadership interest in well-being noted in the CLER site visits, the next cycle of visits is likely to report a higher prevalence of CLEs employing systems-based solutions to burnout, potentially revealing important lessons learned in this area.

---

<sup>a</sup> The CLER Program used the following definition of burnout in conducting the site visits: Distinct from fatigue, burnout is characterized by, but not limited to, losing enthusiasm for work, treating people as if they were objects, and having a sense that work is no longer meaningful.



## REFERENCES

1. Disch, Joanne, Charles M. Kilo, Morgan Passiment, Robin Wagner, and Kevin B. Weiss; National Collaborative for Improving the Clinical Learning Environment. 2017. "The Role of Clinical Learning Environments in Preparing New Clinicians to Engage in Patient Safety." <http://nicicle.org>. Published September 27, 2017.
2. Passiment, Morgan, Robin Wagner, and Kevin B. Weiss, for the *Pursuing Excellence in Clinical Learning Environments: Pathway Leaders Patient Safety Collaborative*. 2020. "ACGME Summary Report: The Pursuing Excellence Pathway Leaders Patient Safety Collaborative." Published September 30, 2020. doi:10.35425/ACGME.0006
3. Dyrbye, Lotte N., Tait D. Shanafelt, Christine A. Sinsky, Pamela F. Cipriano, Jay Bhatt, Alexander Ommaya, Colin P. West, and David Meyers. 2017. "Burnout Among Health Care Professionals: A Call to Explore and Address This Underrecognized Threat to Safe, High-Quality Care." *NAM Perspectives* 7 (7). doi.org/10.31478/201707b.
4. National Academies of Sciences, Engineering, and Medicine. 2019. *Taking Action Against Clinician Burnout: A Systems Approach to Professional Well-Being*. Washington, D.C.: National Academies Press. doi.org/10.17226/25521.

---

## CLER EVALUATION COMMITTEE

Catherine M. Kuhn, MD, Current Co-Chair, Durham, NC; John Patrick T. Co, MD, MPH, FAAP, Immediate Past Co-Chair, Boston, MA; Kevin B. Weiss, MD, Co-Chair, Chicago, IL; Jenny J. Alexopoulos, DO, Tulsa, OK; Michael Apostolakos, MD, Rochester, NY; Vamsi Aribindi, MD, Houston, TX; James P. Bagian, MD, PE, Ann Arbor, MI; Lindsay Dale, MD, Richmond, VA; Rosemary Gibson, MSc, Arlington, VA; Linda A. Headrick, MD, MS, FACP, Columbia, MO; Robert Higgins, MD, Augusta, GA; Sherry C. Huang, MD, New Brunswick, NJ; Marcia Hutchinson, MD, Savannah, GA; Lynne M. Kirk, MD, MACP, Chicago, IL; Anai N. Kothari, MD, MS, Maywood, IL; Tanya Lord, PhD, MPH, Concord, NH; David Markenson, MD, MBA, FAAP, FACEP, FCCM, FACHE, Washington, DC; David Mayer, MD, Columbia, MD; Lucie E. Mitchell, DO, MS, Birmingham, AL; Douglas E. Paull, MD, MS, FACS, FCCP, CHSE, CPPS, Chicago, IL; Lakshmana Swamy, MD, MBA, Boston, MA; Andrew M. Thomas, MD, MBA, Columbus, OH; Marjorie S. Wiggins, DNP, MBA, RN, FAAN, NEA-BC, Portland, ME; Ronald Wyatt, MD, MHA, DMS (Hon), Atlanta, GA



# Detailed Findings

Nancy J. Koh, PhD; Robin Wagner, RN, MHSA; Robin C. Newton, MD, FACP; Hongling Sun, PhD; and Kevin B. Weiss, MD, on behalf of the CLER Program

## INTRODUCTION

This section includes detailed findings from the third cycle of visits of the CLER Program. The findings in the six CLER Focus Areas<sup>1</sup> are based on site visits to the major participating clinical sites (i.e., hospitals, medical centers, ambulatory care sites, and other clinical settings) for 566 ACGME-accredited Sponsoring Institutions. These sites serve as CLEs for the Sponsoring Institutions.<sup>2,3</sup>

Collectively, the 566 Sponsoring Institutions oversee 9,724 ACGME-accredited residency and fellowship programs, with a range of one to 159 programs per Sponsoring Institution (median = 4). These Sponsoring Institutions account for 92.7% of all residents and fellows in ACGME-accredited programs—with a range of one to 1,661 residents/fellows per Sponsoring Institution (median = 74).

Approximately 29% of the CLEs were located in the southern region of the United States, 26.0% in the northeast, 25.3% in the midwest, and 18.9% in the west. The sites ranged in size from 38 to 2,875 acute care beds (median = 402). The majority (71.0%) were non-government, not-for-profit organizations; 17.2% were government, non-federal; 7.9% were investor-owned, for-profit; and 3.9% were government, federal.

In total, the CLER teams interviewed more than 3,000 members of executive leadership (including CEOs); 11,166 residents and fellows; 9,988 core faculty members; and 6,489 program directors of ACGME-accredited programs in the group interviews. Additionally, the CLER teams interviewed the CLEs' leadership in patient safety and health care quality, individuals formally or informally designated by executive leadership to address the well-being of all members of the clinical care team at the clinical site, and thousands of residents, fellows, faculty members, nurses, pharmacists, social workers, and other health care professionals while on walking rounds in the clinical areas.

These findings are based on a mixed methods approach to data gathering and analysis to improve the accuracy of the findings by combining quantitative, descriptive, and qualitative evidence in a complementary manner (see Methodology, pp. 17-26). As such, some of the findings are represented quantitatively while others are described qualitatively.

The combination of methodologies and varied representation of findings should be considered when interpreting the results, making comparisons, or drawing conclusions. Both supporting and conflicting evidence may be presented to explain or qualify findings. For example, results from the group interviews may appear more positive than information gathered on walking rounds. Alternatively, practices reported during group interviews may have been verified on walking rounds.

## INTERPRETING QUANTITATIVE RESULTS FROM THE GROUP INTERVIEWS

During the group interviews with residents and fellows, faculty members, and program directors, an electronic audience response system (ARS; Keypoint Interactive version 2.6.6, Innovision Inc, Commerce Township,

MI) was used to collect anonymous responses to closed-ended questions. The results from the ARS were analyzed at both the individual (e.g., residents and fellows) and the CLE levels.

At the individual level of analysis, results are presented as percentages of the total number of individuals surveyed. For example:

*“In the group interviews, 31.2% of the residents and fellows reported that they had received cultural competency training that was specific to the patients receiving care at their clinical site.”*

At the CLE level of analysis, individual responses were aggregated at the CLE level and results are presented as median and interquartile range (IQR) percentages. For example:

*“Across CLEs, a median (IQR) of 30.0% (18.7%–50.0%) of the residents and fellows indicated that they had received cultural competency training that was specific to the patients receiving care at their clinical site.”*

Statistically significant differences (i.e.,  $P \leq .05$ ) in responses due to resident and fellow characteristics (e.g., residency/fellowship year) and CLE characteristics (e.g., bed size) are also reported. Of note, statistical significance does not always imply practical significance. For example, differences in responses by residency/fellowship year may be statistically significant but the differences may not be meaningful or large enough to have practical relevance or implications.

## ADDITIONAL CONSIDERATIONS

As described in the Methodology section (pp. 17-26), this report contains a specific set of descriptive terms that summarize quantitative results from both the ARS and specific findings that were quantified from the CLER Site Visit Reports. These terms and their corresponding quantitative ranges are as follows:

*few (< 10%); some (10%-49%); most (50%-90%); and nearly all (> 90%).*

Besides the quantitative data, this report contains qualitative data from a number of open-ended questions that CLER Field Representatives asked during group interviews and walking rounds. This information, by design, was not intended to be enumerated. For these questions, the site visit teams made an assessment of the relative magnitude of observations at each individual site. To prevent confusion, these results are presented in the report using a set of descriptive terms different from the previously described terms used for quantitative data. The qualitative descriptive terms, which are intended to approximate the quantitative terms above, are as follows:

*uncommon or limited; occasionally; many; and generally.*

Finally, this section follows approximately the same structure as the individual CLER Site Visit Reports received by participating institutions. This structure is intended to facilitate easy comparison between data from an individual site and that of this report, which aggregates results from all 566 Sponsoring Institutions. Those who seek additional detail may consult the appendices (pp. 98-140).

## PATIENT SAFETY

The CLER Program explored several aspects of resident and fellow engagement in patient safety with emphasis on five major topics: culture of safety; use of the patient safety event reporting system; knowledge of patient safety principles and methods; inclusion in patient safety event investigations; and disclosure of patient safety events.

### **Culture of Safety**

Overall, 97.0% of the residents and fellows in the group interviews indicated that their CLE provides a safe and non-punitive environment for reporting errors.

Across CLEs, physicians and other staff members also indicated use of the patient safety event reporting system to report on individual behaviors. This included reporting on behaviors in a retaliatory fashion or in a manner that could be perceived as punitive.

Given this and based on the collective findings from the site visits, it is unclear whether residents, fellows, and other staff members perceived a safe and non-punitive culture for reporting patient safety events.

### **Use of the Patient Safety Event Reporting System**

#### ***CLE Systems for Reporting***

In general, CLEs had one or more mechanisms for reporting patient safety events, including an online or paper-based patient safety event reporting system and a mechanism to verbally report events to the patient safety staff members (e.g., a hotline). Patient safety events could also be reported through the chain of command—reporting to an immediate supervisor (e.g., a more senior resident, faculty member, or nurse supervisor).

Across CLEs, residents and fellows appeared to be aware of their CLE's process for reporting patient safety events such as adverse events, near misses/close calls, and unsafe conditions. During walking rounds, the CLER site visit team also asked nurses about their CLE's patient safety event reporting system. Across nearly all CLEs (98.6%), nurses appeared to be familiar with their CLE's system for reporting patient safety events.

Overall, 69.6% of CLEs were able to track the number of patient safety event reports submitted by residents and fellows (see Appendix C1). Approximately 61% of CLEs were able to track the number of patient safety event reports submitted by medical staff physicians. The remaining CLEs indicated that their system did not track such information.

While CLEs occasionally provided the Graduate Medical Education Committee (GMEC) and their governing body with information on the number or percentage of patient safety event reports submitted by residents and fellows, it was less common for them to routinely provide the same groups with the number or percentage of patient safety event reports submitted by medical staff physicians.

#### ***Understanding of Reportable Events***

Generally, across CLEs, the residents and fellows interviewed on walking rounds appeared to lack understanding and awareness of the range of reportable patient safety events, including what defines a near miss/close call. In many CLEs, nurses' understanding and awareness of reportable patient safety events also varied.

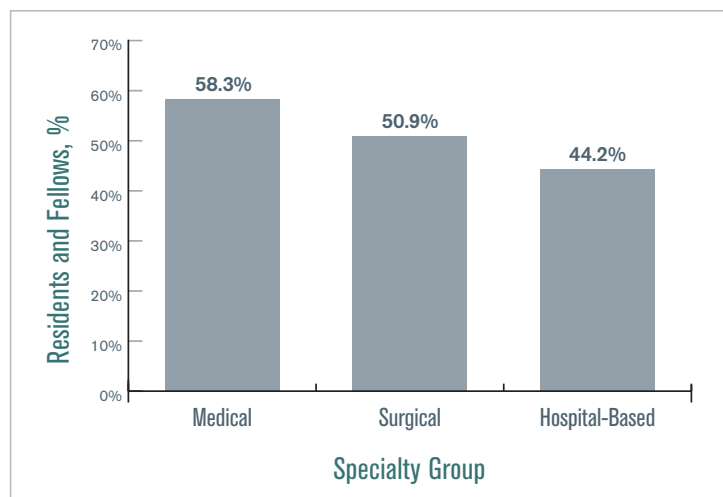
Across CLEs, residents, fellows, and nurses appeared to focus on reporting sentinel events, medication errors, patient falls, and other events with harm; they did not appear to recognize near misses/close calls, unsafe conditions, events without harm, unexpected deteriorations, or known procedural complications that occurred as reportable patient safety events. Residents and fellows appeared to have little awareness of the importance of reporting these events and how such reporting can provide valuable information for identifying system failures, addressing vulnerabilities in the system, reducing risks, and consistently improving patient safety.

### Reporting

Many CLEs did not appear to have specific goals for resident and fellow recognition and reporting of adverse events, near misses, and unsafe conditions.

Approximately 74% of the residents and fellows in the group interviews indicated they had experienced an adverse event, near miss/close call, or unsafe condition while at their CLE (median [IQR], 75.0% [60.0%-83.5%] across CLEs). This experience varied by gender, year of training, and specialty grouping (see Appendix B1 for additional information on variability).

Of the residents and fellows who reported they had experienced an adverse event, near miss/close call, or unsafe condition, 54.0% indicated they had personally reported the patient safety event using the CLE's patient safety event reporting system (median [IQR], 56.4% [37.9%-75.0%] across CLEs). Responses varied by gender, year of training, and specialty grouping (*Figure 1*; see also Appendix B2 for additional information on variability). For those who did not personally enter the patient safety event into the system, 11.5% indicated they relied on a nurse or medical assistant to submit the patient safety event report, 22.6% indicated they relied on a physician supervisor, and 12.0% indicated that they cared for the patient and chose not to submit a report.

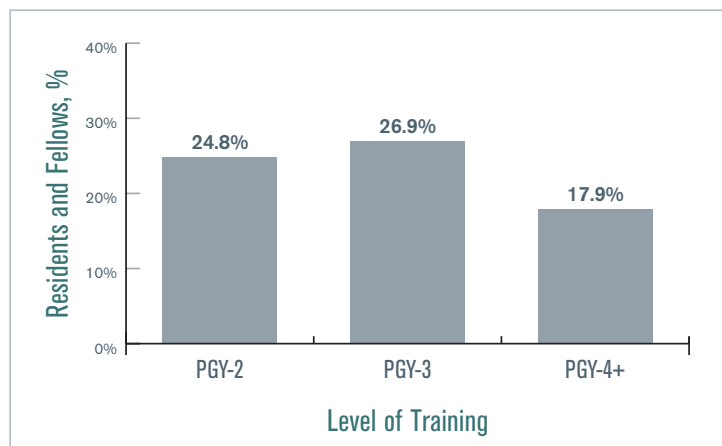


*Figure 1.* Percentage of Residents and Fellows Who Reported Experiencing an Adverse Event, Near Miss/Close Call, or Unsafe Condition and Submitted a Report through the Clinical Site's Reporting System, by Specialty Group

When the CLER teams asked faculty members and program directors what process residents and fellows most frequently followed when reporting a patient safety event, 64.4% of the faculty members and 57.8% of the program directors in the group interviews indicated they believed residents and fellows most often reported the event themselves using the CLE's patient safety event reporting system.

The CLER teams also explored faculty members' and program directors' use of the CLE's patient safety event reporting system. Approximately 37% of the faculty members reported they had personally reported an adverse event, near miss/close call, or unsafe condition in the past year (median [IQR], 37.5% [25.0%-50.0%] across CLEs). Among the program directors, 39.1% reported they had personally reported an adverse event, near miss/close call, or unsafe condition in the past year (median [IQR], 44.4% [22.2%-75.0%] across CLEs); 5.7% had no clinical responsibilities at the site. In both groups, responses varied by CLE bed size and type of ownership.

In a separate query, 22.4% of the residents and fellows in the group interviews indicated they had reported a near miss/close call event while at the CLE, with responses varying by gender, specialty grouping, and year of training (*Figure 2*). Across CLEs, the median (IQR) finding was 21.4% (10.0%-33.3%); responses varied by region, CLE bed size, and type of ownership. Appendix B3 provides detailed information on variability.



*Figure 2.* Percentage of Residents and Fellows Who Reported a Near Miss/Close Call Event, by Level of Training.  
Abbreviation: PGY, postgraduate year.

While indicating familiarity with the patient safety event reporting system and its use, residents and fellows interviewed on walking rounds in many CLEs mentioned that they often report patient safety events locally or through their chain of command. When they delegated or relied on others to report, it was unclear if these reports were formally captured in the CLE's centralized patient safety event reporting system. Residents and fellows mentioned the cumbersome process of submitting a report, lack of feedback, the time needed to enter a report, and fears of repercussion as reasons for not reporting.

Based on the collective information from the site visits, resident and fellow reporting of patient safety events into the CLE's patient safety event reporting system was varied or infrequent in 93.3% of the CLEs (see Appendix C2).

### Feedback on Patient Safety Event Reports

In the group interviews, the CLER teams asked residents and fellows whether they received feedback on patient safety event reports. Of those who had experienced an adverse event, near miss/close call, or unsafe condition and who had personally submitted a patient safety event report or relied on a nurse, medical assistant, or supervisor to submit the report, 46.0% reported that they received feedback on the outcome of the report. Responses varied by gender, specialty grouping, and year of training. Across CLEs, the median (IQR) finding was 50.0% (31.7%-66.7%), with responses varying by region, CLE bed size, and type of ownership (*Figure 3*). Appendix B4 provides complete information on variability.

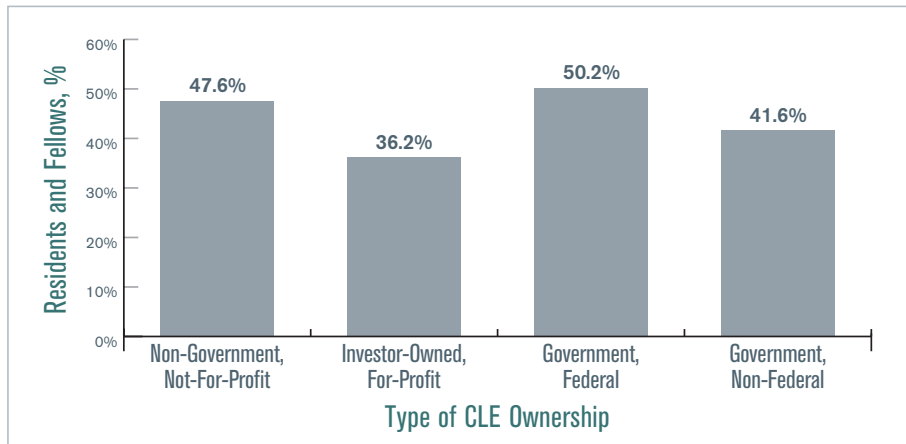


Figure 3. Percentage of Residents and Fellows Who Reported Receiving Feedback on the Outcome of a Patient Safety Event Report Submitted, by Type of Clinical Learning Environment (CLE) Ownership

Residents and fellows sometimes mentioned receiving an email acknowledging receipt of the patient safety event report. They also noted receiving requests for additional information as part of a formal patient safety event investigation when they were involved in the event. It was uncommon for residents to mention receiving information on the outcome of the investigation, including recommended actions to address vulnerabilities in the system and improve patient safety. Across CLEs, residents, fellows, nurses, and other clinical staff members expressed a strong desire to receive feedback in response to submitting a patient safety event report.

CLEs varied in their processes for reviewing and prioritizing reported patient safety events or patient safety event reports. Residents and fellows also varied in their knowledge of these processes and often used the term “black box,” indicating that these processes were unclear. Many residents and fellows appeared to be unaware of how their CLE use the reporting of adverse events, near misses/close calls, or unsafe conditions to improve care broadly and at the individual departmental level. Residents and fellows were rarely involved in their CLE’s process for reviewing and prioritizing reported patient safety events or patient safety event reports that required further investigation.

### Time-Outs

As part of patient safety practices, the CLER teams explored resident and fellow participation in the time-out process (e.g., ambulatory and bedside procedures). Across many CLEs, residents, fellows, nurses, and other health care professionals interviewed on walking rounds indicated that residents and fellows do not consistently conduct standardized time-outs before performing ambulatory and bedside procedures.



### Knowledge of Patient Safety Principles and Methods

Across most CLEs (88.5%), residents and fellows appeared to have limited knowledge of fundamental patient safety principles and methods (e.g., fishbone diagrams, root cause analysis, Swiss cheese model of system failure; see Appendix C3).

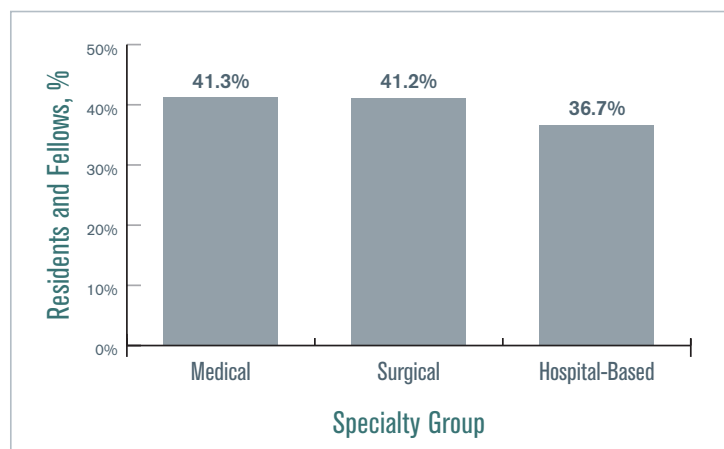
The majority of the program directors in the group interviews indicated they were either proficient or expert (66.6% and 21.2%, respectively) in applying patient safety principles.

### Inclusion in Patient Safety Event Investigations

In many CLEs, the patient safety and quality leaders indicated that they track resident and fellow participation in patient safety event investigations (e.g., root cause analysis). Several CLEs provided the GMEC and the governing body with information regarding the number of residents and fellows who had participated in formal patient safety event investigations. Overall, many CLEs did not appear to have measures of success with regard to including residents and fellows in patient safety event investigations.

The CLER teams also asked the program directors if they measured resident and fellow participation in patient safety event investigations. Across CLEs, a median (IQR) of 50.0% (23.3%-80.0%) of the program directors in the group interviews reported tracking resident and fellow involvement, with responses varying by region, CLE bed size, and type of ownership.

In the group interviews, 40.4% of the residents and fellows who were post-graduate year 3 (PGY-3) and higher indicated that they had participated in an interprofessional investigation of a patient safety event that included components such as analysis of system issues, development and implementation of an action plan, and monitoring for continuous improvement. Responses varied by specialty grouping (*Figure 4*). Across CLEs, the median (IQR) finding was 40.0% (26.6%-61.6%), with responses varying by region and type of ownership. Appendix B5 provides detailed information on variability.



*Figure 4.* Percentage of Residents and Fellows (Post-Graduate Year 3 and Above) Who Reported Participating in an Interprofessional Investigation of a Patient Safety Event, by Specialty Group.

Overall, the format and process of investigating patient safety events varied both across and within CLEs. Across many CLEs, departmental morbidity and mortality conferences, case conferences, and grand rounds—limited to physician participation—were commonly described as the primary means by which residents and fellows experience patient safety event investigations. It was uncommon for residents and fellows to describe involvement in interprofessional comprehensive systems-based approaches to patient safety event investigations aimed at preventing future adverse events, improving patient care, and sustaining improvements in patient safety. In general, residents and fellows described experiences that lacked the attributes of a formal patient safety event investigation with minimal or no interprofessional or interdisciplinary engagement. Residents and fellows varied widely in their perceptions of what constituted a formal investigation of a patient safety event.

### **Disclosure of Patient Safety Events**

Approximately 72% of the residents and fellows in the group interviews indicated they had received training on disclosing medical errors to patients and/or families (3.4% reported that such training was not applicable). Responses varied by gender, year of training, and specialty grouping. Across CLEs, the median (IQR) finding was 77.8% (64.6%-89.4%), with responses varying by region and CLE bed size. Of those who received training, 9.2% indicated that the training was primarily simulation based; 34.6%, lecture based; 26.2%, online; 28.4%, informal; and 1.5%, other.

When asked if they knew of CLE resources to assist them in coping with a major patient safety event that resulted in a patient death or harm, 85.5% of the residents and fellows in the group interviews indicated that they knew of such resources. Across CLEs, the median (IQR) finding was 90.9% (80.0%-100%), with responses varying by region, CLE bed size, and type of ownership (see Appendix B6). Of those familiar with the resources, most indicated they would be somewhat (39.8%) or very (42.8%) comfortable using these resources.

## HEALTH CARE QUALITY (INCLUDING HEALTH CARE DISPARITIES)

The CLER Program explored resident and fellow engagement in improving health care quality within the context of six major areas: involvement in developing and implementing the CLE's strategies for health care quality; awareness of the CLE's health care quality priorities; knowledge of health care quality terminology and methods; engagement in quality improvement (QI) projects; access to quality metrics data; and engagement in CLE efforts to eliminate health care disparities.

### **Involvement in Developing Health Care Quality Strategies**

As part of understanding the CLE's approach to improving health care quality, the CLER teams reviewed each organization's strategic plan for quality and interviewed both executive and patient safety and quality leaders. Across CLEs, resident and fellow involvement in strategic planning for QI was uncommon. Residents and fellows often served as implementers of CLE-wide QI activities (e.g., hand hygiene, reducing hospital-acquired infections, reducing 30-day readmissions).

In many CLEs, resident and fellow participation in institutional QI committees was uncommon. If residents and fellows were assigned to these committees, roles and expectations for participation were often undefined or unclear. The clinical sites also appeared to have insufficient structure to allow residents and fellows to attend committee meetings regularly and to participate in meaningful ways. Additionally, residents and fellows in many CLEs were not included in the governing body's patient safety and quality committees.

### **Priorities for Improving Health Care Quality**

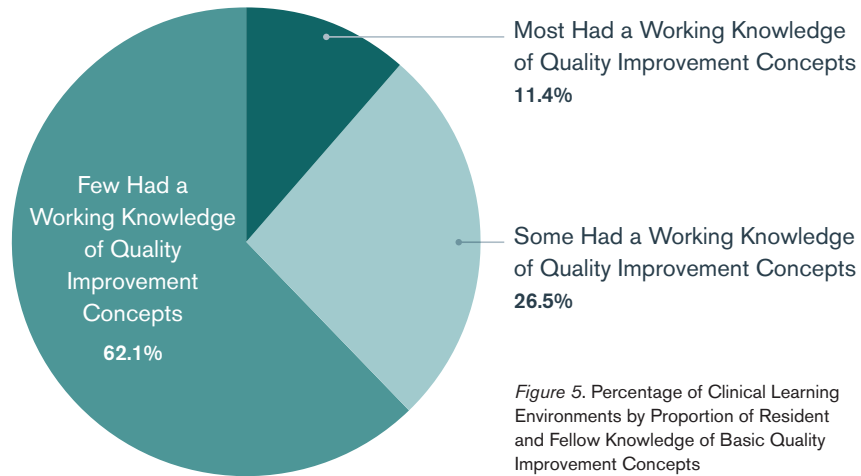
While priorities for improving health care quality varied across CLEs, some common themes included alignment with broad national priorities, such as Centers for Medicare & Medicaid Services value-based purchasing, Core Measures, or other publicly reported performance measures. Many CLEs were highly focused on meeting specific criteria, such as reducing 30-day readmissions or improving performance on metrics related to chronic heart failure, pneumonia, and surgical care improvement project measures.

In the group interviews, 75.3% of the residents and fellows (PGY-2 and above) reported knowing their CLE's priorities for improving health care quality (see Appendix B7 for additional information on variability). When asked the same question, 82.2% of the faculty members and 84.7% of the program directors reported knowing the priorities. The physician groups often focused on departmental activities and did not describe priorities that aligned with those identified by the CLE's executive leadership or the patient safety and quality leaders. When the physicians identified priorities aligned with those of executive leadership, they were most commonly around nationally recognized measures, especially those related to programs with financial incentives such as measures from the Centers for Medicare & Medicaid Services.

### **Knowledge of Health Care Quality Improvement**

In general, the approach to educating residents and fellows about health care QI varied both within and across CLEs. Although some type of education was common as part of new resident and fellow orientation, a limited number of CLEs aimed to provide ongoing training for all residents and fellows. Training in health care QI appeared to occur primarily within departments or individual graduate medical education (GME) programs, and the format, methods, and content appeared to vary widely.

In 62.1% of the CLEs, the residents and fellows appeared to have limited knowledge or understanding of basic QI terminology and methods, such as Lean, Plan-Do-Study-Act, and Six Sigma (*Figure 5*, see also Appendix C4). A limited number of residents and fellows could articulate the QI approach employed by their CLE in designing and implementing QI activities to improve patient care.



### Engagement in Quality Improvement Projects

Approximately 79% of the residents and fellows (PGY-2 and above) in the group interviews reported they had participated in a QI project of their own design, or one designed by their program, department, or ambulatory care setting. Of this group, 47.5% reported their QI project was directly linked to one or more of the CLE's goals; 25.3% were uncertain. Of those who reported their QI projects were linked to the CLE's goals, 74.2% reported that their projects involved interprofessional teams. Appendices B8, B9, and B10 provide complete information on variability.

In the group interviews and on walking rounds, the CLER teams asked residents and fellows to describe their QI projects. Overall, it was uncommon for residents and fellows to describe projects that aligned with their CLE’s priorities. In most CLEs (81.4%), few described projects that included the all components of a complete QI cycle (i.e., Plan-Do-Study-Act) (Figure 6; see also Appendix C5). Often, resident and fellow participation was limited to planning and implementing a QI activity. For many residents and fellows, their QI projects did not involve formally assessing effectiveness and designing follow-up actions to adjust, support, and sustain ongoing QI efforts.

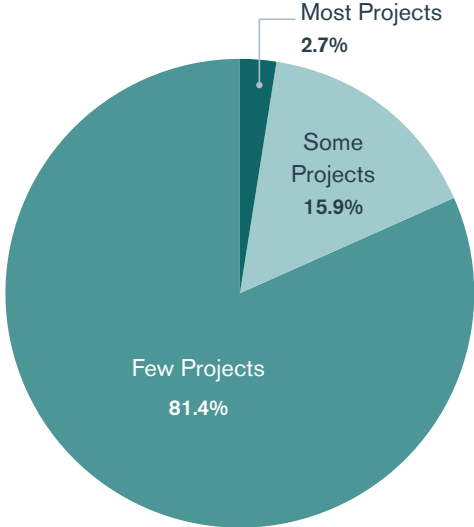


Figure 6. Percentage of Clinical Learning Environments by Proportion of Resident and Fellow Quality Improvement Projects with Components of a Complete Quality Improvement Cycle

Across CLEs, it was also uncommon for residents and fellows to describe involvement in interprofessional team-based QI projects that reflected collaborative engagement in each stage of QI work—including planning, implementing, and monitoring outcomes. During the interviews on walking rounds, a limited number of nurses and other health care professionals indicated they were involved in interprofessional QI projects that included residents and fellows.

In 9.4% of the CLEs, the patient safety and quality leaders indicated that they centrally monitor all resident- and fellow-led QI projects.

**Access to Data**

In the group interviews, 77.4% of the program directors reported that their residents and fellows have ready access to organized systems for collecting and analyzing data for the purposes of QI. Electronic health records, specialty-specific clinical registries, and local, regional, or national quality dashboards were often reported as common sources of QI data. Residents and fellows often mentioned the challenges (e.g., long waiting lists) in acquiring specific reports from these data sources.

Many program directors noted that residents and fellows had limited support for data analysis. When support existed, it was often a departmental resource. The type and extent of analytic support services available to residents and fellows varied both within and across CLEs.

Overall, 31.8% of the residents and fellows in the group interviews reported receiving aggregated or benchmarked QI data on their own patients. Responses varied by year of training and specialty grouping (Figure 7). Across CLEs, the median (IQR) finding was 33.6% (20.0%-45.6%), with responses varying by region, CLE bed size, and type of ownership. Appendix B11 provides complete information on variability.

While many patient safety and quality leaders indicated that residents and fellows receive department or clinical service line quality performance data, it was less common for them to receive quality performance data specific to their patients.

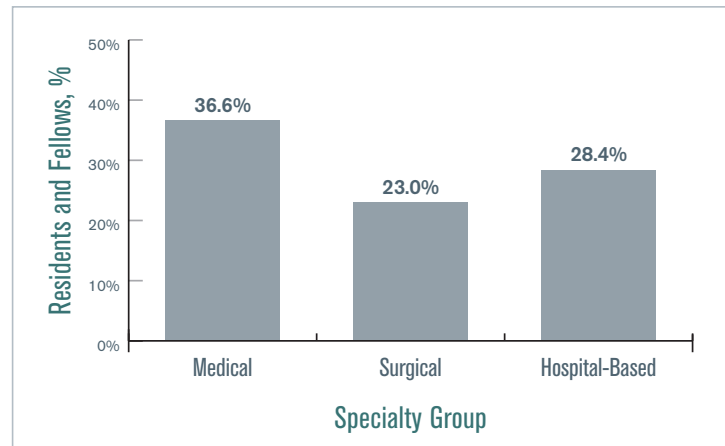


Figure 7. Percentage of Residents and Fellows Who Reported Receiving Aggregated or Benchmarked Quality Performance Data About the Care of Their Own Patients, by Specialty Group

## Engagement in CLE Efforts to Eliminate Health Care Disparities

### Strategies Focused on Eliminating Health Care Disparities

Across many CLEs, executive leaders were aware of issues of health disparities affecting their surrounding communities. Many described using information gleaned from their community health needs assessments to improve access to care and providing free or low-cost care and clinics for the underserved, often staffed by residents and fellows from a few core specialties (e.g., family medicine, internal medicine, pediatrics, obstetrics and gynecology). A limited number of residents and fellows from other specialty and subspecialty programs reported engaging in these activities.

A limited number of executive leaders spoke to health care disparities occurring within their hospital or medical center. Overall, 2.0% of executive leaders described a specific set of strategies or a systematic approach to identifying, addressing, and continuously assessing variability in the care provided to or the clinical outcomes of their patient populations at risk for health care disparities. Approximately 14% of executive leaders described what appeared to be the early stages of developing a systematic approach to identifying variability in the care provided to or the clinical outcomes of their patient populations at risk for health care disparities.

Across CLEs, a limited number of executive leaders described measures that appeared to focus on health care disparities as part of the CLE's process for tracking quality and safety performance measures. It was also uncommon for CLEs to provide their governing body with information on quality metrics by subgroups of vulnerable patient populations.

## Cultural Competency

Overall, residents, fellows, faculty members, and program directors interviewed in the group interviews were able to describe populations at risk for health care disparities at their clinical site.

In the group interviews, 31.2% of the residents and fellows reported they had received cultural competency training that was specific to the patients receiving care at their clinical site; 40.2% reported receiving training that was not specific to the patients receiving care at their clinical site; 23.5% reported receiving training that was primarily informal while providing clinical care; and 5.1% indicated they had not received cultural competency training at their CLE.

Across CLEs, a median (IQR) of 30.0% (18.7%-50.0%) of the residents and fellows indicated they had received cultural competency training that was specific to the patients receiving care at their clinical site. This finding varied by region, CLE bed size, and type of ownership (*Figure 8*; see also Appendix B12).

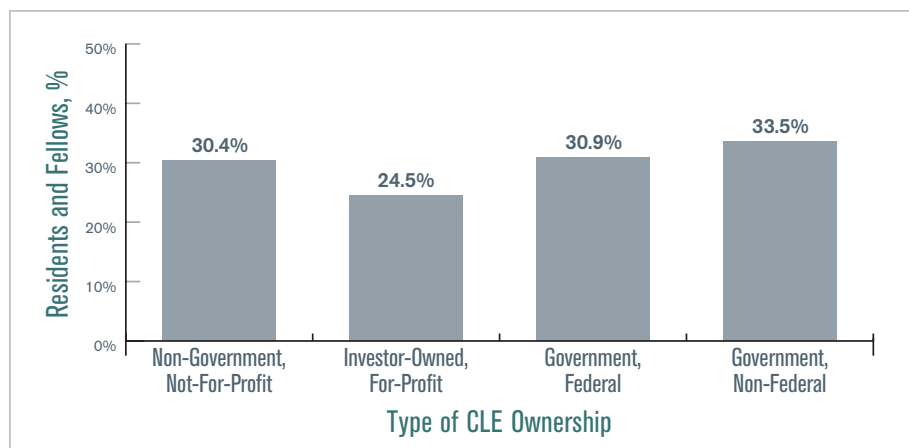
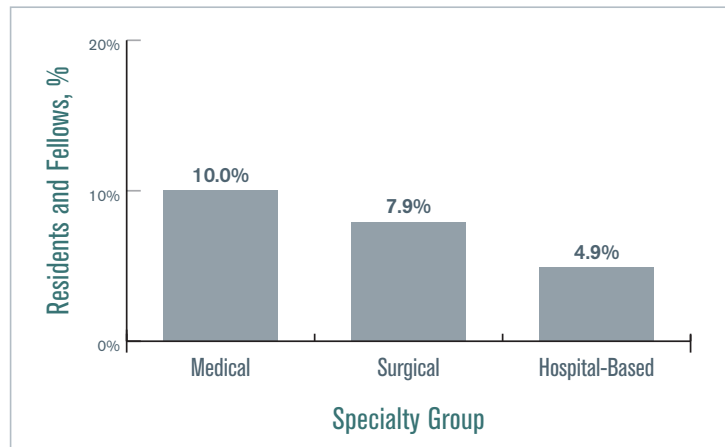


Figure 8. Percentage of Residents and Fellows Who Reported Receiving Cultural Competency Training Specific to the Patients Receiving Care at their Clinical Site, by Type of Clinical Learning Environment (CLE) Ownership

During interviews on walking rounds, many residents and fellows described education and training in cultural competency that was largely generic and not specific to the diverse populations receiving care at their clinical site. In general, residents and fellows across CLEs indicated receiving informal training in cultural competency while delivering clinical care.

### **Participation in Quality Improvement to Address Health Care Disparities**

Approximately 9% of the residents and fellows in the group interviews reported that they had participated in a QI project focused on eliminating health care disparities at their clinical site (median [IQR], 5.5% [0%-15.4%] across CLEs); responses varied by gender, year of training, and specialty grouping (*Figure 9*, see also Appendix B13). In group discussions and on walking rounds, residents and fellows indicated that they rarely received CLE data related to health care disparities.



*Figure 9.* Percentage of Residents and Fellows Who Reported Participating in a Quality Improvement Project Focused on Eliminating Health Care Disparities, by Specialty Group



## CARE TRANSITIONS

The CLER Field Representatives explored several aspects of resident and fellow engagement in improving care transitions, including perceived vulnerabilities in care transitions, education on care transitions, change-of-duty transitions, inpatient transition processes, and supervision and assessment of care transitions.

### Perceived Vulnerabilities in Care Transitions

Across CLEs, residents, fellows, nurses, and other clinical staff members identified many transitions they believed posed vulnerabilities in patient safety. Examples included transfers from the emergency department to inpatient floors or units, transfers from the intensive care units to the floors, transfers from and to outside facilities, transfers from inpatient care back to the community, and multiple intra-hospital transitions, such as service-to-service and floor-to-floor, as well as between levels of care. Residents, fellows, and nurses often expressed concerns that communication during these transitions was most likely to be incomplete or inaccurate, leading to vulnerabilities for patient safety events.

### Education on Care Transitions

Overall, 59.4% of the residents and fellows reported they had participated in formal interprofessional educational activities on transitioning patient care (9.9% reported that transitioning patients' care does not apply to their specialty). Responses varied by gender, level of training, and specialty group. Across CLEs, this finding ranged from 0% to 100%, with a median (IQR) of 66.7% (50.0%-83.3%); responses varied by region, CLE bed size, and type of ownership (*Figure 10*). Appendix B14 provides detailed information on variability.

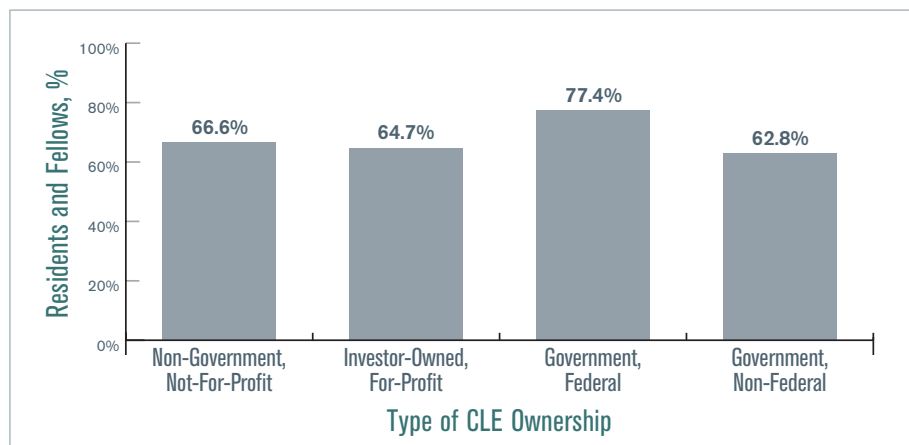


Figure 10. Percentage of Residents and Fellows Who Reported Participating in Formal Interprofessional Educational Activities in How to Transition Patients' Care, by Type of Clinical Learning Environment (CLE) Ownership

### Change-of-Duty Transitions<sup>a</sup>

In the group interviews, 78.3% of the residents and fellows reported that they followed a standardized process for change-of-duty hand-offs (10.5% reported that change-of-duty hand-offs do not apply to their specialty). Across CLEs, this finding ranged from 12.5% to 100%, with a median (IQR) of 88.7% (75.0%-100%). Of the residents and fellows who reported following a standardized process between shifts, 78.4% reported using a standardized written template of patient information to facilitate the hand-off process. Across CLEs, the median (IQR) finding was 83.8% (70.8%-100%), with responses varying by region, type of ownership, and CLE bed size (Figure 11). Appendices B15 and B16 provide complete information on variability.

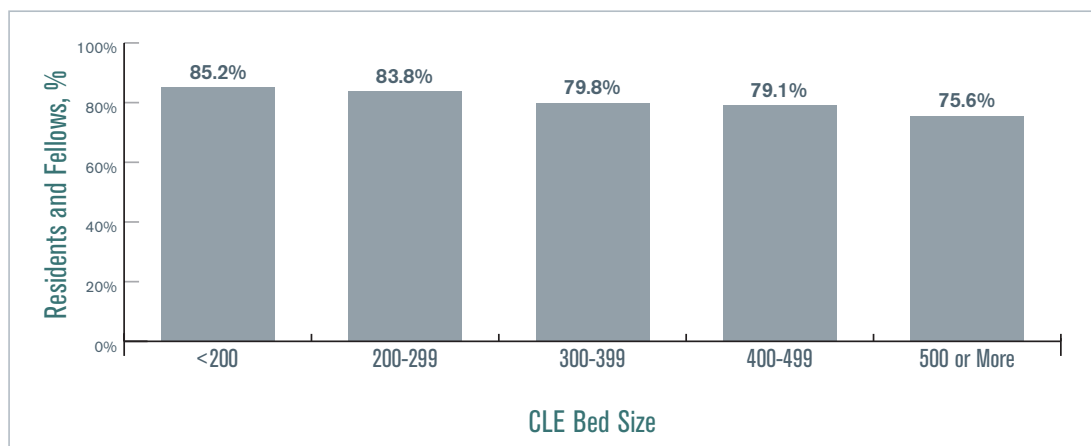


Figure 11. Percentage of Residents and Fellows Who Reported Following a Standardized Process for Hand-Offs Between Shifts that Included a Standardized Written Template for Communication, by Clinical Learning Environment (CLE) Bed Size

When asked how often attending physicians supervise their shift-to-shift hand-off process, 22.0% of the residents and fellows in the group interviews reported that this supervision occurs daily, whereas 43.7% reported it rarely occurs. Other responses included once per week (11.3%) and once per month (7.8%). Approximately 15% reported that shift-to-shift hand-offs do not apply to their specialty.

In group interviews, 73.8% of faculty members reported that they assess resident and fellow readiness to move from direct to indirect supervision in conducting change-of-duty hand-offs (14.0% reported that they do not conduct change-of-duty hand-offs in their program).

Approximately 61% of the program directors in the group interviews indicated that their program assesses resident and fellow readiness to move from direct to indirect supervision in conducting change-of-duty hand-offs (21.4% reported that their program does not conduct change-of-duty hand-offs). For those who indicated their program assesses resident and fellow readiness, 60.3% indicated that assessment occurs by direct observation only, 32.0% used both direct observation and a standardized assessment tool, and 7.7% reported other.

<sup>a</sup> Results from visits that were held exclusively in the ambulatory care setting (9%) have been omitted due to modifications to the question and/or scenario to better fit the setting. These modifications limited comparability across inpatient and ambulatory care settings.

From the information obtained on walking rounds, it appeared that the processes for transitioning care at change-of-duty vary across programs in most CLEs (72.4%) (Figure 12; see also Appendix C6).

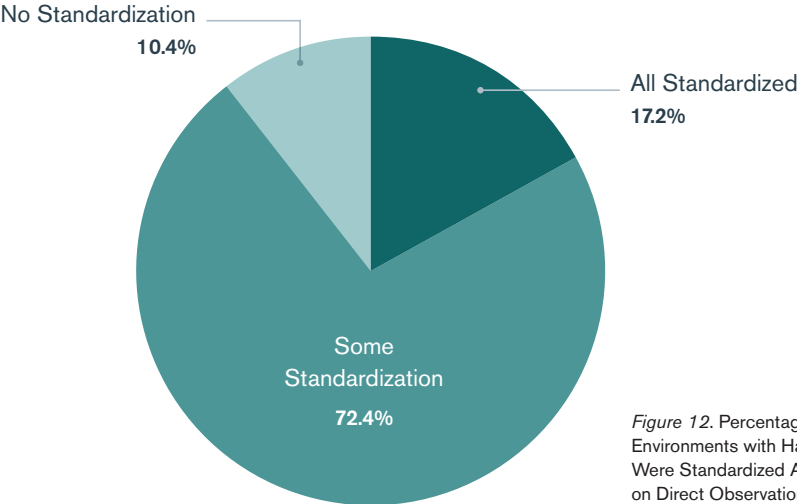


Figure 12. Percentage of Clinical Learning Environments with Hand-Off Processes that Were Standardized Across Programs, Based on Direct Observation

On average, the CLER teams observed resident and fellow change-of-duty hand-offs for one to five programs per visit. Overall, the hand-offs varied both within and across CLEs. Many were conducted in quiet, non-patient areas with minimal interruption. The hand-offs varied in the use of electronic or written templates and other common tools for formal communication. Generally, faculty members were not consistently engaged in supervising these hand-offs, and interprofessional involvement was uncommon. Contingency planning (“if-then” scenarios) and read-back techniques to confirm the plan of care were also inconsistent.

### Inpatient to Outpatient Transitions<sup>a</sup>

When queried, 48.2% of the residents and fellows in the group interviews indicated that they use a standardized process for transitioning patients from inpatient to outpatient care (25.5% indicated that transitioning patients from inpatient to outpatient care did not apply to their specialty). Across CLEs, the median (IQR) was 57.1% (40.0%-80.0%), with responses varying by region and bed size (Figure 13; see Appendix B17).

Nature of interprofessional rounds varied across and within CLEs. These types of rounds were most commonly reported to occur in the intensive care units, when planning for transitioning patients to outpatient care, or for purposes of discharge planning to home and other facilities (e.g., rehabilitation centers, skilled nursing facilities).

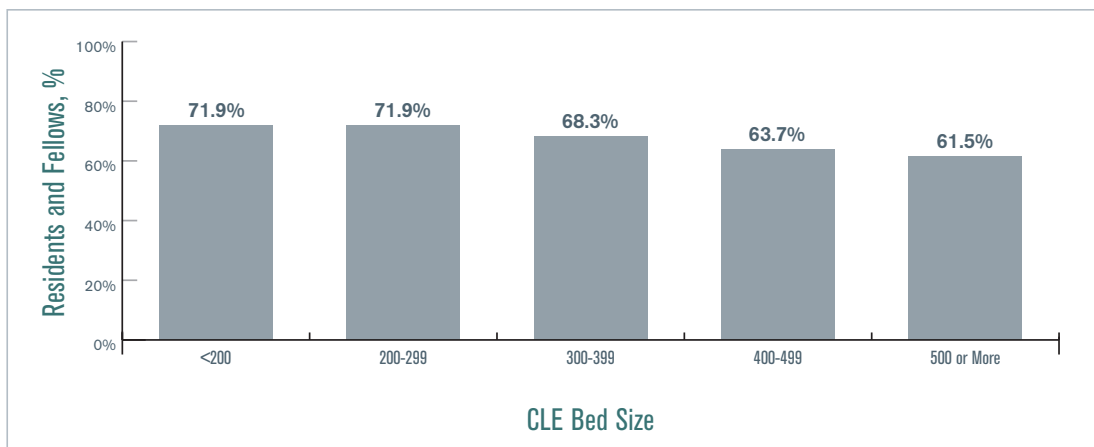


Figure 13. Percentage of Residents and Fellows Who Reported Following Standardized Processes for Handling Transitions of Care from Inpatient to Outpatient Care, by Clinical Learning Environment (CLE) Bed Size

### Monitoring Care Transitions

The patient safety and quality leaders in many CLEs indicated that they analyze patient safety event reports for issues related to resident and fellow transitions of care; they seldom mentioned proactive monitoring of these care transitions.

<sup>a</sup> Results from visits that were held exclusively in the ambulatory care setting (9%) have been omitted due to modifications to the question and/or scenario to better fit the setting. These modifications limited comparability across inpatient and ambulatory care settings.

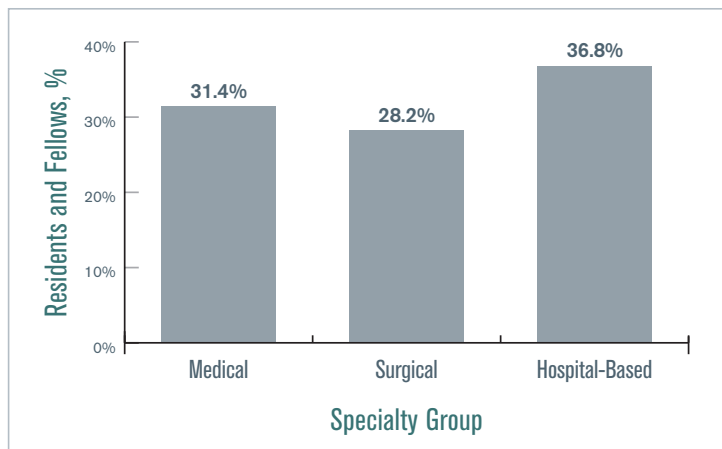
## SUPERVISION

The CLER Program explored resident and fellow supervision and the issues around this CLER Focus Area for perceptions of supervision and potential vulnerabilities, awareness of situations requiring direct supervision, and patient safety events related to supervision.

### Perceptions of Supervision and Potential Vulnerabilities

In many CLEs, executive leaders did not express concerns or identify any specific vulnerabilities related to resident and fellow supervision within their organization. When asked to summarize their experience at their CLE, 69.6% of the residents and fellows in the group interviews reported being adequately supervised. Approximately 67% of the program directors interviewed also indicated that residents and fellows are adequately supervised.

Although the majority of the physicians in the group interviews reported a culture of close supervision, they also reported perceptions of inadequate supervision. Of the residents and fellows surveyed in the group interviews, 31.7% reported that while in training at the CLE, they had been placed in a situation or witnessed one of their peers in a situation where they believed supervision was inadequate (e.g., the attending physician was not available). Responses varied by gender, level of training, and specialty grouping (*Figure 14*). Across CLEs, the median (IQR) finding was 27.5% (14.3%-42.9%), with responses varying by region, CLE bed size, and type of ownership. Appendix B18 provides complete information on variability.



*Figure 14.* Percentage of Residents and Fellows Who Reported Having Been Placed, or Witnessing One of Their Peers Placed, in a Situation Where They Believed There Was Inadequate Supervision, by Specialty Group

In the group interviews, the CLER teams also asked residents and fellows about their experiences in contacting attending physicians and consultants for assistance. Overall, 48.7% indicated they had encountered an attending physician or consultant who made them feel occasionally or frequently uncomfortable when requesting help at their clinical site (median [IQR], 50.0% [33.3%-68.8%] across CLEs). This finding varied by level of training, specialty group, and gender (Figure 15; see also Appendix B19). Approximately 50% of the program directors perceived their residents and fellows had encountered an attending physician or consultant who made them feel occasionally or frequently uncomfortable in requesting help.

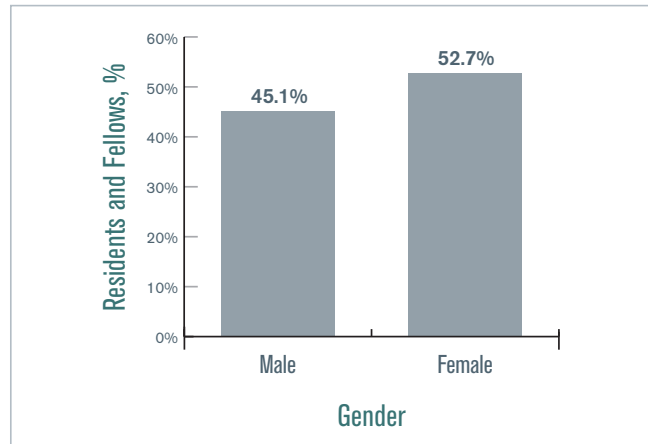


Figure 15. Percentage of Residents and Fellows Who Reported Encountering a Physician (Attending Physician or Consultant) Who Made Them Feel Occasionally or Frequently Uncomfortable When Requesting Assistance, by Gender

In discussing issues related to supervision that may be creating patient safety vulnerabilities, the physician groups frequently mentioned the challenges of providing supervision in the evenings, on weekends, and during times of high acuity and patient volume. They also noted that competing clinical responsibilities further limited the availability of faculty members to supervise residents and fellows.

Across CLEs, many residents and fellows expressed hesitancy to request help from attending physicians, non-core faculty members, and consultants or to report concerns regarding supervision. They noted reluctance or discomfort to ask for assistance due to a lack of understanding of when to escalate concerns in a timely manner, uncertainty about who is on call, unwillingness to appear unprepared, fear of retaliation or other negative consequences, and/or potential resistance when asking for help.

Residents and fellows also mentioned gaps in supervision when their peers provide consultative services, noting these gaps as a potential source of patient safety vulnerabilities.

In addition to concerns of under-supervision, many program directors expressed concerns related to over-supervision, particularly in the procedural specialties, and the impact on resident and fellow readiness for independent practice. In discussing the factors that contribute to over-supervision, program directors often mentioned medical liability concerns and billing requirements.

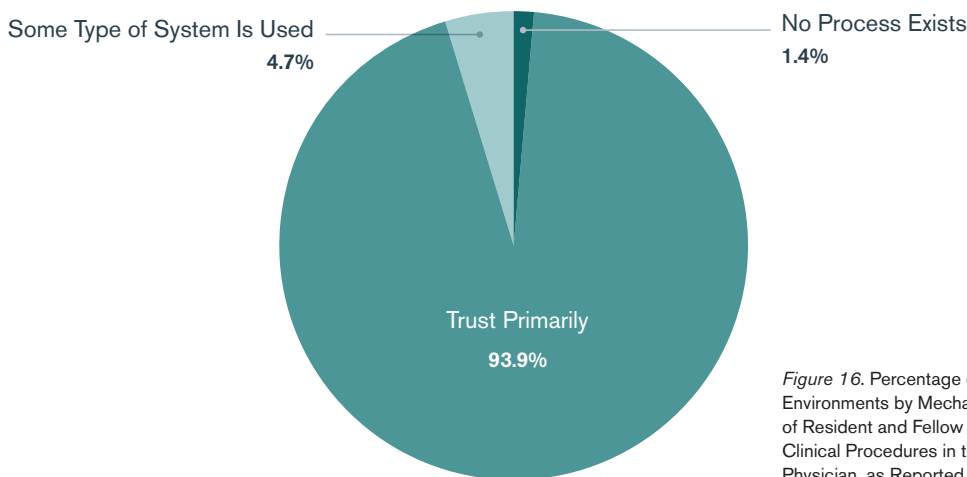
### Awareness of Situations Requiring Direct Supervision

Overall, 91.6% of the residents and fellows in the group interviews reported that they knew what they were allowed to do without direct supervision. Responses varied by level of training and specialty grouping (see Appendix B20).

In a separate query, 30.1% of the residents and fellows in the group interviews indicated they had an objective way to know what procedures their peers from other services were allowed to do without direct supervision when providing consultative services on their patients (17.7% reported that residents and fellows from other services do not consult on their patients). This finding varied by gender and specialty grouping (see Appendix B21).

Nearly 76% of the faculty members in the group interviews indicated they had an objective way of knowing which procedures a particular resident or fellow was allowed to perform without direct supervision (10.9% reported that their residents and fellows do not perform procedures). In many CLEs, faculty members reported this information is documented in an online system and maintained by the GME office or individual programs.

In general, faculty members and programs directors indicated that nurses and other clinical staff members had mechanisms (e.g., paper or online methods) to verify the level of supervision needed when residents and fellows perform clinical procedures outside of the operative areas. During the walking rounds, it appeared that the nurses had limited access to this information, varied in their awareness of how to access this information, or did not routinely use this information in the course of clinical care. Often, this information appeared to be incomplete, inaccurate, or did not exist. In most CLEs (93.9%), nurses reported that, in the absence of an attending physician, they relied principally on familiarity, trust, or year of training when residents and fellows performed procedures (*Figure 16*; see also Appendix C7).



*Figure 16.* Percentage of Clinical Learning Environments by Mechanism Used for Identification of Resident and Fellow Competence to Perform Clinical Procedures in the Absence of an Attending Physician, as Reported by Nurses

### **Patient Safety Events Related to Supervision**

In 30.1% of the CLEs, the patient safety and quality leaders recalled patient safety event reports in the past year related to resident and fellow supervision (see Appendix C8). In the group interviews, 18.0% of program directors reported that, in the past year, they had to manage an issue of resident or fellow supervision that involved a patient safety event at their clinical site. Executive leadership were often unaware of patient safety events attributed to supervision.

In general, executive and patient safety and quality leaders indicated they addressed patient safety events related to supervision as a factor in retrospective review of reported patient safety events. The issue of supervision was often viewed as the responsibility of the GME community. It was uncommon for CLEs to proactively monitor for potential patient safety events related to supervision.



## WELL-BEING

This CLER Focus Area recognizes the importance of sustainable systems that comprehensively address the well-being of residents, fellows, faculty members, and other health care professionals to provide safe patient care. While the concept of well-being is large in scope, the CLER Program explored a selected set of four interrelated topics: work/life balance; fatigue; burnout; and support of those at risk of or demonstrating self-harm.

As part of exploring this Focus Area, the CLER teams interviewed individuals formally or informally designated by executive leadership to address the well-being of all members of the clinical care team (e.g., physicians, nurses, and other health care professionals) at the clinical site. The group interview with well-being leadership often included a Human Resources director or representative (12.2%), a psychologist or psychiatrist (11.5%), a wellness program representative (10.7%), and a faculty member (10.6%). Approximately 5% of the participants were designated by their clinical site as a well-being director, officer, or representative. Other participants included a chaplain, an employee assistance program representative, an ombudsman, a resident or fellow, a nurse, and a social worker.

### **Strategies to Promote the Well-Being of the Clinical Care Team**

Overall, a limited number of CLEs appeared to have a formal strategy to promote, improve, and sustain the well-being of the clinical care team to ensure safe and high-quality patient care. Many CLEs had wellness initiatives and other activities, programs, or resources focused on emotional and physical health (e.g., mindfulness and resilience training, counseling services, provision of access to nearby gym facilities). These efforts were isolated and initiated by individual programs, service lines, units, or professional groups—they did not appear to be part of a larger comprehensive organizational strategy focused on systems-based solutions to optimize the well-being of the entire clinical care team.

In many CLEs, the well-being leadership indicated that their CLE maintained several activities and programs to promote the physical and emotional well-being of residents and fellows. Occasionally, the well-being leadership described formal processes to assess the effectiveness of these efforts.

### **Maintaining Personal Well-Being and Fulfilling Professional Obligations**

In the section that follows, “workload” refers to volume and complexity of patient care in addition to hours worked, including time for documentation, research, and educational activities.

When asked to what extent the leadership of the CLE collaborated with GME leadership to set expectations for residents' and fellows' workload to optimize patient care while supporting their well-being, 42.5% of the program directors surveyed reported that this collaboration occurred to a moderate or great extent (median [IQR], 50.0% [29.4%-100%] across CLEs).

Approximately 70% of the faculty members and 55.1% of the program directors in the group interviews agreed or strongly agreed that the CLE created an environment that promotes balance between faculty members' workload and their well-being. In a separate query, 32.6% of the faculty members and 47.5% of the program directors agreed or strongly agreed that the volume and intensity of faculty members' workload adversely impacted their ability to teach residents and fellows.

Many CLEs did not appear to monitor whether residents, fellows, and faculty members exceed their expected workload. Many also did not appear to monitor whether faculty members' clinical workload adversely impacted their teaching responsibilities.

Across CLEs, the patient safety and quality leaders generally did not describe mechanisms to proactively assess risks to patient safety due to resident and fellow workload intensity; patient safety events were often addressed as they arose and through retrospective review of the events.

### Fatigue Management

At each of the site visits, the residents and fellows in the group interviews were asked to consider a hypothetical scenario in which they were maximally fatigued yet had two hours left before the end of their shift or workday. In this circumstance, 47.6% of the residents and fellows reported that they would power through to hand-off or the end of the day. Responses varied by year of training, specialty grouping, and gender (Figure 17). Across CLEs, the median (IQR) finding was 43.0% (25.0%-57.2%); responses varied by CLE bed size and type of ownership. Appendix B22 provides detailed information on variability.

In this same circumstance, 28.0% of the residents and fellows indicated they would notify a supervisor and expect to be taken off duty immediately; 11.5% indicated that they would ask another resident or fellow to take over their responsibilities.

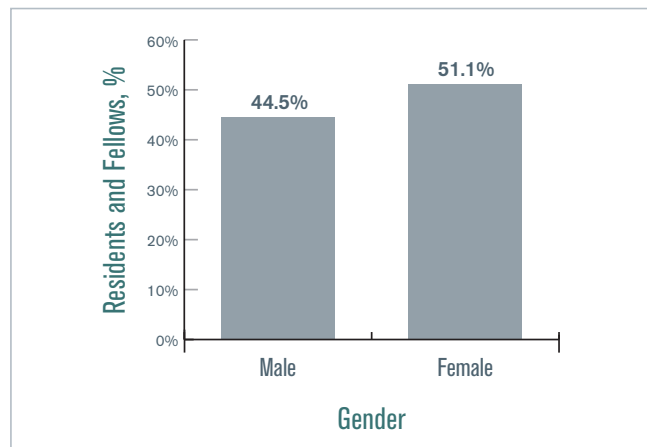


Figure 17. Percentage of Residents and Fellows Who Reported They Would Power through When Maximally Fatigued, by Gender

When presented with the same scenario, 22.7% of the faculty members and 16.8% of the program directors in the group interviews expressed the belief that the resident or fellow would power through to hand-off or the end of the day. Approximately 53% of the faculty members and 56.8% of the program directors believed that the resident or fellow would notify their supervisor and expect to be taken off duty immediately.

Of the residents and fellows surveyed in the group interviews, 79.5% agreed or strongly agreed that the clinical site had successful systems in place to ensure patient safety from the risks of resident and fellow fatigue. Responses varied by gender. Across CLEs, the median (IQR) finding was 85.7% (73.3%-100%), with responses varying by CLE bed size, type of ownership, and region (Figure 18). Appendix B23 provides complete information on variability.

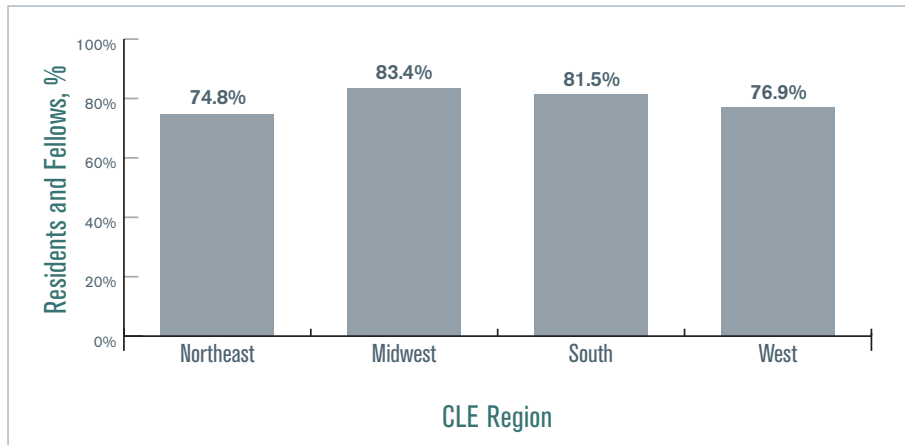


Figure 18. Percentage of Residents and Fellows Who Agreed or Strongly Agreed That Their Clinical Site Had Successful Systems to Ensure Patient Safety from the Risks of Resident and Fellow Fatigue, by Clinical Learning Environment (CLE) Region

In general, CLE efforts to mitigate fatigue among residents and fellows focused primarily on back-up call systems, provision of sleep rooms, transportation home when they were too tired to drive, and education on fatigue management and mitigation.

### Recognition and Mitigation of Burnout

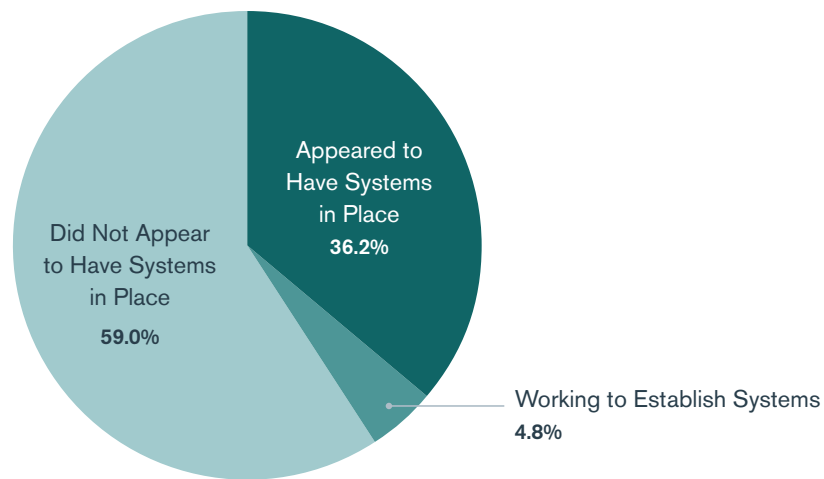
In many CLEs, the well-being leadership described active efforts to build awareness on burnout. In the group interviews, 62.8% of the residents and fellows and 75.0% of the faculty members reported they were moderately or very prepared to recognize and respond to burnout among the members of the clinical care team.

When asked how frequently they see signs of burnout among faculty members at their clinical site, over half of the residents and fellows surveyed responded sometimes or often (38.1% and 13.8%, respectively). When asked the same question, 44.0% of the faculty members in the group interviews reported that they sometimes see signs of burnout among their faculty colleagues; 15.0% reported they see these signs often.

In many CLEs, residents, fellows, nurses, and other health care professionals described seeing signs of burnout in their colleagues, faculty members, and other members of the clinical care team that included emotional exhaustion, depersonalization, and/or a sense of low personal accomplishment. Across CLEs, members of the clinical care team reported that burnout among faculty members and nurses was more prevalent than among other members of the clinical care team.

When asked about factors at their CLE that increase their risk for burnout, faculty members in the group interviews mentioned the following as contributing factors: high patient volume; patient acuity; clinical productivity pressures; extensive documentation requirements; inadequate clinical and administrative support; and the challenge of balancing teaching, research, administrative responsibilities, and patient care.

Less than half of the CLEs visited appeared to have systems in place to identify the level of burnout among faculty members (*Figure 19*; see also Appendix C9). A limited number of CLEs appeared to have a systematic approach to preventing, recognizing, and effectively mitigating burnout among physicians. When engaged in efforts to address burnout, many CLEs were at varying stages of implementing solutions and assessing the effectiveness of these efforts was uncommon. Proactive efforts to eliminate harm to patients due to physician burnout was also uncommon across CLEs.



*Figure 19.* Percentage of Clinical Learning Environments That Appeared to Have Systems in Place to Identify the Level of Burnout among Faculty Members

### Support of Those at Risk of or Demonstrating Self-Harm

In the group interviews, 58.1% of the residents and fellows reported they were moderately or very prepared to recognize members of the clinical care team at risk of or demonstrating self-harm (median [IQR], 62.5% [45.6%-79.7%] across CLEs). Responses varied by level of training, specialty group, and gender (Figure 20; see also Appendix B24).

When asked the same question, 70.0% of the faculty members, and 73.9% of the program directors reported they were moderately or very prepared to recognize members of the clinical care team at risk of or demonstrating self-harm.



Figure 20. Percentage of Residents and Fellows Who Reported Being Moderately or Very Prepared to Recognize Members of Their Clinical Care Team at Risk of or Demonstrating Self-Harm, by Gender

In a separate query, 87.2% of the residents and fellows and 80.1% of the faculty members reported that they knew of resources offered by their CLE to support their well-being if they needed personal or professional support after one of their colleagues harmed themselves.

In many CLEs, processes did not appear to exist to identify residents, fellows, and faculty members at risk of or demonstrating self-harm. If such processes existed, many CLEs did not appear to assess the effectiveness of its efforts to facilitate care for those at risk of or demonstrating self-harm.

## PROFESSIONALISM

The concept of professionalism encompasses a number of attributes. The CLER visits focused mainly on those involving honesty, integrity, disclosure of potential conflicts of interest, and respectful treatment of others.

### **Honesty in Reporting**

Overall, 86.8% of the residents and fellows in the group interviews reported that they believe their CLE provides a supportive, non-punitive environment for bringing forward concerns about honesty in reporting. Responses varied by gender and specialty group. Across CLEs, the median (IQR) finding was 92.9% (82.8%-100%) with responses varying by region and type of ownership. Appendix B25 provides complete information on variability.

### **Culture of Reporting Work Hours**

In the group interviews, the CLER teams presented the residents and fellows with a scenario in which a colleague stays 30 minutes beyond work hour limits to address a small, non-urgent clinical task. When asked about the likelihood that the colleague would report the time, 50.9% responded that it was very unlikely that the colleague would do so. When presented with the same scenario, 16.1% of the program directors indicated that it was very unlikely that the resident or fellow would report the time.

In a separate query, 36.5% of the program directors in the group interviews indicated that when moonlighting was permitted, residents and fellows may be underreporting their moonlighting hours (median [IQR], 25.0% [0%-50.0%] across CLEs).

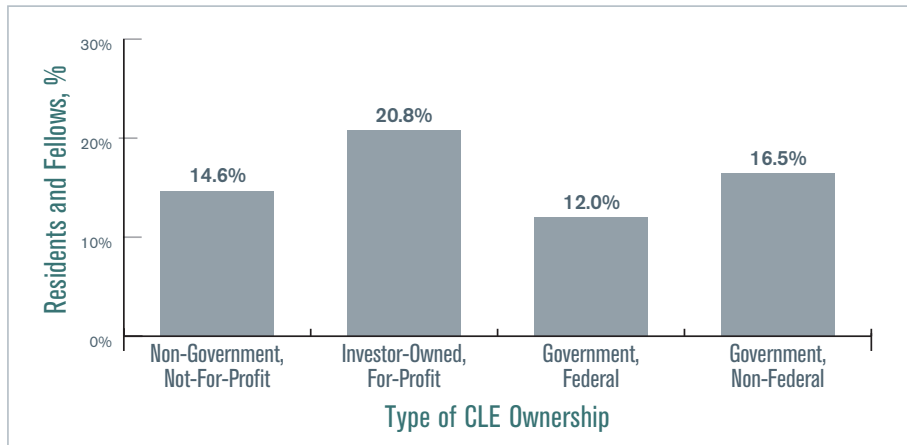
### **Documentation Practices**

In the group interviews, 32.9% of the residents and fellows reported that while at their CLE, they had documented a history or physical finding in a patient medical record that they did not personally elicit (e.g., copying and pasting from another note without attribution). Responses varied by gender and specialty group (see Appendix B26). Approximately 5% reported that documenting a history or physical finding in a patient medical record did not apply to their specialty.

When the CLER teams asked the faculty members about their documentation practices, 13.5% in the group interviews indicated they had documented a history or physical finding in a patient medical record that they did not personally elicit (6.4% reported that documenting a history or physical finding in a patient medical record did not apply to their specialty).

## Integrity

Of the residents and fellows surveyed in the group interviews, 15.2% reported that while at the CLE, they had on occasion felt pressured to compromise their honesty or integrity to satisfy an authority figure. Across CLEs, the median (IQR) finding was 11.1% (0%-20.0%), with responses varying by region, CLE bed size, and type of ownership (*Figure 21*; see also Appendix B27).



*Figure 21.* Percentage of Residents and Fellows Who Reported Having Felt Pressured to Compromise Their Honesty or Integrity to Satisfy an Authority Figure During Their Training at the Clinical Site, by Type of Clinical Learning Environment (CLE) Ownership

To further explore issues of integrity, the CLER teams presented the residents and fellows in the group interviews with a scenario in which one of their colleagues has written a manuscript and the department chair or program director, although not involved in the project, asked to be included as an author. Approximately 50% of the residents and fellows responded that they would advise the colleague to discuss the matter with a faculty member or the DIO. The next most common response (26.0%) was to advise their colleague to include the department chair's or program director's name on the manuscript.

## Disclosure of Potential Conflicts of Interest

When asked how often faculty members disclose whether or not they have potential conflicts of interests (e.g., research funding or commercial interests) during each resident and fellow clinical rotation, 30.1% of the residents and fellows in the group interviews reported that faculty members often or always disclose this information. Responses varied by level of training and specialty group. Across CLEs, this finding ranged from 0% to 100%, with a median (IQR) of 28.6% (15.5%-44.6%); responses varied by region, type of ownership, and CLE bed size (Figure 22). Appendix B28 provides detailed information on variability.

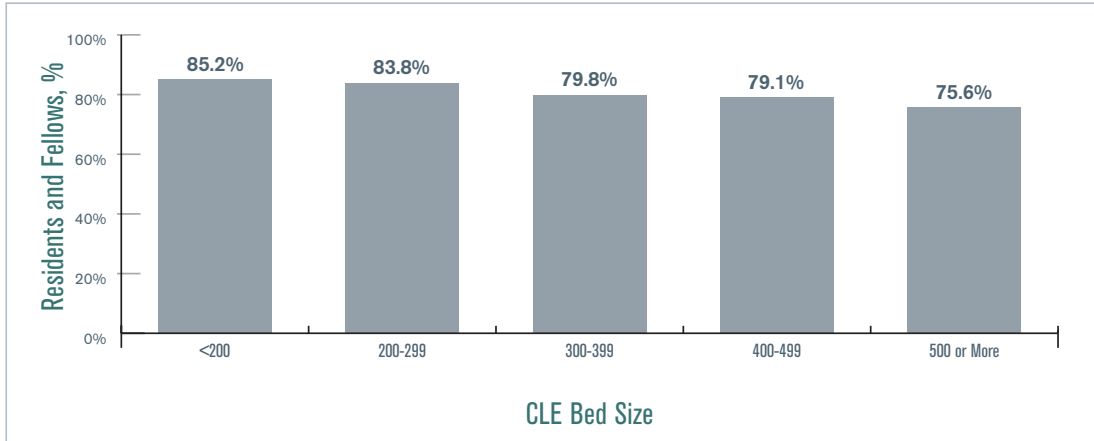


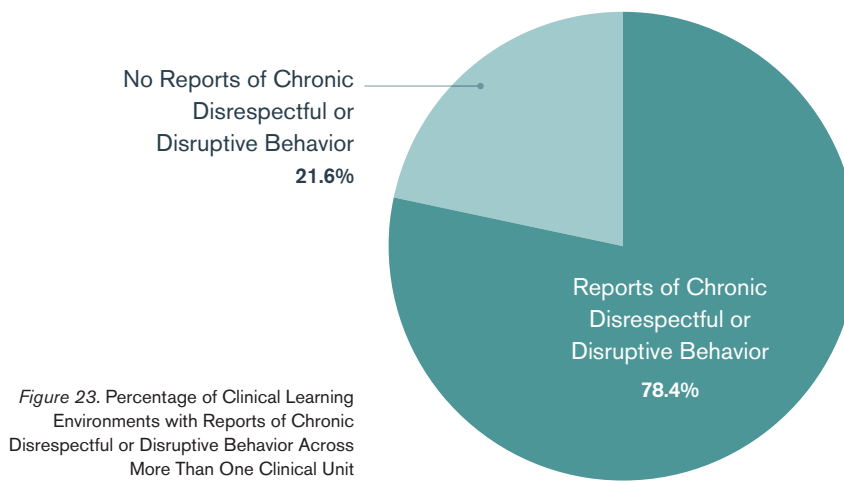
Figure 22. Percentage of Residents and Fellows Who Reported That, Based on Their Experience at the Clinical Site, Faculty Members Often or Always Disclose Whether or Not They Have Potential Conflicts of Interests (e.g., Research Funding or Commercial Interests) During Each of Their Clinical Rotations, by Clinical Learning Environment (CLE) Bed Size



## Respectful Treatment of Others

Across CLEs, executive leaders expressed intolerance for unprofessional and disrespectful behavior. Approximately 75% of the program directors surveyed expressed the belief that their CLE was usually or always effective in managing reports of unprofessional behavior.

Although many residents, fellows, nurses, and other health care professionals described their work environments as respectful and collegial, in nearly all of the CLEs (93.3%), individuals across multiple areas described the behavior of attending physicians and nurses as disrespectful or disruptive. In 78.4% of the CLEs, the behaviors were described as chronic, persistent, or pervasive in nature (*Figure 23*; see also Appendix C10).



Across CLEs, many residents and fellows also described professionalism issues in obtaining consultation services, including lack of responsiveness and disrespectful communications in response to their requests for consultation.

In the group interviews, the CLER teams presented the residents and fellows with a scenario describing an attending physician's mistreatment of a resident colleague that continued to persist despite being reported to the chief resident, program director, department chair, and head of GME. When presented with choices of what they might advise the colleague to do, 58.9% indicated that they would recommend contacting the organization's Human Resources department or anonymous hotline. Other responses included: contacting the Equal Employment Opportunity Commission (6.7%); registering a concern with the ACGME (19.2%); and taking no further action (3.0%). Another 12.2% suggested they would advise some other course of action, and when asked to elaborate, many indicated they would recommend speaking with an ombudsman or returning to one or more members of the GME community to seek assistance.

When presented with the same scenario, faculty members and program directors in the group interviews also varied in their belief as to what the resident would do to address the perceived mistreatment.

In general, residents and fellows across CLEs did not appear to be aware of the mechanisms and resources available to resolve perceived mistreatment beyond those offered by GME. According to program directors, the effectiveness of the organization's response to address these concerns varied across CLEs. Residents, fellows, and other clinical staff members often mentioned that they would not report mistreatment out of concern for adverse consequences of reporting.

## REFERENCES

1. CLER Evaluation Committee. 2017. "CLER Pathways to Excellence: Expectations for an Optimal Clinical Learning Environment to Achieve Safe and High Quality Patient Care, Version 1.1." Chicago, IL: Accreditation Council for Graduation Medical Education.
2. Weiss, Kevin B., Robin Wagner, and Thomas J. Nasca. 2012. "Development, Testing, and Implementation of the ACGME Clinical Learning Environment Review (CLER) Program." *Journal of Graduate Medical Education* 4 (3): 396–98. doi.org/10.4300/JGME-04-03-31.
3. Weiss, Kevin B., James P. Bagian, and Thomas J. Nasca. 2013. "The Clinical Learning Environment: The Foundation of Graduate Medical Education." *JAMA* 309 (16): 1687–88. doi.org/10.1001/jama.2013.1931.

## CLER PROGRAM

Octavia Bailey; Mark R. Bixby, MD, FAAFP; Isabelle Bourgeois, MPA; Jennifer J. Buescher, MD, MSPH; Robert Casanova, MD, MHPE; Baretta R. Casey, MD, MPH, FAAFP; Marian D. Damewood, MD, FACOG; Kevin C. Dellsperger, MD, PhD; Robin Dibner, MD; David L. Dull, MD, MMM, FAAPL; Staci A. Fischer, MD, FACP, FIDSA; Patrick Guthrie; Paula Hensley, MPH; Kristen Ward Hirsch; John A. Hopper, MD; Sharhabeel Jwayyed, MD, MS; Catherine Kallal, MD; Elizabeth Kimball, MA; Nancy J. Koh, PhD; Kathryn E. McGoldrick, MD, MAH, FCAI (Hon); Clifton McReynolds, PhD; Terrie Mendelson, MD; Joshua Mirôn, MA; Robin C. Newton, MD, FACP; Morgan Passiment, MS; Douglas E. Paull, MD, MS, FACS, FCCP, CHSE, CPPS; Daniel Picard, MD; Kathy B. Porter, MD, MBA, FACOG; Dale Ray, MD, MMM; Laura Riordan, MS; Melissa Schori, MD, FACP, MBA; Tara Shedor; Stephen Smith, M; Mike Strickland, MFA; Hongling Sun, PhD; Marie Trontell, MD; Paul Uhlig, MD, MPA; Robin Wagner, RN, MHSA; Elizabeth Wedemeyer, MD; Kevin B. Weiss, MD; Esther Woods; Martha S. Wright, MD, Med; James R. Zaidan, MD, MBA; Jose Zayas, DO, FAAP

# Trends in the CLER Focus Areas

Nancy J. Koh, PhD; Robin Wagner, RN, MHSA; Robin C. Newton, MD, FACP; Hongling Sun, PhD; and Kevin B. Weiss, MD, on behalf of the CLER Program

## INTRODUCTION

The CLER Program assessed and monitored a selected set of observations in each of the six CLER Focus Areas over the last three cycles of visits. This section offers a look at changes over time in each of these areas.<sup>1</sup> The measures examined are not comprehensive and do not summarize the full scope of resident and fellow engagement in the CLER Focus Areas. Instead, these trends offer a snapshot that paints a multidimensional picture of the CLE. These findings are intended to further stimulate new discussions on continuously improving the CLE. This section also offers a two-point analysis of selected observations since the last set of visits; the CLER Program added these measures to the site visit protocol in the second cycle of visits to explore important topics in greater depth.

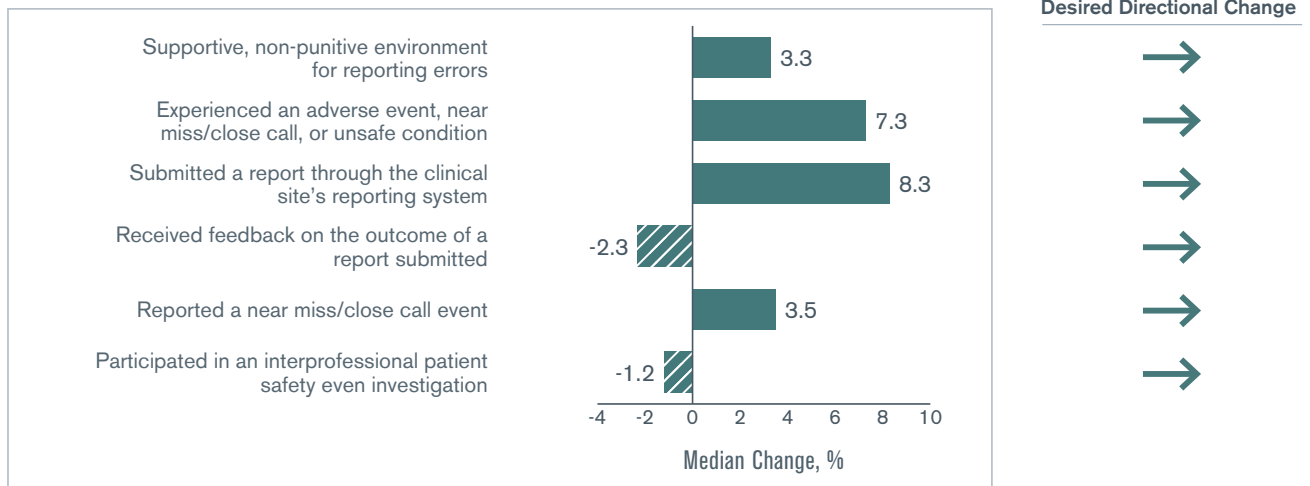
The results are based on matched cases (i.e., CLEs) and a combination of quantitative (e.g., resident and fellow responses to closed-ended questions in group interviews) and qualitative (e.g., observations and interviews on walking rounds) information. Details on data sources and the methods for analysis are described elsewhere in this report (see Methodology section, pp. 17-26).

This section reports changes on selected measures and is not designed to imply plausible explanations of effects or to establish causal relationships. Additionally, statistical significance does not necessarily imply practical significance as the differences may not be large enough to have practical implications. Many factors may influence change, such as awareness and understanding of the CLER Focus Areas, opportunities for engagement (e.g., participation in patient safety event investigations), and attention to improvements in selected CLER Focus Areas (e.g., patient safety and health care quality). These factors may vary across CLEs and change over time; thus, such factors should be considered in interpreting these findings.

# PATIENT SAFETY

## Three-Point Analysis

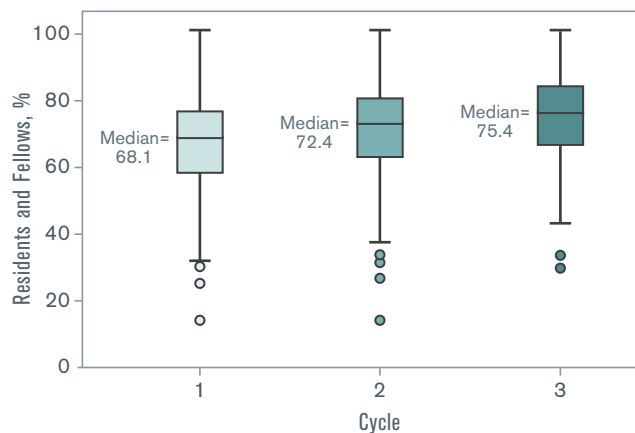
The overall changes on selected measures in patient safety between Cycle 1 and Cycle 3 are presented in *Figure 1*.



*Figure 1.* Median Percentage Differences on Selected Measures in Patient Safety Between Cycle 1 and Cycle 3 of Clinical Learning Environment Review Visits Based on Resident and Fellow Responses to Closed-Ended Questions in Group Interviews

Since Cycle 1, a high median percentage of residents and fellows continued to report that the clinical site provided a supportive and non-punitive environment for reporting errors. In Cycles 1, 2, and 3, the median (interquartile range [IQR]) findings were 96.7% (93.6%-100%), 100% (96.4%-100%), and 100% (95.0%-100%), respectively.

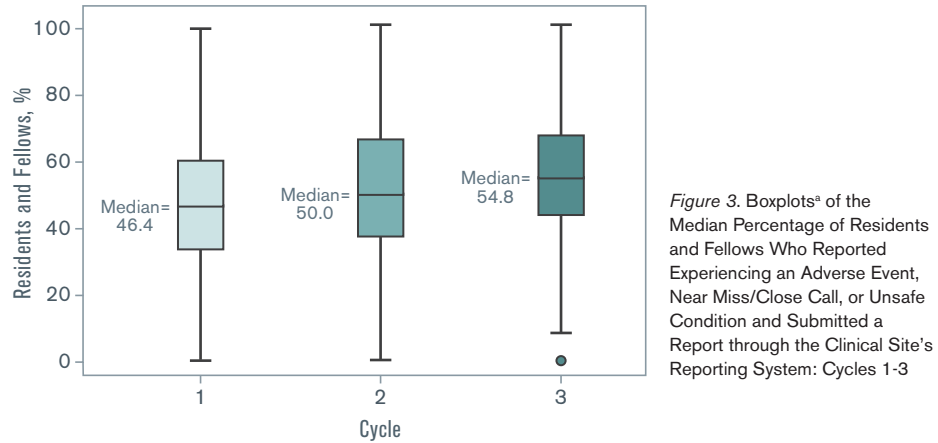
Across CLEs, the median percentage of residents and fellows who reported experiencing an adverse event, near miss/close call, or unsafe condition increased over time since Cycle 1 (*Figure 2*). The median (IQR) findings in Cycles 1, 2, and 3 were 68.1% (57.9%-76.3%), 72.4% (62.7%-80.0%), and 75.4% (66.7%-83.3%), respectively ( $P < .001$ ).



*Figure 2.* Boxplots<sup>a</sup> of the Median Percentage of Residents and Fellows Who Reported Experiencing an Adverse Event, Near Miss/Close Call, or Unsafe Condition: Cycles 1-3

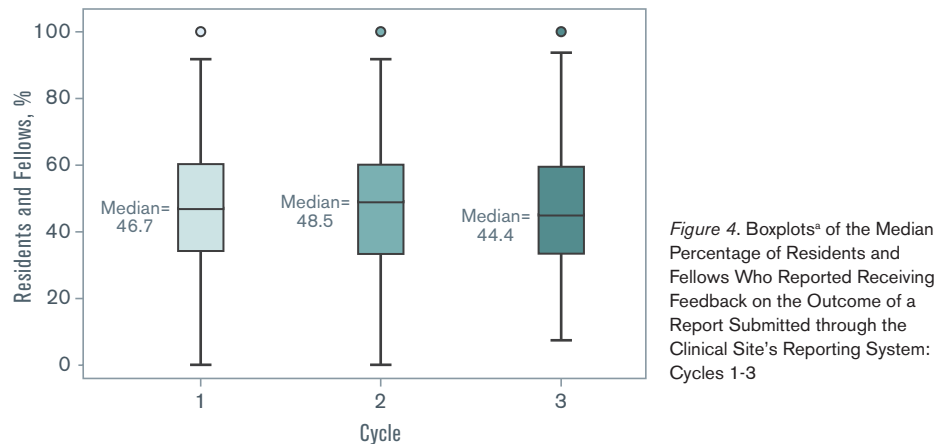
<sup>a</sup> The horizontal line in the middle of the box indicates the median and the top and bottom of the box indicate the 75th and 25th percentiles, respectively, also known as the interquartile range (IQR). The whiskers above and below the box mark the maximum and minimum values, respectively. The points beyond the whiskers are outliers.

The percentage of residents and fellows who reported these events into their CLE's patient safety event reporting system also increased significantly over the last three cycles (*Figure 3*). The median (IQR) findings were 46.5% (33.3%-60.7%) in Cycle 1, 50.0% (37.1%-66.7%) in Cycle 2, and 54.8% (43.8%-68.1%) in Cycle 3 ( $P < .001$ ).



*Figure 3.* Boxplots<sup>a</sup> of the Median Percentage of Residents and Fellows Who Reported Experiencing an Adverse Event, Near Miss/Close Call, or Unsafe Condition and Submitted a Report through the Clinical Site's Reporting System: Cycles 1-3

While there was a slight increase in the median percentage of residents and fellows who reported receiving feedback on the outcome of a patient safety event report submitted into the CLE's central reporting system between Cycle 1 and Cycle 2, the median percentage decreased in Cycle 3 (*Figure 4*). In Cycles 1, 2, and 3, the median (IQR) findings were 46.7% (33.8%-60.0%), 48.5% (33.3%-59.9%), and 44.4% (33.3%-59.4%), respectively. These differences were not statistically significant.



*Figure 4.* Boxplots<sup>a</sup> of the Median Percentage of Residents and Fellows Who Reported Receiving Feedback on the Outcome of a Report Submitted through the Clinical Site's Reporting System: Cycles 1-3

<sup>a</sup> The horizontal line in the middle of the box indicates the median and the top and bottom of the box indicate the 75th and 25th percentiles, respectively, also known as the interquartile range (IQR). The whiskers above and below the box mark the maximum and minimum values, respectively. The points beyond the whiskers are outliers.

When queried separately, the median percentage of residents and fellows who reported a near miss/close call event varied over time (Figure 5). The median (IQR) findings were 17.9% (11.5%-26.6%) in Cycle 1, 23.1% (14.7%-32.8%) in Cycle 2, and 21.4% (13.3%-29.5%) in Cycle 3. Overall, the median percentage difference between Cycle 1 and Cycle 3 indicated a trend in the desired direction; this difference was statistically significant ( $P < .05$ ).

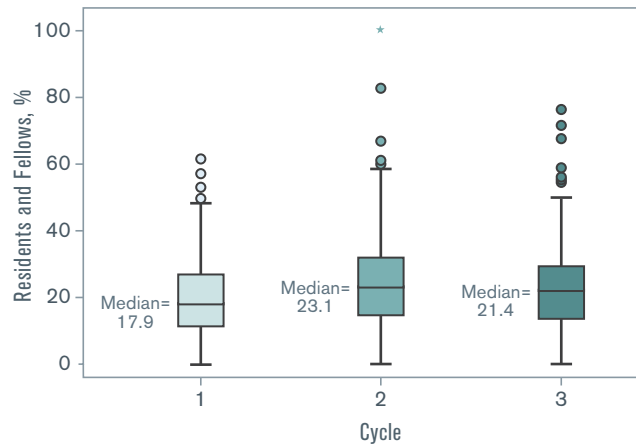


Figure 5. Boxplots<sup>a</sup> of the Median Percentage of Residents and Fellows Who Reported a Near Miss/Close Call Event: Cycles 1-3

In regard to the median of percentage of residents and fellows (post-graduate year 3 [PGY-3] and above) who reported participating in an interprofessional patient safety event investigation, the results varied over the last three cycles (Figure 6). The median percentage was the highest in Cycle 1 (median [IQR], 41.2% [31.6%-51.3%]). A significantly smaller percentage reported the same in Cycle 2 (median [IQR], 36.8% [28.6%-50.0%]). The percentage increased significantly in Cycle 3 (median [IQR], 40.0% [29.8%-53.1%]) compared with Cycle 2.

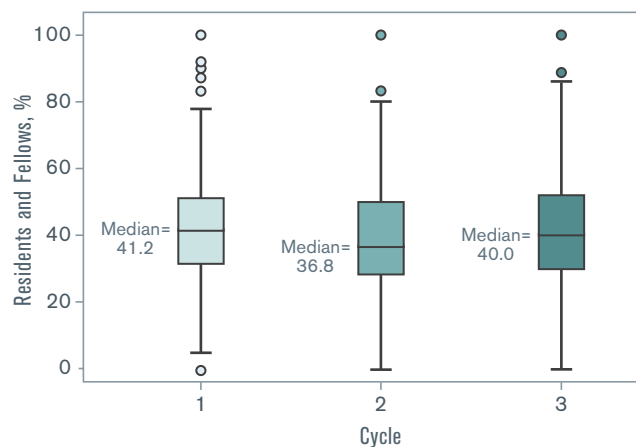


Figure 6. Boxplots<sup>a</sup> of the Median Percentage of Residents and Fellows (PGY-3 and Above) Who Reported Participating in an Interprofessional (Physicians, Nurses, Administrators, Others) Investigation of a Patient Safety Event (e.g., Root Cause Analysis): Cycles 1-3

Abbreviation: PGY, post-graduate year.

<sup>a</sup> The horizontal line in the middle of the box indicates the median and the top and bottom of the box indicate the 75th and 25th percentiles, respectively, also known as the interquartile range (IQR). The whiskers above and below the box mark the maximum and minimum values, respectively. The points beyond the whiskers are outliers.

Table 1 presents results related to qualitative information collected on walking rounds and interviews with patient safety and quality leaders. Compared with Cycle 1, there was a higher proportion of residents and fellows with a working knowledge of basic patient safety terminology across CLEs in Cycle 2 and Cycle 3 ( $P < .001$ ).

The percentage of CLEs that tracked the number of patient safety event reports submitted by residents and fellows increased over the last three cycles. The percentage of CLEs that tracked the number of patient safety event reports submitted by residents and fellows was 34.5% in Cycle 1, 75.5% in Cycle 2, and 80.0% in Cycle 3. This change over time was statistically significant ( $P < .001$ ).

Table 1. Percentage of Clinical Learning Environments by Proportion of Resident and Fellow Knowledge of Patient Safety Terminology and Principles and Tracking of Resident and Fellow Reporting of Patient Safety Events

Items	Scale	Cycle 1 n (%)	Cycle 2 n (%)	Cycle 3 n (%)
Proportion of residents and fellows with knowledge of basic patient safety terminology and principles***	Most	33 (16.8)	14 (7.1)	20 (10.2)
	Some	90 (45.9)	161 (82.1)	153 (78.1)
	Few	73 (37.2)	21 (10.7)	23 (11.7)
Tracks the number of patient safety event reports submitted by residents and fellows***	Tracks reporting	69 (34.5)	151 (75.5)	160 (80.0)
	Does not track reporting	131 (65.5)	49 (24.5)	40 (20.0)

\*\*\*Statistically significant at  $P < .001$ .

## Two-Point Analysis

Across CLEs, the median percentage of residents and fellows who reported receiving training on disclosing medical errors to patients and/or families was higher in Cycle 3 than in Cycle 2 (Figure 7). In Cycles 2 and 3, the median (IQR) findings were 75.0% (62.3%-87.5%) and 80.0% (67.9%-90.9%), respectively ( $P < .001$ ). In addition, the median percentage of residents and fellows who reported knowing resources provided by the clinical site to support them when they were involved in a major patient safety event resulting a patient death was slightly higher in Cycle 3 than in Cycle 2. The median (IQR) findings were 89.7% (77.4%-100%) in Cycle 2 and 90.9% (80.0%-100%) in Cycle 3 ( $P < .05$ ). These results indicated a change in the desired direction.

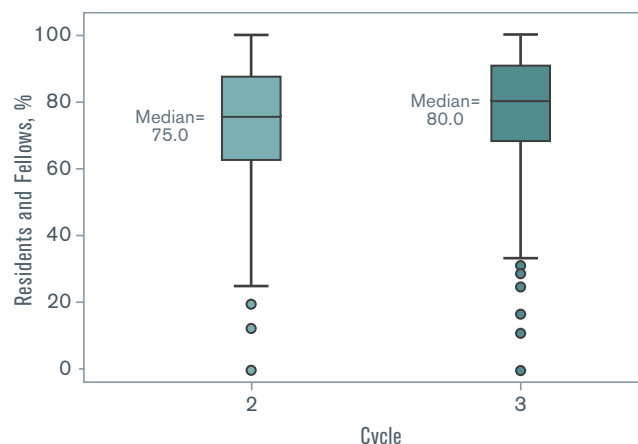


Figure 7. Boxplots<sup>a</sup> of the Median Percentage of Residents and Fellows Who Reported Receiving Training on Disclosing Medical Errors to Patients and/or Families: Cycles 2-3

<sup>a</sup> The horizontal line in the middle of the box indicates the median and the top and bottom of the box indicate the 75th and 25th percentiles, respectively, also known as the interquartile range (IQR). The whiskers above and below the box mark the maximum and minimum values, respectively. The points beyond the whiskers are outliers.

# HEALTH CARE QUALITY (INCLUDING HEALTH CARE DISPARITIES)

## Three-Point Analysis

Figure 8 presents the overall changes on selected measures in health care quality and health care disparities between Cycle 1 and Cycle 3.

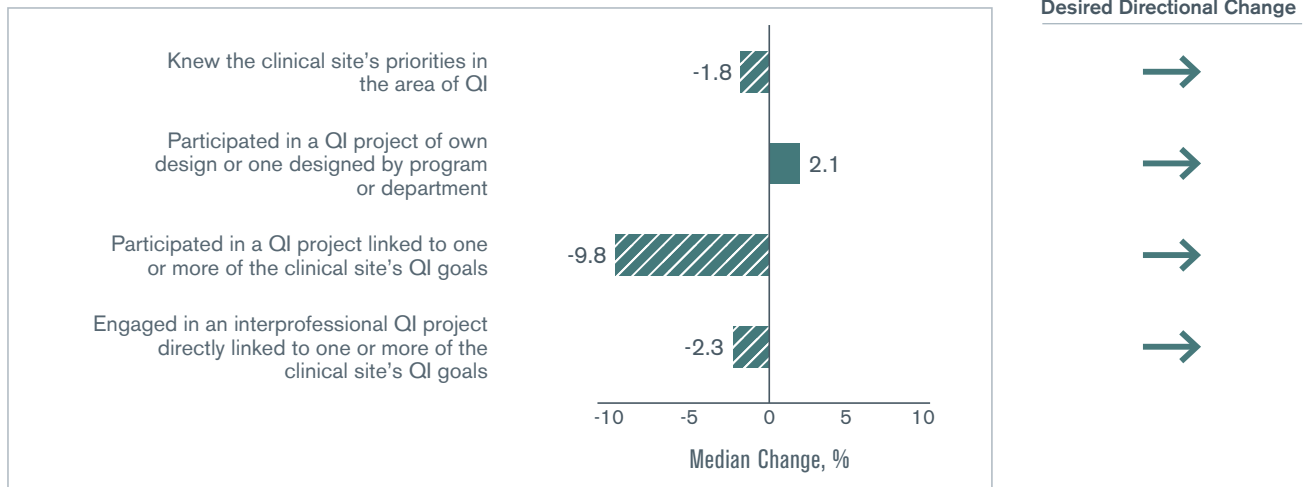


Figure 8. Median Percentage Differences on Selected Measures in Health Care Quality Between Cycle 1 and Cycle 3 of Clinical Learning Environment Review Visits Based on Resident and Fellow Responses to Closed-Ended Questions in Group Interviews

Abbreviation: QI, quality improvement

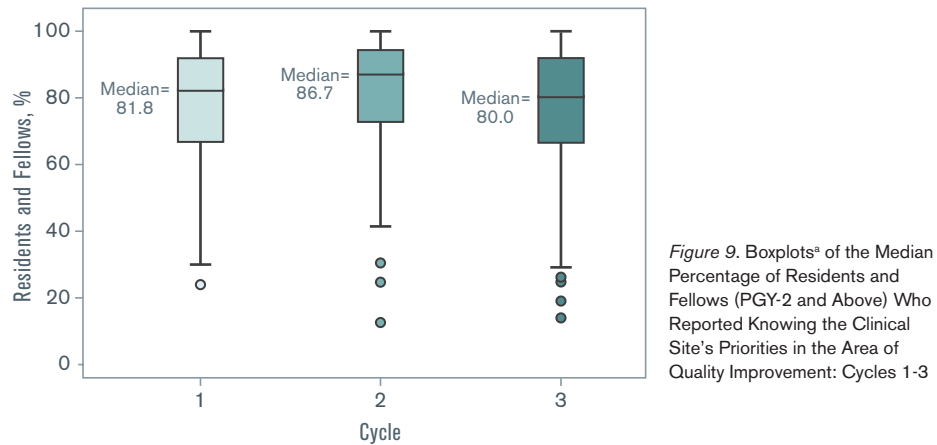
Compared with Cycle 1, there was a higher proportion of residents and fellows with a working knowledge of basic quality improvement (QI) concepts across CLEs in Cycle 2 and Cycle 3 (Table 2). These differences were not statistically significant.

Table 2. Percentage of Clinical Learning Environments by Proportion of Resident and Fellow Knowledge of Basic Quality Improvement Concepts

Item	Scale	Cycle 1 n (%)	Cycle 2 n (%)	Cycle 3 n (%)
Proportion of residents and fellows with knowledge of basic quality improvement concepts	Most	38 (17.2)	25 (11.3)	24 (10.9)
	Some	47 (21.3)	77 (34.8)	79 (35.7)
	Few	136 (61.5)	119 (53.8)	118 (53.4)



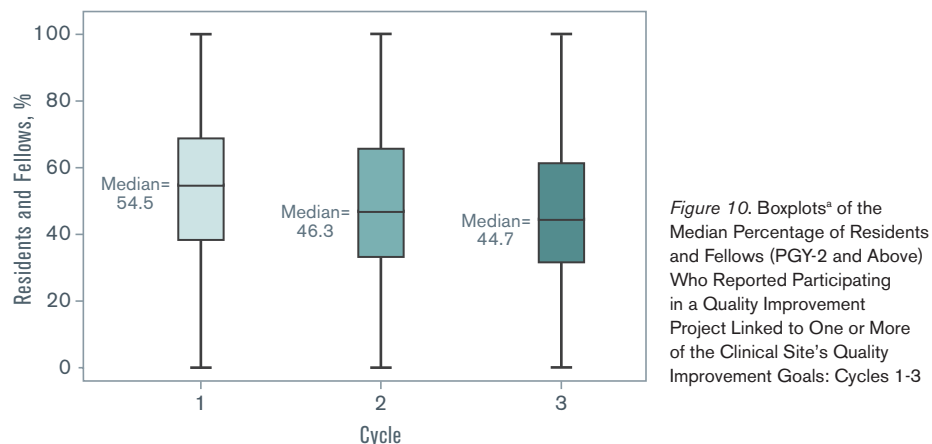
The median percentage of residents and fellows (post-graduate year 2 [PGY-2] and above) who reported awareness of the priorities in QI at their clinical site varied over the last three cycles (*Figure 9*). The median percentage increased significantly between Cycle 1 and Cycle 2 and declined in Cycle 3. The median (IQR) findings were 81.8% (67.7%-91.7%) in Cycle 1, 86.7% (72.4%-94.3%) in Cycle 2, and 80.0% (66.1%-92.2%) in Cycle 3.



*Figure 9.* Boxplots<sup>a</sup> of the Median Percentage of Residents and Fellows (PGY-2 and Above) Who Reported Knowing the Clinical Site's Priorities in the Area of Quality Improvement: Cycles 1-3

While there was a modest increase in the median percentage of residents and fellows (PGY-2 and above) who reported that they had participated in a QI project of their own design or one designed by their program or department between Cycle 1 and Cycle 2, there was relatively no change between Cycle 2 and Cycle 3. The median (IQR) findings were 78.3% (66.7%-88.5%) in Cycle 1, 80.0% (71.4%-88.8%) in Cycle 2, and 80.4% (72.2%-88.8%) in Cycle 3. The overall change between Cycle 1 and Cycle 3 was statistically significant ( $P < .01$ ).

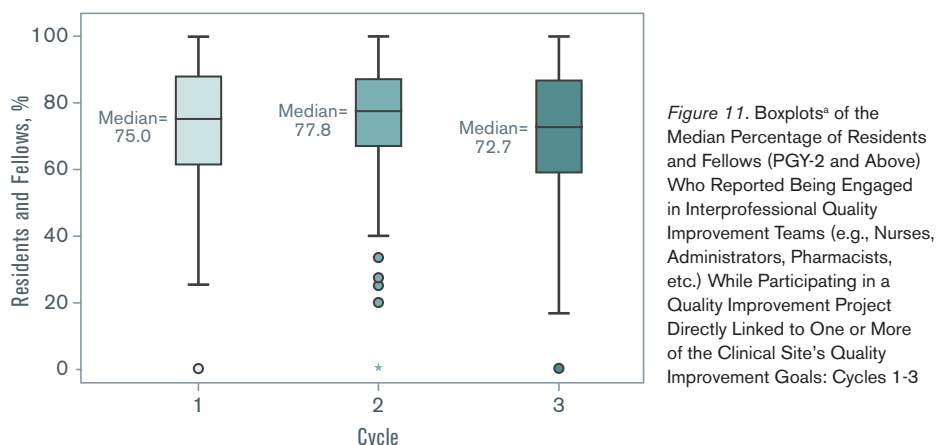
Of the residents and fellows (PGY-2 and above) who reported that they had participated in a QI project, the median percentage who reported the project was linked to the clinical site's QI goals declined over time since the first cycle of visits (*Figure 10*). In Cycles 1, 2, and 3, the median (IQR) findings were 54.5% (38.3%-69.2%), 46.3% (33.3%-65.9%), and 44.7% (31.3%-61.8%), respectively. The overall change between Cycle 1 and Cycle 3 was statistically significant ( $P < .001$ ).



*Figure 10.* Boxplots<sup>a</sup> of the Median Percentage of Residents and Fellows (PGY-2 and Above) Who Reported Participating in a Quality Improvement Project Linked to One or More of the Clinical Site's Quality Improvement Goals: Cycles 1-3

<sup>a</sup> The horizontal line in the middle of the box indicates the median and the top and bottom of the box indicate the 75th and 25th percentiles, respectively, also known as the interquartile range (IQR). The whiskers above and below the box mark the maximum and minimum values, respectively. The points beyond the whiskers are outliers.

Of the residents and fellows (PGY-2 and above) who reported that they had participated in a QI project linked to the clinical site's QI goals, the median percentage who reported the project involved an interprofessional team increased between Cycle 1 and Cycle 2 and declined in Cycle 3 (Figure 11). The median (IQR) findings in Cycle 1, Cycle 2, and Cycle 3 were 75.0% (61.1%-88.0%), 77.8% (66.7%-87.5%), and 72.7% (58.8%-87.5%), respectively. The overall change between Cycle 1 and Cycle 3 was not statistically significant.



After three cycles of visits, there was little change in the percentage of CLEs that appeared to have a systematic approach to addressing health care disparities among the at-risk patients receiving care at these clinical sites—less than 5.0% of CLEs in each cycle. Since the first two cycles of visits, a small percentage of CLEs in Cycle 3 (17.9%) appeared to be in the early stages of developing a systematic approach to identifying variability in the care provided to or the clinical outcomes of their known vulnerable patient populations.

## Two-Point Analysis

While the greater proportion of resident and fellow QI projects did not appear to have the components of a complete QI cycle in both sets of visits as described during group interviews and on walking rounds, there was a smaller proportion of resident and fellow QI projects with all of the components in Cycle 3 than in Cycle 2 (Table 3).

Table 3. Percentage of Clinical Learning Environments by Proportion of Resident and Fellow Quality Improvement Projects with Components of a Complete Quality Improvement Cycle

Item	Scale	Cycle 2 n (%)	Cycle 3 n (%)
Proportion of resident and fellow quality improvement projects with components of a complete quality improvement cycle	Most	26 (5.2)	14 (2.8)
	Some	78 (15.6)	82 (16.4)
	Few	397 (79.2)	405 (80.8)

<sup>a</sup> The horizontal line in the middle of the box indicates the median and the top and bottom of the box indicate the 75th and 25th percentiles, respectively, also known as the interquartile range (IQR). The whiskers above and below the box mark the maximum and minimum values, respectively. The points beyond the whiskers are outliers.

Compared with Cycle 2, a significantly smaller median percentage of residents and fellows in Cycle 3 reported receiving aggregated or benchmarked quality performance data about the care of their own patients (Figure 12). The median (IQR) findings were 37.5% (24.8%-60.0%) in Cycle 2 and 32.8% (20.0%-55.3%) in Cycle 3 ( $P < .01$ ).

In the area of health care disparities, a significantly smaller median percentage of residents and fellows reported participating in a quality improvement project focused on eliminating health care disparities in Cycle 3 (median [IQR], 5.8% [0.0%-14.3%]) than in Cycle 2 (median [IQR], 9.6% [0.0%-18.2%]) ( $P < .001$ ).

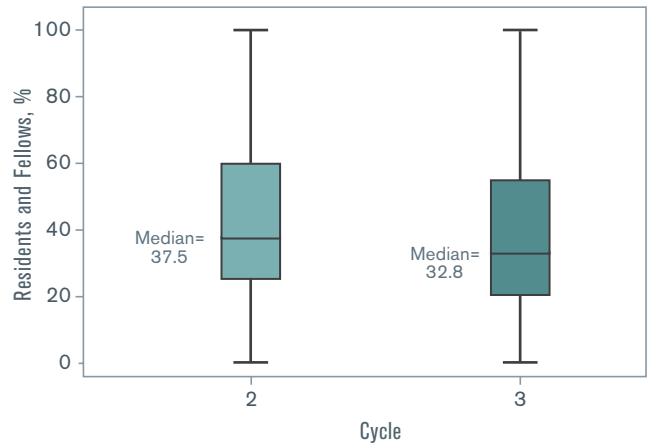


Figure 12. Boxplots<sup>a</sup> of the Median Percentage of Residents and Fellows Who Reported Receiving Aggregated or Benchmarked Quality Performance Data About the Care of Their Own Patients: Cycles 2-3

<sup>a</sup> The horizontal line in the middle of the box indicates the median and the top and bottom of the box indicate the 75th and 25th percentiles, respectively, also known as the interquartile range (IQR). The whiskers above and below the box mark the maximum and minimum values, respectively. The points beyond the whiskers are outliers.

# CARE TRANSITIONS

## Three-Point Analysis

Figure 13 presents the overall changes on selected measures related to care transitions between Cycle 1 and Cycle 3.

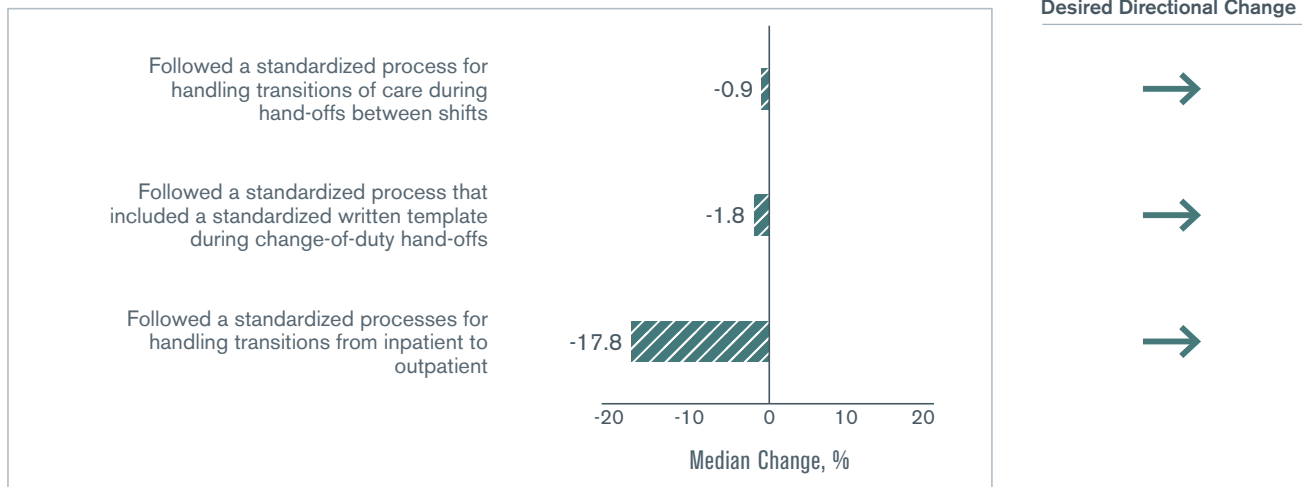


Figure 13. Median Percentage Differences on Selected Measures in Care Transitions Between Cycle 1 and Cycle 3 of Clinical Learning Environment Review Visits Based on Resident and Fellow Responses to Closed-Ended Questions in Group Interviews

The median percentage of residents and fellows who reported following a standardized process for handling transitions of care during change-of-duty hand-offs was highest in Cycle 1, with a median (IQR) of 91.7% (83.9%-100%) (Figure 14). In Cycle 2 and Cycle 3, the median (IQR) findings were 86.0% (77.8%-94.3%) and 90.7% (82.4%-96.3%), respectively. Similarly, of those who reported following a standardized process, a higher percentage in the first cycle of visits indicated that the process included a standardized written template for communication for handling transitions of care during change-of-duty hand-offs, with a median (IQR) finding of 79.6% (70.4%-89.5%) (Figure 15). The median percentage decreased slightly in Cycle 2 (median [IQR], 77.5% [68.8%-88.1%]) and remained relatively the same in Cycle 3 (median [IQR], 77.8% [69.1%-89.6%]).

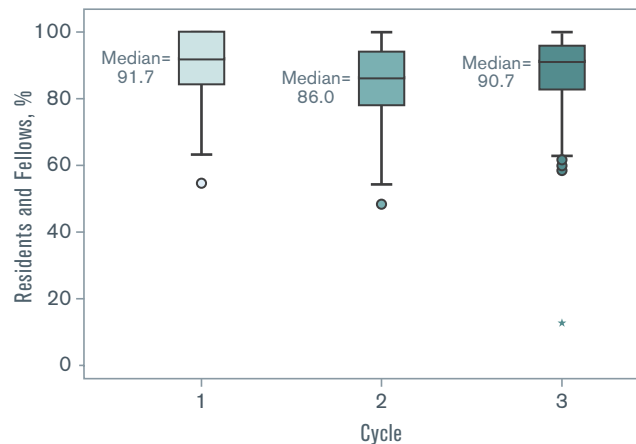


Figure 14. Boxplots<sup>a</sup> of the Median Percentage of Residents and Fellows Who Reported Following a Standardized Following a Standardized Process for Handling Transitions of Care During Hand-Offs Between Shifts: Cycles 1-3

<sup>a</sup> The horizontal line in the middle of the box indicates the median and the top and bottom of the box indicate the 75th and 25th percentiles, respectively, also known as the interquartile range (IQR). The whiskers above and below the box mark the maximum and minimum values, respectively. The points beyond the whiskers are outliers.

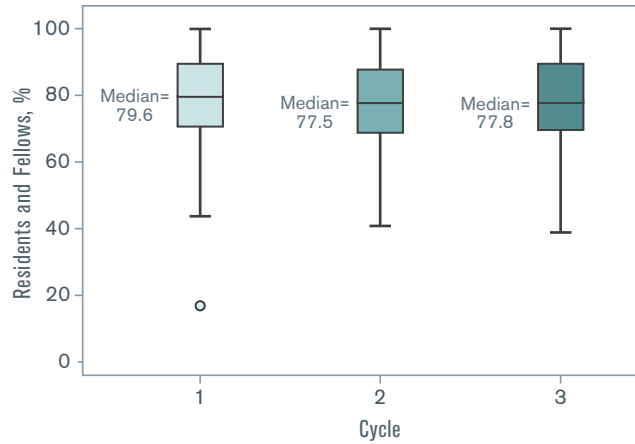


Figure 15. Boxplots<sup>a</sup> of the Median Percentage of Residents and Fellows Who Reported Following a Standardized Process for Hand-Offs Between Shifts that Included a Standardized Written Template for Communication: Cycles 1-3

Based on observations during walking rounds, in many CLEs there appeared to be some level of standardization in the change-of-duty hand-off processes across programs since Cycle 1. Whereas it appeared there was no standardization in the hand-off processes in 68.4% of the CLEs in Cycle 1, the same observation was made in 14.7% of the CLEs in Cycle 3 (Table 4). These differences were statistically significant.

Table 4. Percentage of Clinical Learning Environments with Hand-Off Processes That Were Standardized Across Programs

Item	Scale	Cycle 1 n (%)	Cycle 2 n (%)	Cycle 3 n (%)
Hand-off processes that were standardized across programs, based on direct observations***	All standardized	27 (11.7)	2 (0.9)	24 (10.4)
	Some standardization	46 (19.9)	221 (95.7)	173 (74.9)
	No standardization	158 (68.4)	8 (3.5)	34 (14.7)

\*\*\*Statistically significant at  $P < .001$ .

In regard to transitions from inpatient to outpatient care, there was a marked decline in the median percentage of residents and fellows who reported following standardized processes for handling transitions of care from inpatient to outpatient care since Cycle 1 (Figure 16). The median (IQR) findings were 82.1% (71.9%-91.0%) in Cycle 1, 65.0% (51.0%-78.6%) in Cycle 2, and 64.3% (52.5%-80.0%) in Cycle 3. The median percentage difference between Cycle 1 and Cycle 3 was statistically significant ( $P < .001$ ).

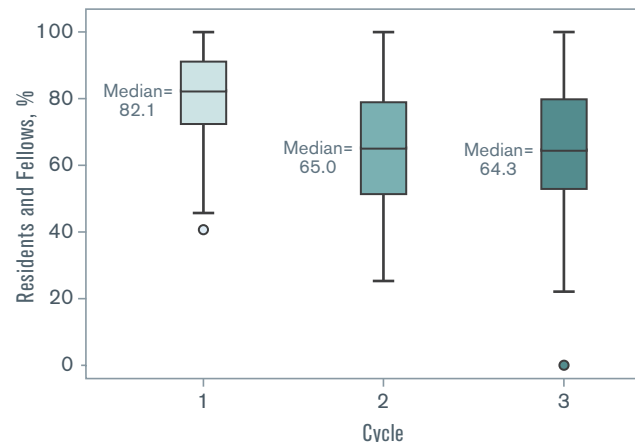


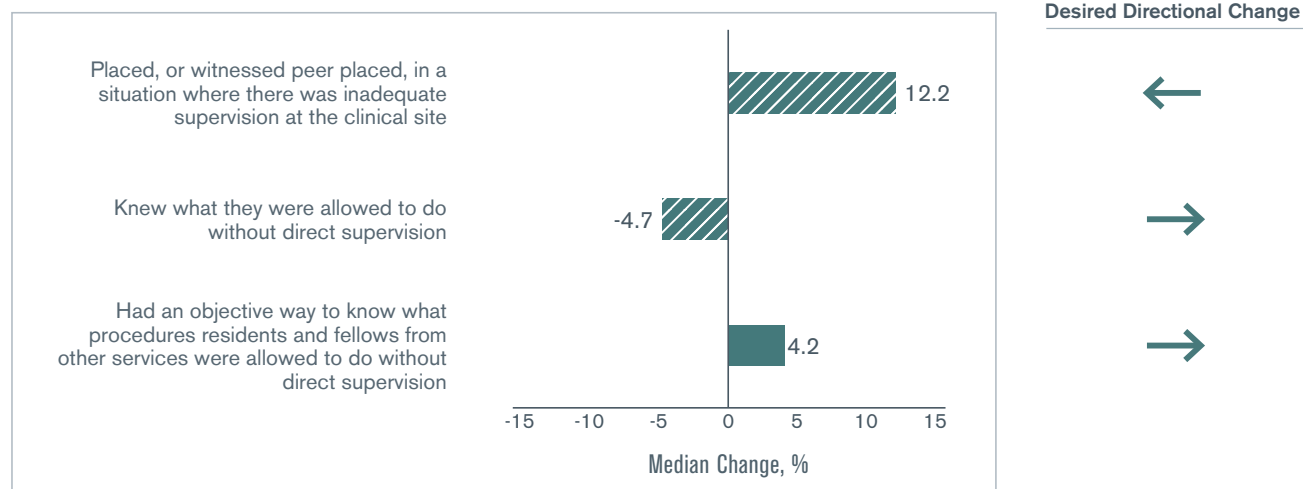
Figure 16. Boxplots<sup>a</sup> of the Median Percentage of Residents and Fellows Who Reported Following Standardized Processes for Handling Transitions of Care from Inpatient to Outpatient Care: Cycles 1-3

<sup>a</sup> The horizontal line in the middle of the box indicates the median and the top and bottom of the box indicate the 75th and 25th percentiles, respectively, also known as the interquartile range (IQR). The whiskers above and below the box mark the maximum and minimum values, respectively. The points beyond the whiskers are outliers.

# SUPERVISION

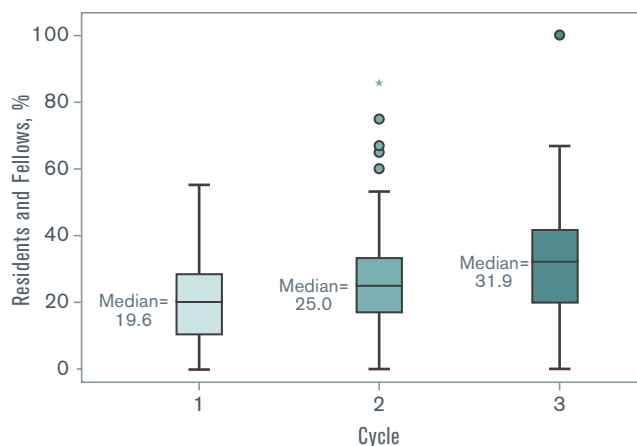
## Three-Point Analysis

The overall changes on selected measures in supervision between Cycle 1 and Cycle 3 are presented in *Figure 17*.



*Figure 17.* Median Percentage Differences on Selected Measures in Supervision Between Cycle 1 and Cycle 3 of Clinical Learning Environment Review Visits Based on Resident and Fellow Responses to Closed-Ended Questions in Group Interviews

Over the past three cycles, the median percentage of residents and fellows who reported having been placed or witnessing one of their peers placed in a situation where they believed there was inadequate supervision has been trending upwards in the undesired direction (*Figure 18*). In Cycles 1, 2, and 3, the median (IQR) findings were 19.6% (10.0%-28.3%), 25.0% (16.7%-33.3%), and 31.9% (20.0%-41.7%), respectively. This change over time was statistically significant ( $P < .001$ ).



*Figure 18.* Boxplots<sup>a</sup> of the Median Percentage of Residents and Fellows Who Reported Having Been Placed, or Witnessing One of Their Peers Placed, in a Situation Where They Believed There Was Inadequate Supervision at the Clinical Site (e.g., the Attending Physician Was Not Available): Cycles 1-3

<sup>a</sup> The horizontal line in the middle of the box indicates the median and the top and bottom of the box indicate the 75th and 25th percentiles, respectively, also known as the interquartile range (IQR). The whiskers above and below the box mark the maximum and minimum values, respectively. The points beyond the whiskers are outliers.

Since Cycle 1, a high median percentage of residents and fellows continued to report knowing what they were allowed to do without direct supervision. In Cycles 1, 2, and 3, the median (IQR) findings were 99.2% (94.9%-100%), 96.3% (91.5%-100%), and 94.5% (88.9%-100%), respectively.

The median percentage of residents and fellows who reported having an objective way to know what procedures residents and fellows from other services were allowed to do without direct supervision when they consulted on patients varied over time (Figure 19). While there was a significant increase in the median percentage from Cycle 1 to Cycle 2, the median percentage decreased in Cycle 3. The median (IQR) findings were 29.1% (16.6%-54.3%) in Cycle 1, 40.0% (22.8%-61.1%) in Cycle 2, and 33.3% (22.2%-57.3%) in Cycle 3.

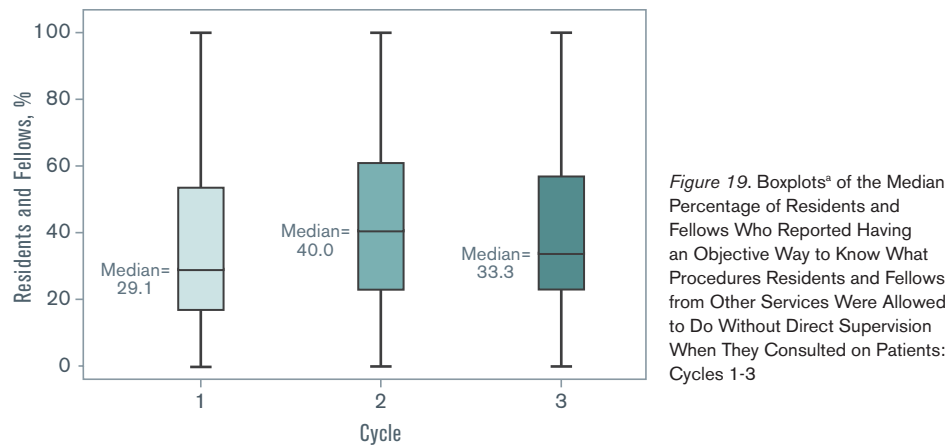


Figure 19. Boxplots<sup>a</sup> of the Median Percentage of Residents and Fellows Who Reported Having an Objective Way to Know What Procedures Residents and Fellows from Other Services Were Allowed to Do Without Direct Supervision When They Consulted on Patients: Cycles 1-3

In the majority of CLEs (90.3% in Cycle 1, 93.7% in Cycle 2, and 92.8% in Cycle 3), nurses indicated on walking rounds that in the absence of an attending physician, they relied primarily on trust when residents and fellows performed clinical procedures (Table 5).

Table 5. Percentage of Clinical Learning Environments by Mechanism Used for Identification of Resident and Fellow Competence to Perform Clinical Procedures, as Reported by Nurses

Item	Scale	Cycle 1 n (%)	Cycle 2 n (%)	Cycle 3 n (%)
Mechanism used for identification of resident and fellow competency to perform clinical procedures, as reported by nurses	Some type of system is used	21 (8.9)	13 (5.5)	17 (7.2)
	Trust primarily	214 (90.3)	222 (93.7)	220 (92.8)
	No process exists	2 (0.8)	2 (0.8)	–

<sup>a</sup> The horizontal line in the middle of the box indicates the median and the top and bottom of the box indicate the 75th and 25th percentiles, respectively, also known as the interquartile range (IQR). The whiskers above and below the box mark the maximum and minimum values, respectively. The points beyond the whiskers are outliers.

The percentage of CLEs where patient safety and quality leaders recalled patient safety event reports involving issues of resident or fellow supervision increased over time since the first cycle of visits (Table 6). In 41.6% of the CLEs in Cycle 1, 43.5% in Cycle 2, and 50.9% in Cycle 3, the patient safety and quality leaders recalled such reports.

Table 6. Percentage of Clinical Learning Environments Where Patient Safety and Quality Leaders Recalled Patient Safety Event Reports Involving Issues of Resident or Fellow Supervision

Item	Scale	Cycle 1 n (%)	Cycle 2 n (%)	Cycle 3 n (%)
Patient safety and quality leaders recalled patient safety event reports involving issues of resident or fellow supervision	Recalled events	67 (41.6)	70 (43.5)	82 (50.9)
	Did not recall events	94 (58.4)	91 (56.5)	79 (49.1)

### Two-Point Analysis

Compared with those in Cycle 2, a slightly higher median percentage of residents and fellows in Cycle 3 reported their experience of having encountered physicians (attending physicians or consultants) who made them feel uncomfortable when requesting help (Figure 20). The median (IQR) findings were 48.3% (33.3%-63.2%) in Cycle 2 and 50.0% (34.7%-66.7%) in Cycle 3 ( $P < .05$ ).

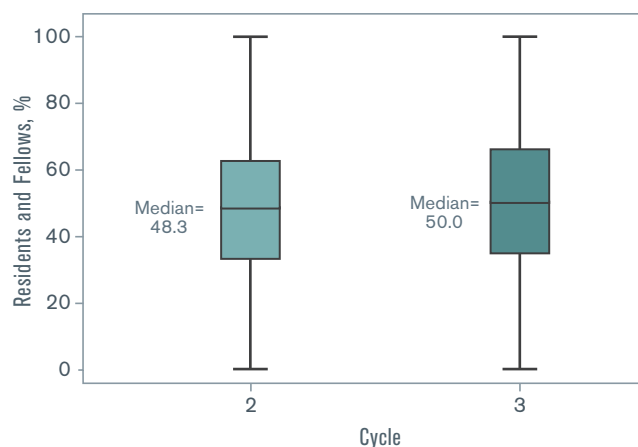


Figure 20. Boxplots<sup>a</sup> of the Median Percentage of Residents and Fellows Who Reported Encountering a Physician (Attending Physician or Consultant) Who Made Them Feel Uncomfortable When Requesting Assistance: Cycles 2-3

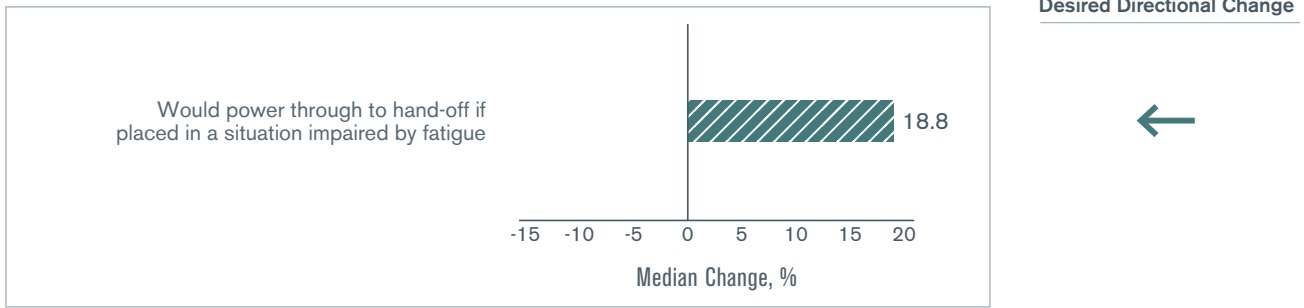
<sup>a</sup> The horizontal line in the middle of the box indicates the median and the top and bottom of the box indicate the 75th and 25th percentiles, respectively, also known as the interquartile range (IQR). The whiskers above and below the box mark the maximum and minimum values, respectively. The points beyond the whiskers are outliers.



# WELL-BEING

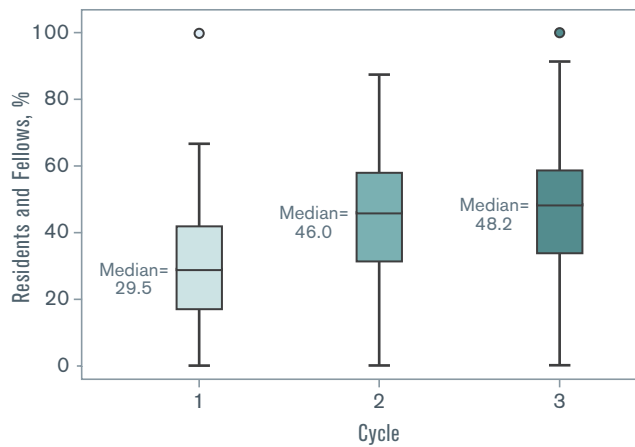
## Three-Point Analysis

The overall changes on selected measures in well-being between Cycle 1 and Cycle 3 are presented in *Figure 21*.



*Figure 21.* Percentage of Residents and Fellows Who Reported They Would Power through When Maximally Fatigued: Median Percentage Differences between Cycle 1 and Cycle 3 of Clinical Learning Environment Review Visits

Overall, the median percentage of residents and fellows who reported that they would power through to hand-off if placed in a situation in which they were impaired by fatigue trended upward over time (*Figure 22*). The median (IQR) findings in Cycles 1, 2, and 3 were 29.5% (16.9%-42.3%), 46.0% (30.8%-58.3%), and 48.2% (33.3%-58.9%), respectively. The median percentage difference between Cycle 1 and Cycle 3 was statistically significant ( $P < .001$ ).



*Figure 22.* Boxplots<sup>a</sup> of the Median Percentage of Residents and Fellows Who Reported They Would Power through When Maximally Fatigued: Cycles 1-3

<sup>a</sup> The horizontal line in the middle of the box indicates the median and the top and bottom of the box indicate the 75th and 25th percentiles, respectively, also known as the interquartile range (IQR). The whiskers above and below the box mark the maximum and minimum values, respectively. The points beyond the whiskers are outliers.

# PROFESSIONALISM

## Three-Point Analysis

Figure 23 presents the overall changes on selected measures in professionalism between Cycle 1 and Cycle 3.

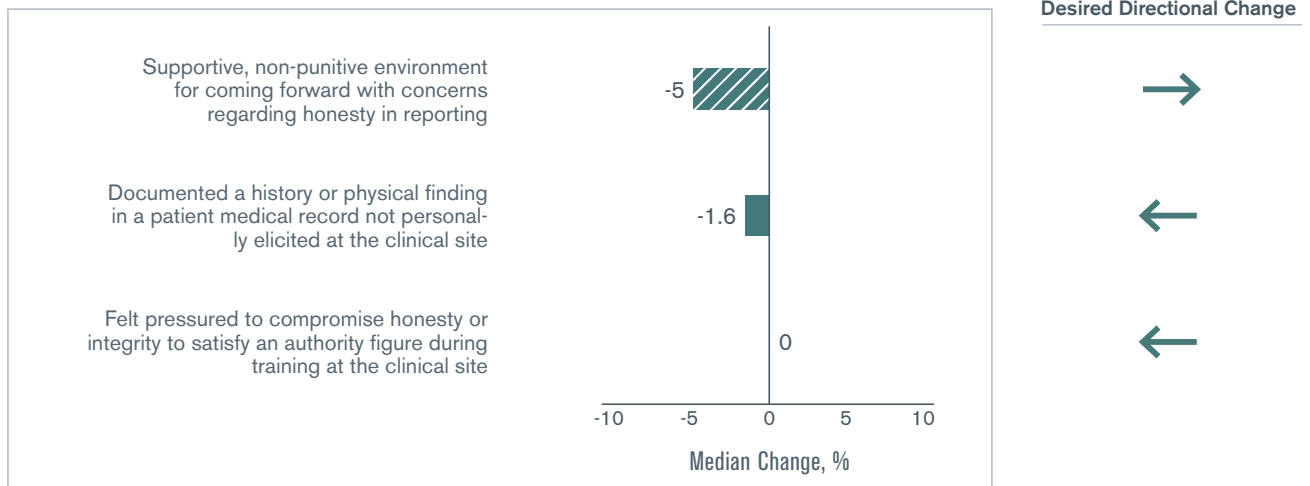


Figure 23. Median Percentage Differences on Selected Measures in Professionalism Between Cycle 1 and Cycle 3 of Clinical Learning Environment Review Visits Based on Resident and Fellow Responses to Closed-Ended Questions in Group Interviews

Across CLEs, the median percentage of residents and fellows who reported that their clinical site provided a supportive, non-punitive environment for coming forward with concerns regarding honesty in reporting remained relatively high over the last three cycles of visits. The median percentage was highest in Cycle 1 (median [IQR], 95.0% [90.0%-100%]). In Cycle 2 and Cycle 3, the median (IQR) findings were 90.0% (84.2%-96.0%) and 90.0% (82.4%-95.0%), respectively.

The median percentage of residents and fellows who reported that they had documented a history or physical finding in a patient medical record that they did not personally elicit was the highest in Cycle 1, with a median (IQR) of 35.5% (20.5%-49.2%) (Figure 24). A smaller percentage reported the same in Cycle 2, with a median (IQR) of 33.3% (17.1%-43.2%). The percentage increased slightly in Cycle 3 compared with Cycle 2, with a median (IQR) of 34.0% (22.2%-44.4%).

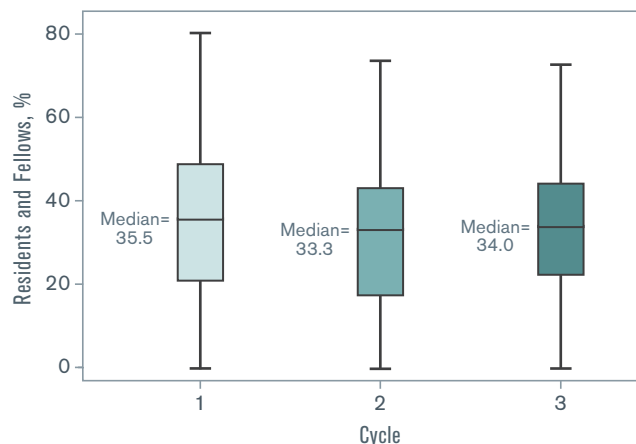
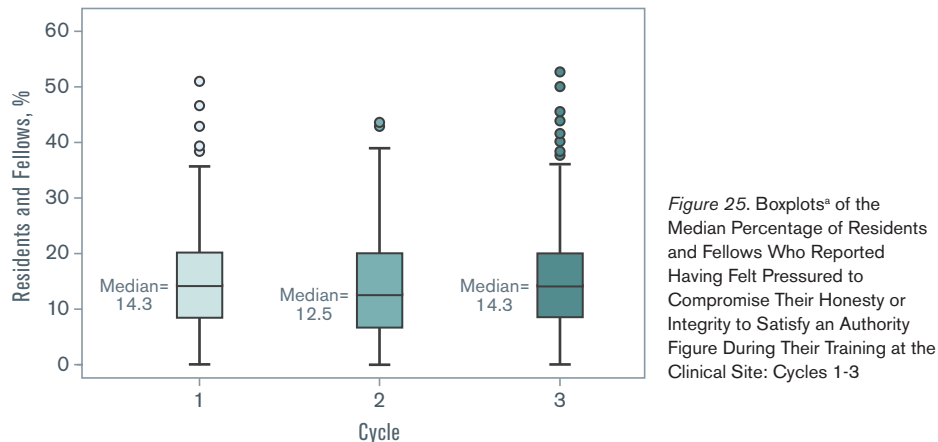


Figure 24. Boxplots<sup>a</sup> of the Median Percentage of Residents and Fellows Who Reported They Had Documented a History or Physical Finding in a Patient Medical Record That They Did Not Personally Elicit at the Clinical Site (e.g., Copying and Pasting from Another Note): Cycles 1-3

<sup>a</sup> The horizontal line in the middle of the box indicates the median and the top and bottom of the box indicate the 75th and 25th percentiles, respectively, also known as the interquartile range (IQR). The whiskers above and below the box mark the maximum and minimum values, respectively. The points beyond the whiskers are outliers.

The median percentage of residents and fellows who reported that they felt pressure to compromise their honesty or integrity to satisfy an authority figure during their training at their CLE was the lowest in Cycle 2, with a median (IQR) of 12.5% (6.7%-20.0%) (Figure 25). The results were the same in Cycles 1 and 3, with a median (IQR) of 14.3% (8.3%-20.0%). These differences were not statistically significant.



## Two-Point Analysis

Based on interviews on walking rounds, there was a significantly larger percentage of CLEs with reports of chronic disrespectful or disruptive behavior across more than one clinical unit in Cycle 3 (78.3%) than in Cycle 2 (60.1%) (Table 7). This difference was statistically significant ( $P < .001$ ).

Table 7. Percentage of Clinical Learning Environments with Reports of Chronic Disrespectful or Disruptive Behavior Across More Than One Clinical Unit

Item	Scale	Cycle 2 n (%)	Cycle 3 n (%)
Percentage of clinical learning environments with reports of chronic disrespectful or disruptive behavior across more than one clinical unit	No reports of chronic disrespectful or disruptive behavior	171 (39.9)	93 (21.7)
	Reports of chronic disrespectful or disruptive behavior	258 (60.1)	336 (78.3)

<sup>a</sup> The horizontal line in the middle of the box indicates the median and the top and bottom of the box indicate the 75th and 25th percentiles, respectively, also known as the interquartile range (IQR). The whiskers above and below the box mark the maximum and minimum values, respectively. The points beyond the whiskers are outliers.

## SUMMARY

Collectively, the results indicate both progress and challenges across the CLER Focus Areas.

Overall, the trends in resident and fellow engagement in patient safety are encouraging. Since Cycle 1, residents and fellows continued to report a supportive and non-punitive environment for reporting patient safety errors. Resident and fellow recognition of reportable patient safety events and use of the clinical site's patient safety event reporting system to report these events also improved over time. Additionally, there continued to be an upward trend in the percentage of CLEs that tracked the number of patient safety event reports submitted by residents and fellows since the first cycle of CLER visits.

Conversely, the results over the last three cycles of visits indicate that challenges continue to exist in providing residents and fellows with feedback on the outcomes of patient safety event reports submitted and engaging them in interprofessional patient safety event investigations.

While there was progress from Cycle 1 to Cycle 2 on most of the measures in health care quality, there was either change in the undesired direction or little change for the same measures between Cycle 2 and Cycle 3. Specifically, the median percentage of residents and fellows who reported that they knew their clinical sites' QI priorities declined significantly from Cycle 2 to Cycle 3. There was minimal change in the median percentage of residents and fellows who reported participating in QI projects of their own design or one designed by their program or department. There was a downward trend in the median percentage of residents and fellows who reported participating in a QI project aligned with the clinical site's QI goals and receiving aggregated or benchmarked quality performance data about the care of their own patients.

Regarding health care disparities, the number of CLEs engaged in systematic efforts to identify and eliminate disparities in health care and the clinical outcomes of their known vulnerable patient populations remained relatively the same since Cycle 1. Additionally, the median percentage of residents and fellows who reported participating in a QI project focused on eliminating health care disparities declined between Cycle 2 and Cycle 3.

A moderately high median percentage of residents and fellows continued to report following a standardized process for handling transitions of care during change-of-duty hand-offs. In many CLEs, there also appeared to be some level of standardization in the change-of-duty hand-off processes across programs since the first cycle of visits. At the same time, there was relatively no movement in the median percentage of residents and fellows who reported using a standardized written template as part of a standardized process for change-of-duty hand-offs. There was a downward trend in the median percentage of residents and fellows who reported following a standardized process for handling care transitions from inpatient to outpatient care.

Overall, the majority of the measures in supervision moved in a direction opposite of desired change. Of note, the percentage of CLEs where patient safety and quality leaders recalled patient safety event reports involving issues of resident or fellow supervision continued to increase over time. There was also a significant upward trend in the median percentage of residents and fellows who reported being placed or witnessing a situation in which they perceived there was inadequate supervision. Additionally, a higher median percentage of residents and fellows reported encountering a physician who made them feel uncomfortable when requesting help in Cycle 3 than in Cycle 2.

There was an upward trend—against the desired direction of change—in the median percentage of residents and fellows who reported that they would power through to hand-off if impaired by fatigue, with the most significant increase from Cycle 1 to Cycle 2.

In the area of professionalism, a high median percentage of residents and fellows continued to report that their clinical site provided a supportive, non-punitive environment for coming forward with concerns regarding honesty in reporting. Over time, there was little change in the median percentage of residents and fellows who reported they had documented a history or physical finding in a patient medical record that they did not personally elicit. Similarly, there was minimal change in the median percentage of residents and fellows who reported they felt pressured to compromise their honesty or integrity to satisfy an authority figure. Challenges remain in addressing unprofessional behavior—between Cycles 2 and 3, there was a significantly larger percentage of CLEs with reports of chronic disrespectful or disruptive behavior across more than one clinical unit.

## CONCLUSION

The trends and between-cycle findings across the CLER Focus Areas indicate that ongoing formative feedback may be having some effect in advancing CLEs. They also point to opportunities for improvement. In general, the results demonstrate modest progress in some areas, little or no movement in others, and undesired change in other areas. Given the dynamic and intricate nature of CLEs, there can be a considerable time lag between the discovery of challenges, implementation of systems changes to address these challenges, and demonstrable results. The selected trends offer a perspective on how CLEs can continue their journey to assess and explore innovative ways to improve the learning environment and to ensure safe and high-quality patient care.

## REFERENCES

1. CLER Evaluation Committee. 2017. "CLER Pathways to Excellence: Expectations for an Optimal Clinical Learning Environment to Achieve Safe and High Quality Patient Care, Version 1.1." Chicago, IL: Accreditation Council for Graduation Medical Education.

---

## CLER PROGRAM

Octavia Bailey; Mark R. Bixby, MD, FAAFP; Isabelle Bourgeois, MPA; Jennifer J. Buescher, MD, MSPH; Robert Casanova, MD, MHPE; Baretta R. Casey, MD, MPH, FAAFP; Marian D. Damewood, MD, FACOG; Kevin C. Dellsperger, MD, PhD; Robin Dibner, MD; David L. Dull, MD, MMM, FAAPL; Staci A. Fischer, MD, FACP, FIDSA; Patrick Guthrie; Paula Hensley, MPH; Kristen Ward Hirsch; John A. Hopper, MD; Sharhabeel Jwayyed, MD, MS; Catherine Kallal, MD; Elizabeth Kimball, MA; Nancy J. Koh, PhD; Kathryn E. McGoldrick, MD, MAH, FCAI (Hon); Clifton McReynolds, PhD; Terrie Mendelson, MD; Joshua Mirôn, MA; Robin C. Newton, MD, FACP; Morgan Passiment, MS; Douglas E. Paull, MD, MS, FACS, FCCP, CHSE, CPPS; Daniel Picard, MD; Kathy B. Porter, MD, MBA, FACOG; Dale Ray, MD, MMM; Laura Riordan, MS; Melissa Schori, MD, FACP, MBA; Tara Shedor; Stephen Smith, M; Mike Strickland, MFA; Hongling Sun, PhD; Marie Trontell, MD; Paul Uhlig, MD, MPA; Robin Wagner, RN, MHSA; Elizabeth Wedemeyer, MD; Kevin B. Weiss, MD; Esther Woods; Martha S. Wright, MD, Med; James R. Zaidan, MD, MBA; Jose Zayas, DO, FAAP



# Lessons Learned and Future Directions

Robin Wagner, RN, MHSA and Kevin B. Weiss, MD

The CLER Program was conceived to gather new knowledge about the CLEs of resident and fellow physicians, and to introduce a process of formative assessment and feedback to generate conversations between GME leaders and the executive leadership of CLEs—conversations that promote positive change in important areas of focus such as patient safety and health care quality.

This *CLER National Report of Findings* suggests the CLER Program's process of providing formative feedback is leading to improvements in some areas while in other areas there are performance gaps that continue to persist without change or are moving in the undesired direction. As a result, discussions of each of the CLER Focus Areas in this report are rich with examples from which to draw lessons learned. To illustrate, the findings in the CLER Focus Area of patient safety offer numerous opportunities to learn from both successes and challenges. For example, the data on trends in resident and fellow reporting of patient safety events has shown steady improvement from cycle to cycle. This is likely a reflection of the dedicated efforts within CLEs to help residents and fellows recognize what to report and how to utilize the CLEs' patient safety event reporting systems.

This *National Report* also highlights trends in patient safety that reflect persistent challenges. Examples include challenges in providing residents and fellows with feedback on the outcome of patient safety event reports and involving them in patient safety event investigations. Lack of feedback and engagement may lead residents and fellows to think their efforts to report events result in no actions being taken, thereby worsening their impression of the CLE's culture of safety. One of the reasons behind the modest rather than substantial improvements in resident and fellow engagement in patient safety may reflect the gap between the traditional pace of GME that spans the entire length of educational programs (ranging from one to seven years) and the CLE's more immediate needs for ensuring optimal patient care. GME and their CLEs often address patient safety and the other CLER Focus Areas through separate non-aligned structures, processes, and timelines. The CLER Program seeks to improve this lack of alignment by encouraging GME and CLE leadership to establish a formal structure to work together to mutually identify incentives and opportunities to improve both learning and patient care and establish goals, timelines, and accountability for achieving success. Ensuring residents and fellows are included in the CLE's efforts to measure the culture of safety is a starting place to understand the opportunities for improvement.

*This CLER National Report of Findings suggests the CLER Program's process of providing formative feedback is leading to improvements in some areas while in other areas there are performance gaps that continue to persist without change or are moving in the undesired direction. As a result, discussions of each of the CLER Focus Areas in this report are rich with examples from which to draw lessons learned.*

Independent of the trends noted above, there are other observations from the third cycle of visits that continue to shed light and offer new insights in each of the CLER Focus Areas on how residents and fellows learn in the context of delivering patient care. Most notably, this *National Report* offers an in-depth exploration in the new CLER Focus Area of well-being, specifically on how CLEs are addressing the challenges related to this topic and its implications on physician education and the future workforce. Well-being, workforce engagement, and the culture of safety are strongly correlated so efforts to improve in these areas need to be integrated rather than isolated within individual professional education programs.

Throughout the report, there are other areas of focus that provide new information that can inform the education and training experiences of residents and fellows. For example, in the area of professionalism, the CLER Program explored for the first time the topic of disclosing potential conflicts of interest throughout resident and fellow education. Across CLEs, less than a third of residents and fellows reported that faculty members often or always disclosed whether or not they had potential conflicts of interests during each of their clinical rotations. The CLER Program will continue to explore this topic in greater detail to better understand how CLEs are ensuring physicians have opportunities to improve and advance patient care through research, scholarship, and collaboration in an atmosphere of integrity and transparency.

Additionally, the findings also pointed to the lack of interprofessional learning in the course of providing patient care. The next site visit protocol will explore a new CLER Focus Area, Teaming, in order to understand the benefits of purposeful interactions in which clinical care team members come together to coordinate care and share accountability to achieve outstanding patient care results.

The numerous opportunities for improvement appearing in each of the CLER Focus Areas may also reflect how difficult it is to identify and implement successful solutions that are not readily apparent or complicated by numerous internal and external factors affecting both GME and the CLE. As noted in the introduction to this report, the CLER Program is committed to exploring and implementing various mechanisms to help CLEs accelerate positive change. For example, the *Pursuing Excellence* initiative has demonstrated successful approaches to solving for complex problems using a collaborative model of learning that convenes teams from various CLEs to learn under a common framework while allowing for flexibility and innovation from site to site.<sup>1</sup> In addition, initiatives such as the ACGME's Sponsoring Institution National Learning Community, with its DIO Forum and other plans for outreach, and a new effort known as the Program Directors' Patient Safety and Quality Educators Network, are providing models for how to build, sustain, and grow communities of learning. Through these and many other ACGME programs of education and outreach, the ACGME is assisting the GME community in testing and sharing new approaches to improving complex challenges in the CLE. These efforts also align with other national efforts in these areas such as the recently released National Action Plan to Advance Patient Safety, focusing on four foundational areas: leadership and culture; patient engagement; workforce safety; and learning systems.<sup>2</sup>

Efforts to promote ongoing quality improvement in our nation's CLEs can take many forms. One potential approach might be to follow the well accepted model of quality outlined by Donabedian in his seminal work on quality improvement, with attention to structure, process and outcomes.<sup>3</sup> For example, regarding structure, there are fundamental documents, such as the organization's quality and patient safety plan, that could articulate organizational expectations for how learners like residents and fellows engage in efforts to optimize health care quality and patient safety. Similarly, most organizations have performance dashboards where measures of resident and fellow engagement could be included. CLEs could also focus on examining and



improving their current approach to including GME in efforts to design optimal clinical care teams and patient experiences.

When considering its processes, CLEs may benefit from examining how their patient safety and quality departments could expand their processes for educating the workforce (including GME) and involve them in strategic efforts. CLEs can seek to ensure each new member of the clinical care team, including residents and fellows, receives a successful progressive learning experience that involves them in the organization's efforts to patient safety and quality improvement. For outcomes, CLEs could benefit from deepening their understanding of the essential role GME plays in achieving optimal clinical outcomes by understanding residents' and fellows' contributions to patient outcomes as reflected in the organization's key performance indicators.

In addition to its outward facing efforts, the CLER Program is also an essential component of the ACGME's internal cycles of continuous quality improvement. For the CLER Program, each cycle involves a multi-year process to evolve and implement the CLER site visit protocol, analyze and report aggregate findings, and explore ways to motivate and support improvement in GME and patient care. For example, the *CLER National Report of Findings* published in 2016 informed the *CLER Pathways to Excellence* guidance document (Version 1.1).<sup>4</sup> In turn, the *Pathways to Excellence* document and 2016 *National Report* catalyzed the launch of the *Pursuing Excellence* initiative's outreach efforts and also informed the ACGME's ongoing process to improve accreditation standards—specifically informing the background and requirements in Section VI of the ACGME Common Program Requirements published in 2017.

In 2022, the ACGME's Institutional Requirements are scheduled to undergo a major revision as part of a routine 10-year major revision cycle. Anticipating this revision, the CLER Evaluation Committee is in the process of studying the results in this current *CLER National Report of Findings* and those in past reports to identify and articulate a set of opportunities for improvement for the Institutional Review Committee's consideration. This will complete a second major quality improvement cycle within the ACGME that weighs the evidence from the CLER Program in forming the basis of institutional standards.

The ACGME is continually forward facing, and as part of its strategic plan, future directions will increasingly include a focus on assessment of clinical outcomes. As part of this larger effort, the CLER Program is in the early stages of exploring how clinical outcomes might best inform its ongoing evolution and transformation and how those efforts in turn can best contribute to the ACGME's next major quality improvement cycle. In doing so, the CLER Program looks forward to the future and to furthering the goal of optimizing both learning and patient care.

## REFERENCES

1. Wagner, Robin, Kevin B. Weiss, Morgan L. Passiment, and Thomas J. Nasca. 2016. "Pursuing Excellence in Clinical Learning Environments." *Journal of Graduate Medical Education* 8 (1): 124–27. doi.org/10.4300/JGME-D-15-00737.1.
2. <http://forms.ihl.org/national-action-plan?hsCtaTracking=5aff5040-7b47-4fde-b44e-620597380a7d%7C919b960f-4785-4fc3-bfe6-83d96eae247>
3. Donabedian, Avedis. *Explorations in Quality Assessment and Monitoring Vol. 1. The Definition of Quality and Approaches to Its Assessment*. Ann Arbor, MI: Health Administration Press, 1980.
4. CLER Evaluation Committee. 2017. "CLER Pathways to Excellence: Expectations for an Optimal Clinical Learning Environment to Achieve Safe and High Quality Patient Care, Version 1.1." Chicago, IL: Accreditation Council for Graduation Medical Education.

# APPENDIX A1.

## GENERAL CHARACTERISTICS OF SPONSORING INSTITUTIONS

### A1.1. Sponsoring Institution Distribution by Region and Type<sup>a</sup>

Characteristic	SIs with CLER Visits, % <sup>a</sup> (n = 566)	All SIs, % (N = 766)
<b>Region</b>		
Northeast	26.0	24.7
Midwest	25.3	23.1
South	29.3	30.2
West	18.9	20.5
Territory <sup>b</sup>	0.5	1.6
<b>Type of Sponsoring Institution</b>		
General/teaching hospital	57.8	48.4
Medical school or health science center	19.1	15.9
Educational consortium	4.4	6.7
Children's hospital	2.7	2.5
Other	16.1	26.5

### A1.2. Sponsoring Institution Distribution by Number of ACGME-Accredited Residency and Fellowship Programs and Participating Sites

Programs and Sites	SIs with CLER Visits, % (n = 566)	All SIs, % (N = 766)
<b>Programs</b>		
<3	36.9	47.8
3–4	14.3	12.5
5–20	24.2	20.9
>20	24.6	18.8
<b>Number of Core Programs</b>		
<2	32.0	42.2
2–3	24.2	22.3
4–10	20.5	17.4
>10	23.3	18.1
<b>Number of Participating Sites</b>		
<6	27.9	30.8
6–11	22.1	22.6
12–29	25.8	24.7
>29	24.2	21.9

<sup>a</sup>Percentages do not total 100 because of rounding.

<sup>b</sup>Limited to three Sponsoring Institutions (SIs) in Puerto Rico.

*Abbreviations:* ACGME, Accreditation Council for Graduate Medical Education; CLER, Clinical Learning Environment Review.

### A1.3. Number and Distribution of Core Faculty Members at Sponsoring Institutions by Specialty Grouping<sup>a</sup>

Specialty Subgroup	SIs with CLER Visits, % (n = 98,976)	All SIs, % (N = 107,504)
Medical	43.7	45.4
Surgical	32.3	31.3
Hospital-based	24.1	23.3

### A1.4. Number and Distribution of Residents and Fellows at Sponsoring Institutions by Gender, Level of Training, and Specialty Grouping<sup>a</sup>

Resident and Fellow Characteristic	SIs with CLER Visits, % (n = 129,788)	All SIs, % (N = 139,265)
<b>Gender</b>		
Male	53.5	53.6
Female	45.2	45.1
Unknown	1.3	1.3
<b>Level of Training</b>		
PGY-1	25.6	25.9
PGY-2	23.1	23.3
PGY-3	22.1	22.3
PGY-4+	29.2	28.6
<b>Specialty Group</b>		
Medical	60.3	60.9
Surgical	20.3	19.8
Hospital-based	19.4	19.2

<sup>a</sup>Percentages do not total 100 because of rounding.

Abbreviations: CLER, Clinical Learning Environment Review; PGY, postgraduate year; SI, Sponsoring Institution.

# APPENDIX A2.

## GENERAL CHARACTERISTICS OF CLINICAL LEARNING ENVIRONMENTS

### A2.1. Clinical Learning Environment Distribution by Type of Ownership and Services<sup>a,b</sup>

Characteristic	SIs with CLER Visits, % (n = 534) <sup>c</sup>	Teaching Hospitals, <sup>d</sup> % (n = 300)	All Hospitals, % (N = 6,218)
<b>Type of Ownership</b>			
Non-government, not-for-profit	71.0	68.7	50.1
Investor-owned, for-profit	7.9	2.0	26.7
Government, federal	3.9	12.3	3.4
Government, non-federal	17.2	17.0	19.7
<b>Service for Majority of Patients</b>			
General medical and surgical	94.4	89.7	74.2
Other <sup>e</sup>	5.6	10.3	25.8

### A2.2. Clinical Learning Environment Distribution by Beds and Staffing<sup>a</sup>

Characteristic	SIs with CLER Visits, Median (IQR)	Teaching Hospitals, Median (IQR)	All Hospitals, Median (IQR)
<b>Total Licensed Beds</b>	498 (341–713) <sup>f</sup>	620 (435–863) <sup>g</sup>	107 (40–260) <sup>h</sup>
<b>Total Staffed Beds</b>	402 (245–607) <sup>i</sup>	535 (358–734)	81 (30–196)
<b>Staff<sup>j,k</sup></b>			
Registered nurses	952 (568–1690)	1509 (920–2403)	112 (49–371)
Clinical staff	581 (330–1057)	876 (510–1384)	100 (48–255)
All other personnel	1459 (848–2769)	2357 (1384–3648)	213 (92–572)

<sup>a</sup> Based on the 2018 American Hospital Association Annual Survey.

<sup>b</sup> Percentages do not total 100 because of rounding.

<sup>c</sup> Missing data (< 6%) largely due to clinical sites that do not report data to the American Hospital Association. Percentages based on valid percent.

<sup>d</sup> Member of Council of Teaching Hospital of the Association of American Medical Colleges.

<sup>e</sup> Includes psychiatric, rehabilitation, acute long-term care hospital, children's general medical and surgical, and other types of services.

<sup>f</sup> Missing data < 14%.

<sup>g</sup> Missing data < 11%.

<sup>h</sup> Missing data < 30%.

<sup>i</sup> Missing data < 6%.

<sup>j</sup> Physicians, residents, interns, and other trainees omitted from staff count.

<sup>k</sup> Full-time and part-time personnel only; excludes full-time and part-time equivalent personnel.

*Abbreviations:* CLER, Clinical Learning Environment Review; IQR, interquartile range; SI, Sponsoring Institution.

# APPENDIX A3.

## CLINICAL LEARNING ENVIRONMENTS VISITED: NUMBER OF PROGRAMS AT SITE

Programs <sup>a,b</sup>	SIs with CLER Visits, % (N = 565) <sup>c</sup>
<b>Number of Programs at Site</b>	
<4	29.4
4-10	22.7
11-34	23.2
>34	24.8
<b>Number of Core Programs at Site</b>	
<3	27.3
3-7	26.0
8-18	22.1
>18	24.6

<sup>a</sup> Based on the 2017-2020 Accreditation Council for Graduate Medical Education data.

<sup>b</sup> Percentages do not total 100 because of rounding.

<sup>c</sup> Missing data limited to one Sponsoring Institution.

Abbreviation: SI, Sponsoring Institution.

# APPENDIX A4.

## CLER VISITS: CHARACTERISTICS OF GROUPS INTERVIEWED

### A4.1. Selected Characteristics of Residents and Fellows in the Group Interviews<sup>a</sup>

Characteristic	Residents and Fellows, % (N = 11,166)
<b>Gender<sup>b</sup></b>	
Male	53.8
Female	45.8
Other	0.4
<b>Level of Training<sup>b</sup></b>	
PGY-1	1.6
PGY-2	27.1
PGY-3	30.4
PGY-4+	40.9
<b>Specialty Group<sup>b</sup></b>	
Medical	57.6
Surgical	23.3
Hospital-based	19.1

### A4.2. Selected Characteristics of Faculty Members and Program Directors in the Group Interviews<sup>a,c</sup>

Characteristic	Faculty Members, % (N = 9,988)	Program Directors, % (N = 6,489)
<b>Years at Hospital, Medical Center, or Ambulatory Care Site<sup>b</sup></b>		
≤ 2	19.5	6.2
3–5	25.7	15.7
6–10	21.0	27.8
> 10	33.8	50.3
<b>Program<sup>b</sup></b>		
Core residency program	58.0	46.4
Fellowship	12.6	48.3
Both	29.4	5.3
<b>Specialty Group<sup>b</sup></b>		
Medical	56.7	54.9
Surgical	22.3	22.8
Hospital-based	21.0	22.2

<sup>a</sup> Based on audience response system data.

<sup>b</sup> Missing data (< 2%) have been omitted; percentages based on valid percent.

<sup>c</sup> Percentages do not total 100 because of rounding.

# APPENDIX B.

## SELECTED RESULTS FROM RESIDENT AND FELLOW GROUP INTERVIEWS

### B1. Percentage of Residents and Fellows Who Reported Experiencing an Adverse Event, Near Miss/Close Call, or Unsafe Condition

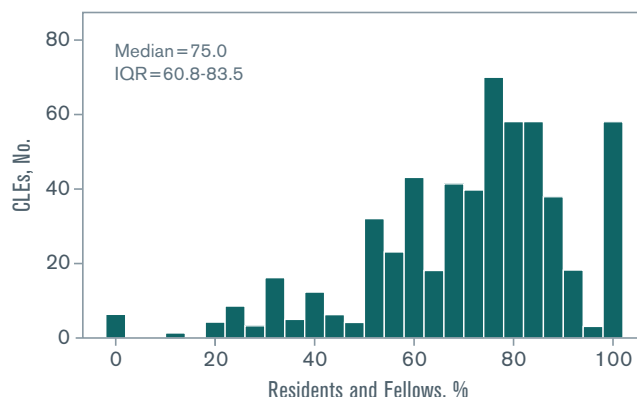
PERCENT OF TOTAL SURVEYED<sup>a</sup> (N = 11,148)

**74.1**

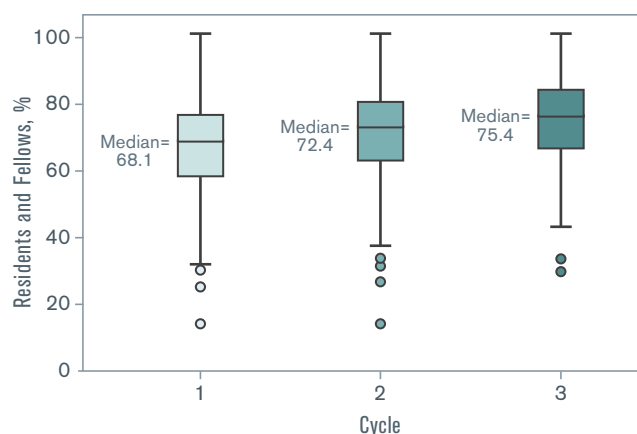
#### PERCENTAGE BY RESIDENT AND FELLOW AND CLE CHARACTERISTICS<sup>a</sup>

Residents and Fellows Characteristics	Residents and Fellows, % (n = 11,148)
<b>Gender<sup>***</sup></b>	
Male	72.7
Female	75.8
<b>Level of Training<sup>***</sup></b>	
PGY-1	52.2
PGY-2	72.4
PGY-3	78.4
PGY-4+	72.9
<b>Specialty Group<sup>***</sup></b>	
Medical	74.2
Surgical	78.7
Hospital-based	68.4
<b>CLE Characteristics</b>	
<b>Region<sup>b**</sup></b>	
Northeast	75.5
Midwest	75.4
South	73.4
West	74.5
<b>Bed Size<sup>***</sup></b>	
<200	70.2
200–299	72.8
300–399	71.0
400–499	75.0
500 or more	76.0
<b>Type of Ownership<sup>**</sup></b>	
Non-government, not-for-profit	75.1
Investor-owned, for-profit	68.7
Government, federal	78.8
Government, non-federal	73.6

DISTRIBUTION ACROSS CLEs<sup>c</sup> (n = 565)



CHANGE IN MEDIAN BETWEEN CLER VISITS: CYCLES 1–3<sup>d,e</sup> (N = 240)<sup>\*\*\*</sup>



<sup>a</sup> Missing data (< 4%) have been omitted; percentages based on valid percent.

<sup>b</sup> Results from clinical learning environments (CLEs) in Puerto Rico (< 1%) omitted to ensure anonymity.

<sup>c</sup> Distribution includes 95% or more of the total number of CLEs (N = 566).

<sup>d</sup> Results based on matched observations; see Methodology (pp. 17–26).

<sup>e</sup> The horizontal line in the middle of the box indicates the median and the top and bottom of the box indicate the 75th and 25th percentiles, respectively, also known as the interquartile range (IQR). The whiskers above and below the box mark the maximum and minimum values, respectively. The points beyond the whiskers are outliers.

\* Statistically significant at  $P < .05$ .

\*\* Statistically significant at  $P < .01$ .

\*\*\* Statistically significant at  $P < .001$ .

Abbreviation: PGY, postgraduate year.

## B2. Percentage of Residents and Fellows Who Reported Experiencing an Adverse Event, Near Miss/Close Call, or Unsafe Condition and Submitted a Report through the Clinical Site's Reporting System

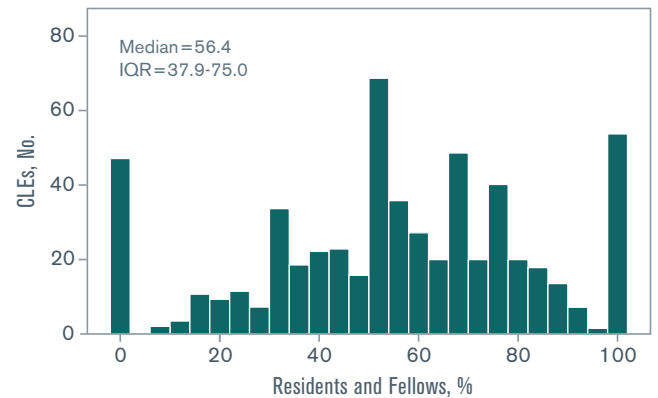
PERCENT OF TOTAL SURVEYED<sup>a</sup> (n = 8,093)

**54.0**

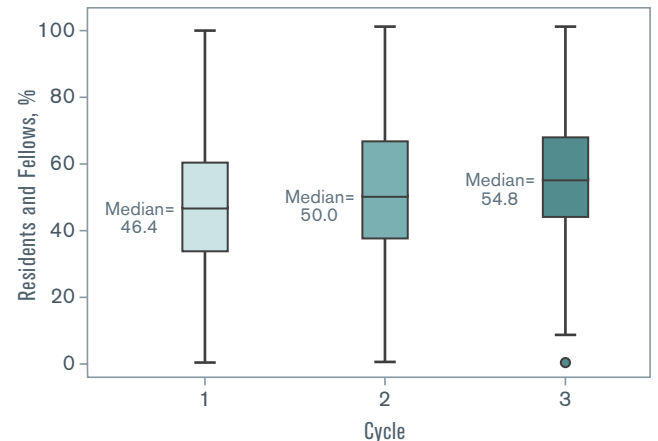
### PERCENTAGE BY RESIDENT AND FELLOW AND CLE CHARACTERISTICS<sup>a</sup>

Residents and Fellows Characteristics	Residents and Fellows, % (n = 8,093)
<b>Gender<sup>***</sup></b>	
Male	52.0
Female	56.3
<b>Level of Training<sup>***</sup></b>	
PGY-1	33.7
PGY-2	53.8
PGY-3	57.2
PGY-4+	52.0
<b>Specialty Group<sup>***</sup></b>	
Medical	58.3
Surgical	50.9
Hospital-based	44.2
<b>CLE Characteristics</b>	
<b>Region<sup>b***</sup></b>	
Northeast	53.2
Midwest	57.2
South	55.6
West	48.1
<b>Bed Size<sup>***</sup></b>	
<200	61.0
200–299	60.6
300–399	55.3
400–499	49.1
500 or more	53.2
<b>Type of Ownership<sup>***</sup></b>	
Non-government, not-for-profit	54.9
Investor-owned, for-profit	42.5
Government, federal	69.5
Government, non-federal	52.4

### DISTRIBUTION ACROSS CLEs<sup>c</sup> (n = 558)



### CHANGE IN MEDIAN BETWEEN CLER VISITS: CYCLES 1–3<sup>d,e</sup> (n = 240)\*\*



<sup>a</sup> Missing data (< 5%) have been omitted; percentages based on valid percent.

<sup>b</sup> Results from clinical learning environments (CLEs) in Puerto Rico (< 1%) omitted to ensure anonymity.

<sup>c</sup> Distribution includes 95% or more of the total number of CLEs (N = 566).

<sup>d</sup> Results based on matched observations; see Methodology (pp. 17-26).

<sup>e</sup> The horizontal line in the middle of the box indicates the median and the top and bottom of the box indicate the 75th and 25th percentiles, respectively, also known as the interquartile range (IQR). The whiskers above and below the box mark the maximum and minimum values, respectively. The points beyond the whiskers are outliers.

\* Statistically significant at  $P < .05$ .

\*\* Statistically significant at  $P < .01$ .

\*\*\* Statistically significant at  $P < .001$ .

Abbreviation: PGY, postgraduate year.



### B3. Percentage of Residents and Fellows Who Reported a Near Miss/Close Call Event

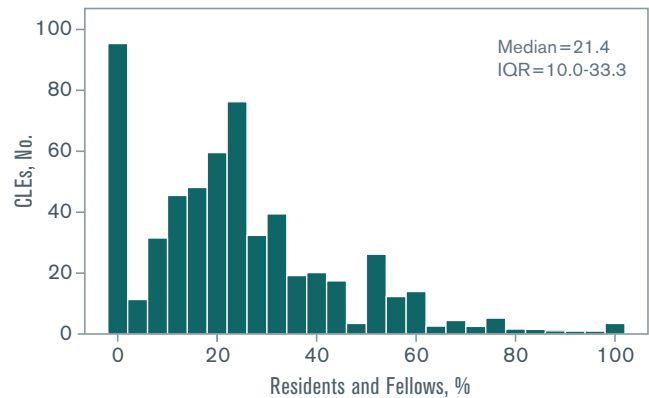
PERCENT OF TOTAL SURVEYED<sup>a</sup> (n = 11,138)

**22.4**

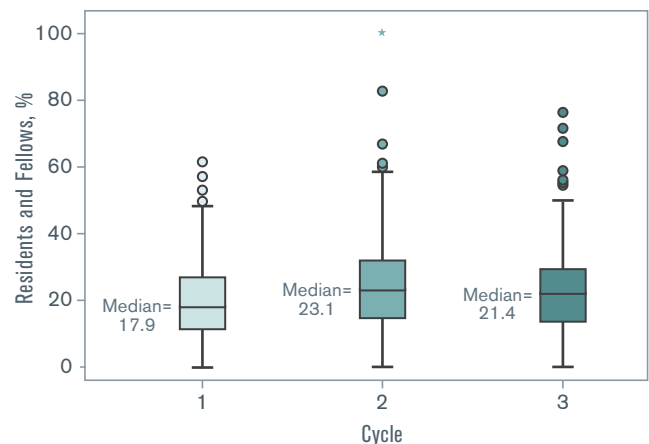
#### PERCENTAGE BY RESIDENT AND FELLOW AND CLE CHARACTERISTICS<sup>a</sup>

Residents and Fellows Characteristics	Residents and Fellows, % (n = 11,138)
<b>Gender<sup>***</sup></b>	
Male	19.6
Female	25.7
<b>Level of Training<sup>***</sup></b>	
PGY-1	9.3
PGY-2	24.8
PGY-3	26.9
PGY-4+	17.9
<b>Specialty Group<sup>***</sup></b>	
Medical	25.6
Surgical	19.9
Hospital-based	16.0
<b>CLE Characteristics</b>	
<b>Region<sup>b***</sup></b>	
Northeast	24.0
Midwest	25.3
South	22.3
West	17.9
<b>Bed Size<sup>*</sup></b>	
<200	24.3
200–299	25.2
300–399	20.2
400–499	21.8
500 or more	22.8
<b>Type of Ownership<sup>***</sup></b>	
Non-government, not-for-profit	23.5
Investor-owned, for-profit	23.1
Government, federal	28.1
Government, non-federal	19.9

DISTRIBUTION ACROSS CLEs<sup>c</sup> (n = 565)



CHANGE IN MEDIAN BETWEEN CLER VISITS: CYCLES 1–3<sup>d,e</sup> (n = 241)<sup>\*\*\*</sup>



<sup>a</sup> Missing data (< 4%) have been omitted; percentages based on valid percent.

<sup>b</sup> Results from clinical learning environments (CLEs) in Puerto Rico (< 1%) omitted to ensure anonymity.

<sup>c</sup> Distribution includes 95% or more of the total number of CLEs (N = 566).

<sup>d</sup> Results based on matched observations; see Methodology (pp. 17-26).

<sup>e</sup> The horizontal line in the middle of the box indicates the median and the top and bottom of the box indicate the 75th and 25th percentiles, respectively, also known as the interquartile range (IQR). The whiskers above and below the box mark the maximum and minimum values, respectively. The points beyond the whiskers are outliers.

\* Statistically significant at  $P < .05$ .

\*\* Statistically significant at  $P < .01$ .

\*\*\* Statistically significant at  $P < .001$ .

Abbreviation: PGY, postgraduate year.

## B4. Percentage of Residents and Fellows Who Reported Receiving Feedback on the Outcome of a Report Submitted<sup>a</sup> through the Clinical Site's Reporting System

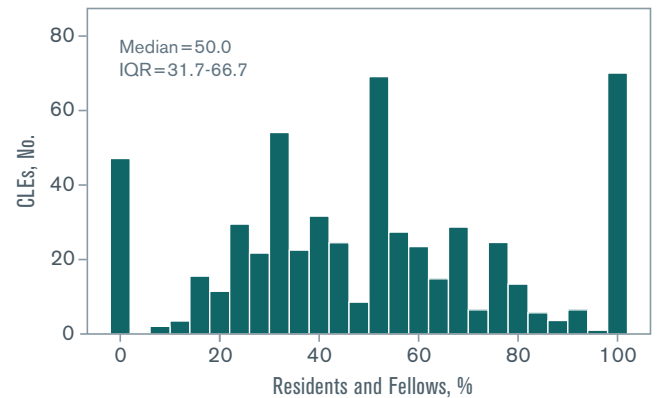
PERCENT OF TOTAL SURVEYED<sup>b</sup> (n = 6,673)

**46.0**

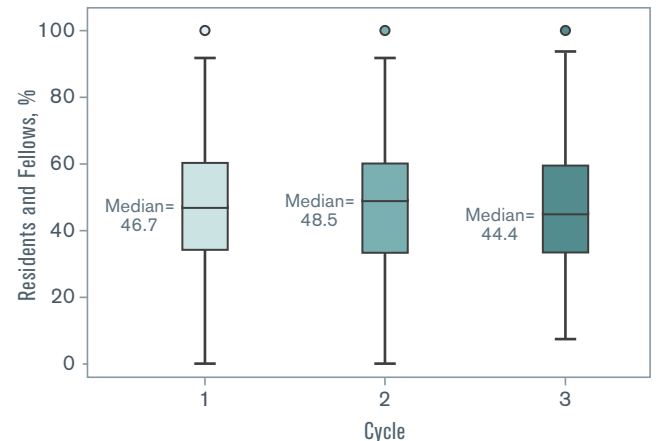
### PERCENTAGE BY RESIDENT AND FELLOW AND CLE CHARACTERISTICS<sup>b</sup>

Residents and Fellows Characteristics	Residents and Fellows, % (n = 6,673)
<b>Gender<sup>***</sup></b>	
Male	49.5
Female	42.3
<b>Level of Training<sup>***</sup></b>	
PGY-1	38.1
PGY-2	42.0
PGY-3	46.3
PGY-4+	48.5
<b>Specialty Group<sup>***</sup></b>	
Medical	44.2
Surgical	50.3
Hospital-based	46.2
<b>CLE Characteristics</b>	
<b>Region<sup>c***</sup></b>	
Northeast	49.1
Midwest	46.0
South	45.6
West	40.1
<b>Bed Size<sup>*</sup></b>	
<200	50.9
200–299	49.7
300–399	45.2
400–499	44.8
500 or more	44.7
<b>Type of Ownership<sup>***</sup></b>	
Non-government, not-for-profit	47.6
Investor-owned, for-profit	36.2
Government, federal	50.2
Government, non-federal	41.6

### DISTRIBUTION ACROSS CLEs<sup>d</sup> (n = 555)



### CHANGE IN MEDIAN BETWEEN CLER VISITS: CYCLES 1–3<sup>e,f</sup> (n = 240)<sup>\*\*\*</sup>



<sup>a</sup> Report submitted by resident or fellow or through a nurse, medical assistant, or supervisor.

<sup>b</sup> Missing data (< 9%) have been omitted; percentages based on valid percent.

<sup>c</sup> Results from clinical learning environments (CLEs) in Puerto Rico (< 1%) omitted to ensure anonymity.

<sup>d</sup> Distribution includes 95% or more of the total number of CLEs (N = 566).

<sup>e</sup> Results based on matched observations; see Methodology (pp. 17–26).

<sup>f</sup> The horizontal line in the middle of the box indicates the median and the top and bottom of the box indicate the 75th and 25th percentiles, respectively, also known as the interquartile range (IQR). The whiskers above and below the box mark the maximum and minimum values, respectively. The points beyond the whiskers are outliers.

\* Statistically significant at  $P < .05$ .

\*\* Statistically significant at  $P < .01$ .

\*\*\* Statistically significant at  $P < .001$ .

Abbreviation: PGY, postgraduate year.

## B5. Percentage of Residents and Fellows (PGY-3 and Above) Who Reported Participating in an Interprofessional (Physicians, Nurses, Administrators, Others) Investigation of a Patient Safety Event (e.g., Root Cause Analysis)

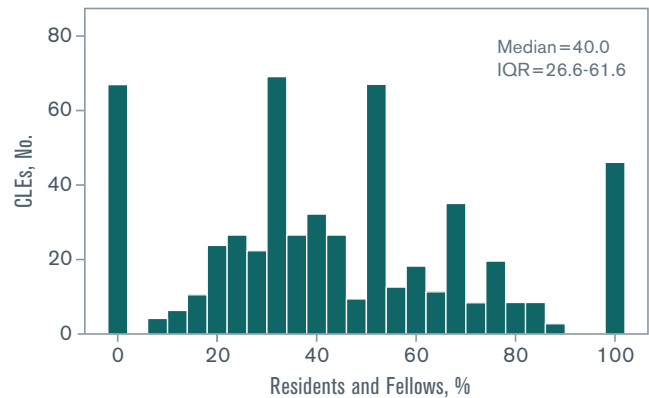
PERCENT OF TOTAL SURVEYED<sup>a</sup> (n = 7,774)

**40.4**

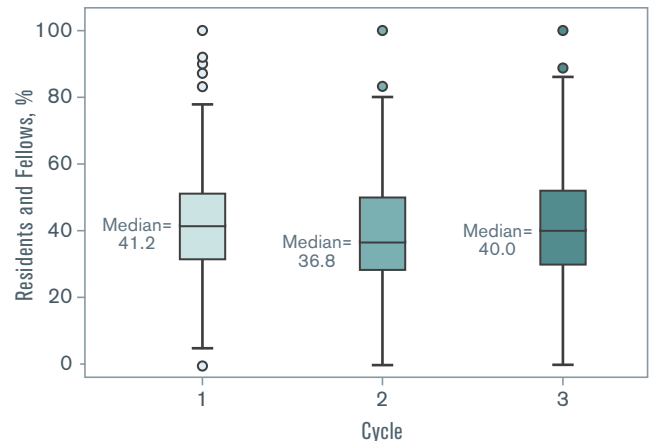
### PERCENTAGE BY RESIDENT AND FELLOW AND FELLOW AND CLE CHARACTERISTICS<sup>a</sup>

Residents and Fellows Characteristics	Residents and Fellows, % (n = 7,774)
<b>Gender</b>	
Male	40.2
Female	40.6
<b>Level of Training</b>	
PGY-3	40.9
PGY-4+	39.9
<b>Specialty Group<sup>**</sup></b>	
Medical	41.3
Surgical	41.2
Hospital-based	36.7
<b>CLE Characteristics</b>	
<b>Region<sup>b**</sup></b>	
Northeast	41.8
Midwest	41.4
South	40.7
West	36.8
<b>Bed Size</b>	
< 200	41.9
200–299	42.8
300–399	37.7
400–499	39.6
500 or more	40.6
<b>Type of Ownership<sup>*</sup></b>	
Non-government, not-for-profit	41.5
Investor-owned, for-profit	36.0
Government, federal	38.6
Government, non-federal	38.5

### DISTRIBUTION ACROSS CLEs<sup>c</sup> (n = 554)



### CHANGE IN MEDIAN BETWEEN CLER VISITS: CYCLES 1–3<sup>d,e</sup> (n = 235)\*



<sup>a</sup> Missing data (< 5%) have been omitted; percentages based on valid percent.

<sup>b</sup> Results from clinical learning environments (CLEs) in Puerto Rico (< 1%) omitted to ensure anonymity.

<sup>c</sup> Distribution includes 95% or more of the total number of CLEs (N = 566).

<sup>d</sup> Results based on matched observations; see Methodology (pp. 17-26).

<sup>e</sup> The horizontal line in the middle of the box indicates the median and the top and bottom of the box indicate the 75th and 25th percentiles, respectively, also known as the interquartile range (IQR). The whiskers above and below the box mark the maximum and minimum values, respectively. The points beyond the whiskers are outliers.

\* Statistically significant at  $P < .05$ .

\*\* Statistically significant at  $P < .01$ .

\*\*\* Statistically significant at  $P < .001$ .

Abbreviation: PGY, postgraduate year.

## B6. Percentage of Residents and Fellows Who Reported Knowing the Clinical Site's Resources to Support Them if Involved in a Major Patient Safety Event

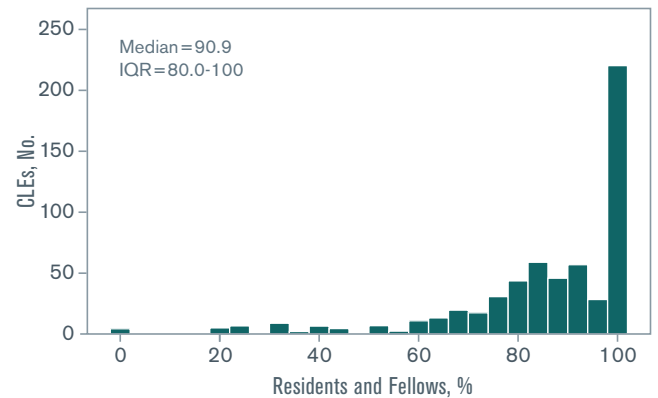
PERCENT OF TOTAL SURVEYED<sup>a</sup> (n = 11,124)

**85.5**

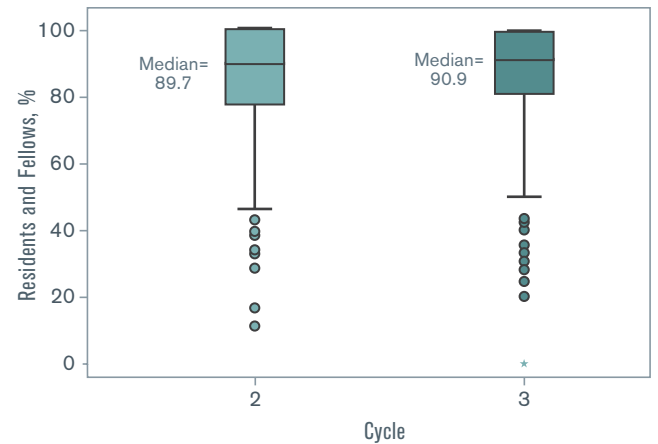
### PERCENTAGE BY RESIDENT AND FELLOW AND CLE CHARACTERISTICS<sup>a</sup>

Residents and Fellows Characteristics	Residents and Fellows, % (n = 11,124)
<b>Gender</b>	
Male	85.8
Female	85.4
<b>Level of Training</b>	
PGY-1	85.7
PGY-2	86.0
PGY-3	86.0
PGY-4+	85.0
<b>Specialty Group</b>	
Medical	85.3
Surgical	86.0
Hospital-based	85.8
<b>CLE Characteristics</b>	
<b>Region<sup>b***</sup></b>	
Northeast	82.7
Midwest	86.0
South	86.0
West	89.3
<b>Bed Size<sup>***</sup></b>	
<200	87.2
200–299	84.6
300–399	82.6
400–499	81.2
500 or more	87.0
<b>Type of Ownership<sup>***</sup></b>	
Non-government, not-for-profit	86.7
Investor-owned, for-profit	75.2
Government, federal	91.1
Government, non-federal	83.4

### DISTRIBUTION ACROSS CLEs<sup>c</sup> (n=565)



### CHANGE IN MEDIAN BETWEEN CLER VISITS: CYCLES 2–3<sup>d,e</sup> (n=501)<sup>\*\*\*</sup>



<sup>a</sup> Missing data (< 4%) have been omitted; percentages based on valid percent.

<sup>b</sup> Results from clinical learning environments (CLEs) in Puerto Rico (< 1%) omitted to ensure anonymity.

<sup>c</sup> Distribution includes 95% or more of the total number of CLEs (N = 566).

<sup>d</sup> Results based on matched observations; see Methodology (pp. 17-26).

<sup>e</sup> The horizontal line in the middle of the box indicates the median and the top and bottom of the box indicate the 75th and 25th percentiles, respectively, also known as the interquartile range (IQR). The whiskers above and below the box mark the maximum and minimum values, respectively. The points beyond the whiskers are outliers.

\* Statistically significant at  $P < .05$ .

\*\* Statistically significant at  $P < .01$ .

\*\*\* Statistically significant at  $P < .001$ .

Abbreviation: PGY, postgraduate year.

## B7. Percentage of Residents and Fellows (PGY-2 and Above) Who Reported Knowing the Clinical Site's Priorities in the Area of Quality Improvement

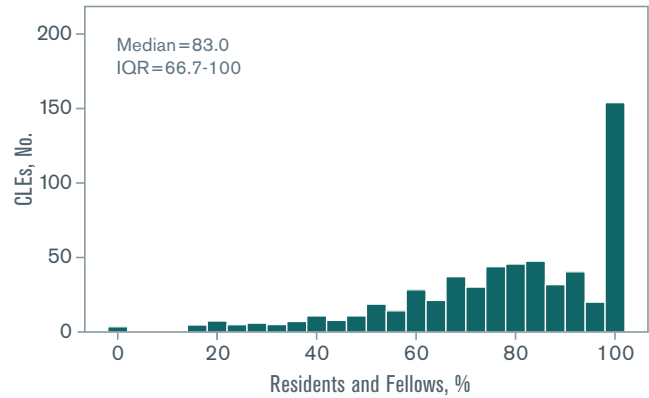
PERCENT OF TOTAL SURVEYED<sup>a</sup> (n = 10,914)

**75.3**

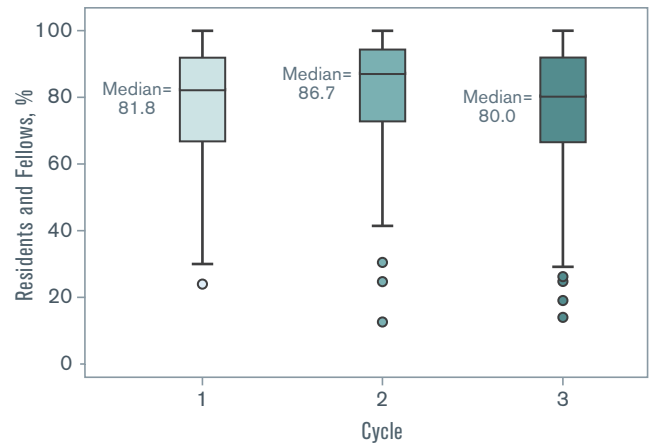
### PERCENTAGE BY RESIDENT AND FELLOW AND CLE CHARACTERISTICS<sup>a</sup>

Residents and Fellows Characteristics	Residents and Fellows, % (n = 10,914)
<b>Gender*</b>	
Male	74.5
Female	76.4
<b>Level of Training***</b>	
PGY-2	76.8
PGY-3	77.0
PGY-4+	73.0
<b>Specialty Group*</b>	
Medical	75.6
Surgical	76.5
Hospital-based	73.0
<b>CLE Characteristics</b>	
<b>Region<sup>b***</sup></b>	
Northeast	75.2
Midwest	76.1
South	77.0
West	69.6
<b>Bed Size***</b>	
< 200	79.9
200–299	83.0
300–399	77.7
400–499	69.8
500 or more	73.6
<b>Type of Ownership***</b>	
Non-government, not-for-profit	76.4
Investor-owned, for-profit	73.3
Government, federal	74.1
Government, non-federal	71.8

### DISTRIBUTION ACROSS CLEs<sup>c</sup> (n=564)



### CHANGE IN MEDIAN BETWEEN CLER VISITS: CYCLES 1–3<sup>d,e</sup> (n=237)\*\*



<sup>a</sup> Missing data (< 4%) have been omitted; percentages based on valid percent.

<sup>b</sup> Results from clinical learning environments (CLEs) in Puerto Rico (< 1%) omitted to ensure anonymity.

<sup>c</sup> Distribution includes 95% or more of the total number of CLEs (N = 566).

<sup>d</sup> Results based on matched observations; see Methodology (pp. 17-26).

<sup>e</sup> The horizontal line in the middle of the box indicates the median and the top and bottom of the box indicate the 75th and 25th percentiles, respectively, also known as the interquartile range (IQR). The whiskers above and below the box mark the maximum and minimum values, respectively. The points beyond the whiskers are outliers.

\* Statistically significant at  $P < .05$ .

\*\* Statistically significant at  $P < .01$ .

\*\*\* Statistically significant at  $P < .001$ .

Abbreviation: PGY, postgraduate year.

## B8. Percentage of Residents and Fellows (PGY-2 and Above) Who Reported Participating in a Quality Improvement Project of Their Own Design or One Designed by Their Program or Department

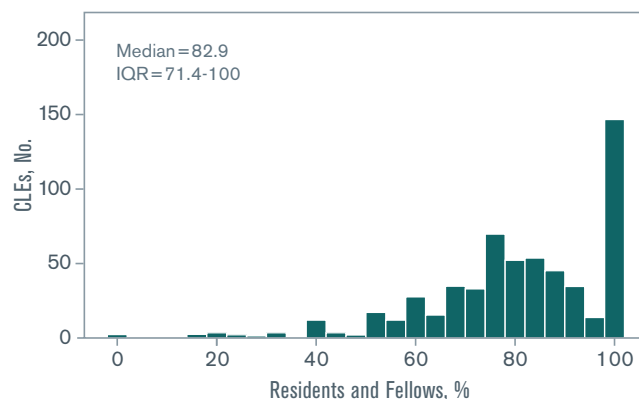
PERCENT OF TOTAL SURVEYED<sup>a</sup> (n = 10,914)

**78.9**

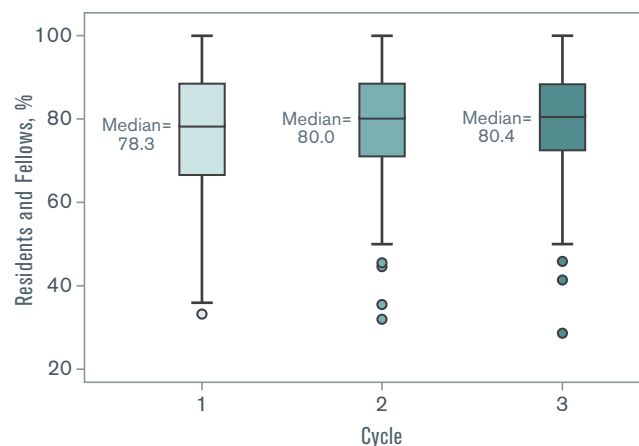
### PERCENTAGE BY RESIDENT AND FELLOW AND CLE CHARACTERISTICS<sup>a</sup>

Residents and Fellows Characteristics	Residents and Fellows, % (n = 10,914)
<b>Gender<sup>***</sup></b>	
Male	77.8
Female	80.2
<b>Level of Training<sup>***</sup></b>	
PGY-2	75.5
PGY-3	82.4
PGY-4+	78.5
<b>Specialty Group<sup>***</sup></b>	
Medical	81.4
Surgical	75.5
Hospital-based	75.2
<b>CLE Characteristics</b>	
<b>Region<sup>b***</sup></b>	
Northeast	75.4
Midwest	78.6
South	80.6
West	81.2
<b>Bed Size<sup>***</sup></b>	
< 200	82.0
200–299	83.2
300–399	77.6
400–499	76.8
500 or more	78.2
<b>Type of Ownership</b>	
Non-government, not-for-profit	78.6
Investor-owned, for-profit	80.2
Government, federal	82.2
Government, non-federal	78.2

### DISTRIBUTION ACROSS CLEs<sup>c</sup> (n = 564)



### CHANGE IN MEDIAN BETWEEN CLER VISITS: CYCLES 1–3<sup>d,e</sup> (n = 237)\*



<sup>a</sup> Missing data (< 4%) have been omitted; percentages based on valid percent.

<sup>b</sup> Results from clinical learning environments (CLEs) in Puerto Rico (< 1%) omitted to ensure anonymity.

<sup>c</sup> Distribution includes 95% or more of the total number of CLEs (N = 566).

<sup>d</sup> Results based on matched observations; see Methodology (pp. 17-26).

<sup>e</sup> The horizontal line in the middle of the box indicates the median and the top and bottom of the box indicate the 75th and 25th percentiles, respectively, also known as the interquartile range (IQR). The whiskers above and below the box mark the maximum and minimum values, respectively. The points beyond the whiskers are outliers.

\* Statistically significant at  $P < .05$ .

\*\* Statistically significant at  $P < .01$ .

\*\*\* Statistically significant at  $P < .001$ .

Abbreviation: PGY, postgraduate year.

## B9. Percentage of Residents and Fellows (PGY-2 and Above) Who Reported Participating in a Quality Improvement Project Linked to One or More of the Clinical Site's Quality Improvement Goals

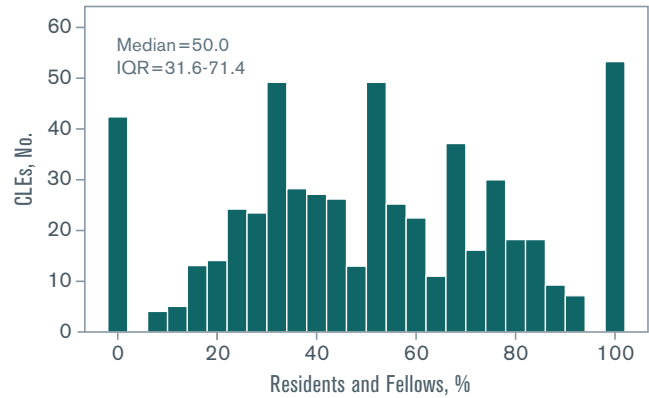
PERCENT OF TOTAL SURVEYED<sup>a</sup> (n = 8,440)

**47.5**

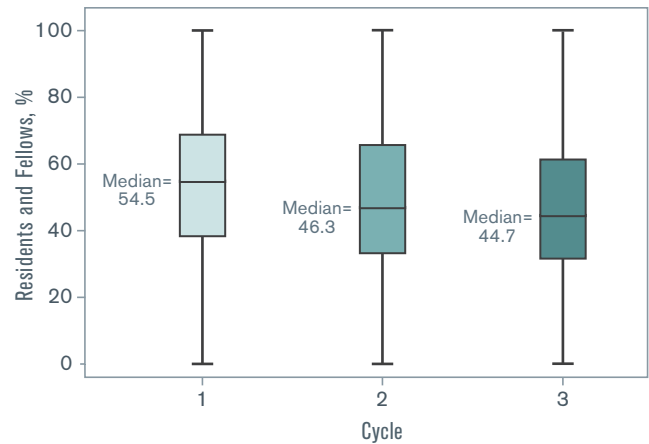
### PERCENTAGE BY RESIDENT AND FELLOW AND CLE CHARACTERISTICS<sup>a</sup>

Residents and Fellows Characteristics	Residents and Fellows, % (n = 8,440)
<b>Gender</b>	
Male	48.6
Female	46.3
<b>Level of Training</b>	
PGY-2	48.9
PGY-3	48.2
PGY-4+	45.9
<b>Specialty Group<sup>***</sup></b>	
Medical	47.1
Surgical	51.0
Hospital-based	44.0
<b>CLE Characteristics</b>	
<b>Region<sup>b***</sup></b>	
Northeast	49.8
Midwest	46.5
South	46.9
West	43.3
<b>Bed Size<sup>***</sup></b>	
< 200	52.4
200–299	53.3
300–399	48.4
400–499	46.0
500 or more	45.1
<b>Type of Ownership<sup>***</sup></b>	
Non-government, not-for-profit	47.7
Investor-owned, for-profit	40.9
Government, federal	50.4
Government, non-federal	46.1

### DISTRIBUTION ACROSS CLEs<sup>c</sup> (n = 563)



### CHANGE IN MEDIAN BETWEEN CLER VISITS: CYCLES 1–3<sup>d,e</sup> (n = 236)\*\*



<sup>a</sup> Missing data (< 5%) have been omitted; percentages based on valid percent.

<sup>b</sup> Results from clinical learning environments (CLEs) in Puerto Rico (< 1%) omitted to ensure anonymity.

<sup>c</sup> Distribution includes 95% or more of the total number of CLEs (N = 566).

<sup>d</sup> Results based on matched observations; see Methodology (pp. 17-26).

<sup>e</sup> The horizontal line in the middle of the box indicates the median and the top and bottom of the box indicate the 75th and 25th percentiles, respectively, also known as the interquartile range (IQR). The whiskers above and below the box mark the maximum and minimum values, respectively. The points beyond the whiskers are outliers.

\* Statistically significant at  $P < .05$ .

\*\* Statistically significant at  $P < .01$ .

\*\*\* Statistically significant at  $P < .001$ .

Abbreviation: PGY, postgraduate year.

## B10. Percentage of Residents and Fellows (PGY-2 and Above) Who Reported Being Engaged in Interprofessional Quality Improvement Teams (e.g., Nurses, Administrators, Pharmacists, etc.) While Participating in a Quality Improvement Project Directly Linked to One or More of the Clinical Site’s Quality Improvement Goals

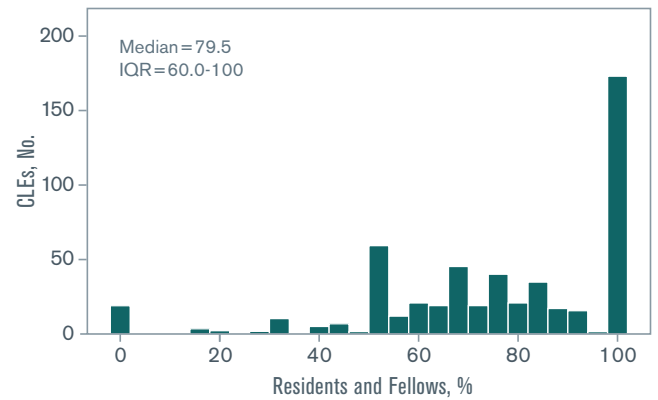
PERCENT OF TOTAL SURVEYED<sup>a</sup> (n = 3,881)

**74.2**

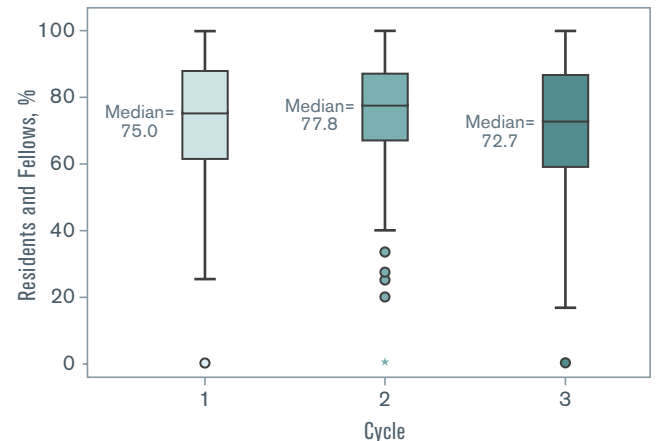
### PERCENTAGE BY RESIDENT AND FELLOW AND CLE CHARACTERISTICS<sup>a</sup>

Residents and Fellows Characteristics	Residents and Fellows, % (n = 3,881)
<b>Gender</b>	
Male	74.4
Female	74.0
<b>Level of Training</b>	
PGY-2	74.5
PGY-3	74.9
PGY-4+	73.5
<b>Specialty Group</b>	
Medical	75.3
Surgical	73.4
Hospital-based	71.5
<b>CLE Characteristics</b>	
<b>Region<sup>b</sup></b>	
Northeast	73.0
Midwest	73.1
South	75.0
West	74.1
<b>Bed Size</b>	
< 200	78.2
200–299	74.4
300–399	72.6
400–499	74.4
500 or more	73.3
<b>Type of Ownership</b>	
Non-government, not-for-profit	73.9
Investor-owned, for-profit	73.1
Government, federal	80.3
Government, non-federal	73.1

### DISTRIBUTION ACROSS CLEs<sup>c</sup> (n=518)



### CHANGE IN MEDIAN BETWEEN CLER VISITS: CYCLES 1–3<sup>d,e</sup> (n=231)



<sup>a</sup> Missing data (< 7%) have been omitted; percentages based on valid percent.

<sup>b</sup> Results from clinical learning environments (CLEs) in Puerto Rico (< 1%) omitted to ensure anonymity.

<sup>c</sup> Distribution includes 90% or more of the total number of CLEs (N = 566).

<sup>d</sup> Results based on matched observations; see Methodology (pp. 17-26).

<sup>e</sup> The horizontal line in the middle of the box indicates the median and the top and bottom of the box indicate the 75th and 25th percentiles, respectively, also known as the interquartile range (IQR). The whiskers above and below the box mark the maximum and minimum values, respectively. The points beyond the whiskers are outliers.

\* Statistically significant at  $P < .05$ .

\*\* Statistically significant at  $P < .01$ .

\*\*\* Statistically significant at  $P < .001$ .

Abbreviation: PGY, postgraduate year.



## B11. Percentage of Residents and Fellows Who Reported Receiving Aggregated or Benchmarked Quality Performance Data About the Care of Their Own Patients

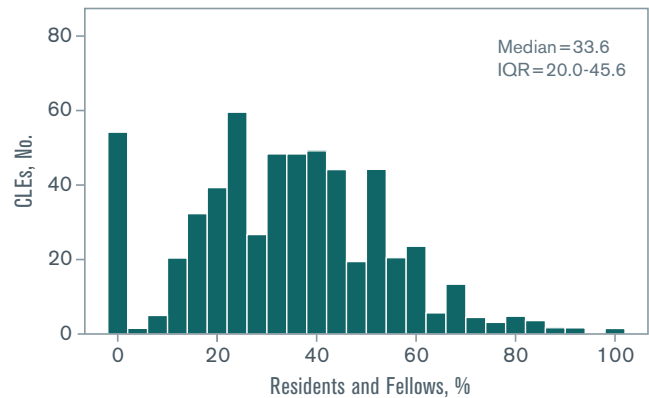
PERCENT OF TOTAL SURVEYED<sup>a</sup> (n = 11,105)

**31.8**

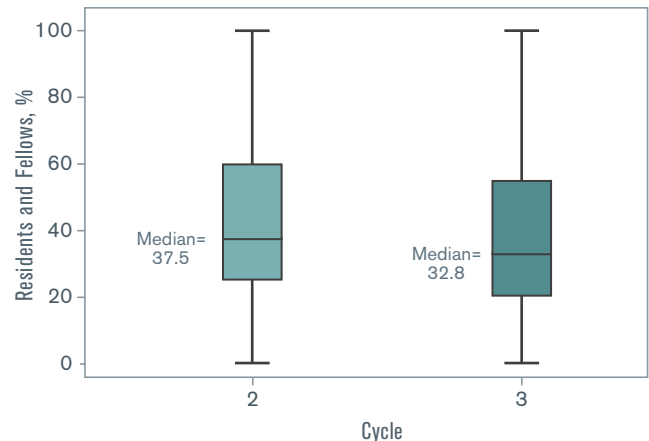
### PERCENTAGE BY RESIDENT AND FELLOW AND CLE CHARACTERISTICS<sup>a</sup>

Residents and Fellows Characteristics	Residents and Fellows, % (n = 11,105)
<b>Gender</b>	
Male	32.1
Female	31.6
<b>Level of Training<sup>***</sup></b>	
PGY-1	28.2
PGY-2	37.2
PGY-3	35.9
PGY-4+	25.4
<b>Specialty Group<sup>***</sup></b>	
Medical	36.6
Surgical	23.0
Hospital-based	28.4
<b>CLE Characteristics</b>	
<b>Region<sup>b***</sup></b>	
Northeast	30.5
Midwest	33.4
South	30.2
West	33.4
<b>Bed Size<sup>**</sup></b>	
<200	34.3
200–299	36.1
300–399	32.8
400–499	28.9
500 or more	30.5
<b>Type of Ownership<sup>***</sup></b>	
Non-government, not-for-profit	32.4
Investor-owned, for-profit	27.4
Government, federal	32.5
Government, non-federal	29.4

DISTRIBUTION ACROSS CLEs (n=566)



CHANGE IN MEDIAN BETWEEN CLER VISITS: CYCLES 2–3<sup>c,d</sup> (n=501)<sup>\*\*\*</sup>



<sup>a</sup> Missing data (< 4%) have been omitted; percentages based on valid percent.

<sup>b</sup> Results from clinical learning environments (CLEs) in Puerto Rico (< 1%) omitted to ensure anonymity.

<sup>c</sup> Results based on matched observations; see Methodology (pp. 17-26).

<sup>d</sup> The horizontal line in the middle of the box indicates the median and the top and bottom of the box indicate the 75th and 25th percentiles, respectively, also known as the interquartile range (IQR). The whiskers above and below the box mark the maximum and minimum values, respectively. The points beyond the whiskers are outliers.

\* Statistically significant at  $P < .05$ .

\*\* Statistically significant at  $P < .01$ .

\*\*\* Statistically significant at  $P < .001$ .

Abbreviation: PGY, postgraduate year.

## B12. Percentage of Residents and Fellows Who Reported Receiving Cultural Competency Training Specific to Populations at Risk for Health Care Disparities at Their Clinical Site

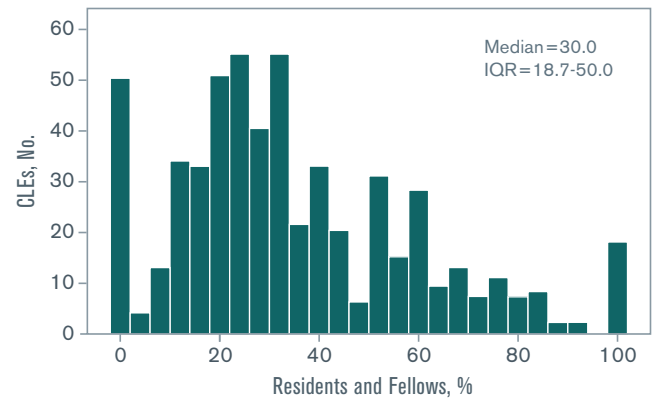
PERCENT OF TOTAL SURVEYED<sup>a</sup> (n = 11,106)

**31.2**

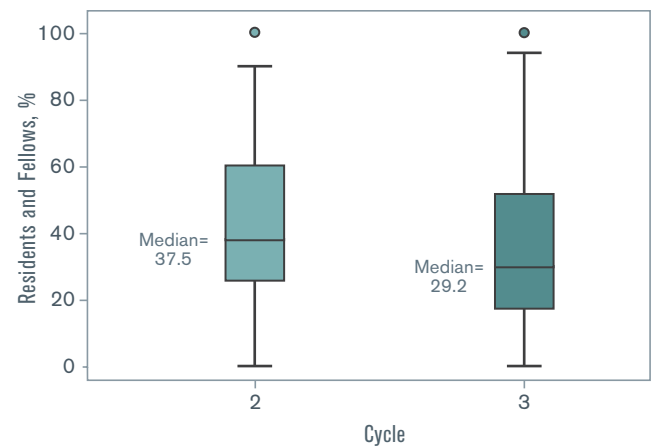
### PERCENTAGE BY RESIDENT AND FELLOW AND FELLOW AND CLE CHARACTERISTICS<sup>a</sup>

Residents and Fellows Characteristics	Residents and Fellows, % (n = 11,106)
<b>Gender**</b>	
Male	30.7
Female	31.7
<b>Level of Training***</b>	
PGY-1	25.3
PGY-2	34.1
PGY-3	33.5
PGY-4+	27.9
<b>Specialty Group***</b>	
Medical	33.4
Surgical	29.9
Hospital-based	26.1
<b>CLE Characteristics</b>	
<b>Region<sup>b**</sup></b>	
Northeast	31.8
Midwest	30.5
South	30.1
West	31.6
<b>Bed Size***</b>	
<200	31.3
200–299	35.3
300–399	32.4
400–499	32.1
500 or more	29.4
<b>Type of Ownership***</b>	
Non-government, not-for-profit	30.4
Investor-owned, for-profit	24.5
Government, federal	30.9
Government, non-federal	33.5

### DISTRIBUTION ACROSS CLEs (n=566)



### CHANGE IN MEDIAN BETWEEN CLER VISITS: CYCLES 2–3<sup>c,d</sup> (n=502)\*\*\*



<sup>a</sup> Missing data (< 4%) have been omitted; percentages based on valid percent.

<sup>b</sup> Results from clinical learning environments (CLEs) in Puerto Rico (< 1%) omitted to ensure anonymity.

<sup>c</sup> Results based on matched observations; see Methodology (pp. 17-26).

<sup>d</sup> The horizontal line in the middle of the box indicates the median and the top and bottom of the box indicate the 75th and 25th percentiles, respectively, also known as the interquartile range (IQR). The whiskers above and below the box mark the maximum and minimum values, respectively. The points beyond the whiskers are outliers.

\* Statistically significant at  $P < .05$ .

\*\* Statistically significant at  $P < .01$ .

\*\*\* Statistically significant at  $P < .001$ .

Abbreviation: PGY, postgraduate year.

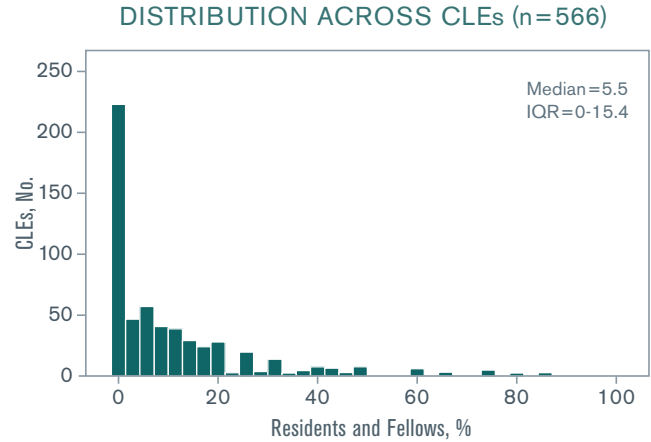
## B13. Percentage of Residents and Fellows Who Reported Participating in a Quality Improvement Project Focused on Eliminating Health Care Disparities

PERCENT OF TOTAL SURVEYED<sup>a</sup> (n = 11,112)

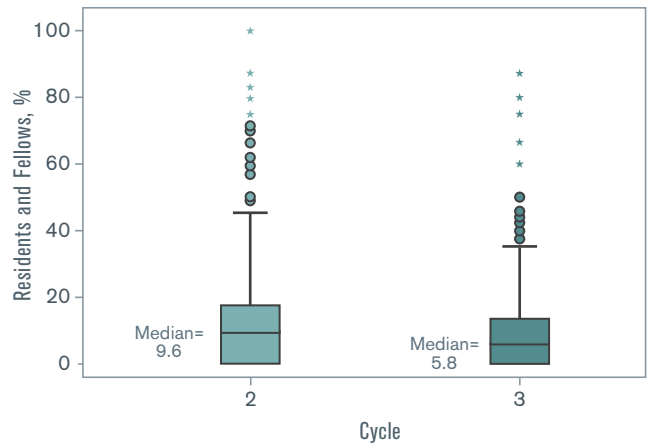
**8.6**

### PERCENTAGE BY RESIDENT AND FELLOW AND FELLOW AND CLE CHARACTERISTICS<sup>a</sup>

Residents and Fellows Characteristics	Residents and Fellows, % (n = 11,112)
<b>Gender<sup>***</sup></b>	
Male	7.4
Female	10.0
<b>Level of Training<sup>***</sup></b>	
PGY-1	5.6
PGY-2	8.9
PGY-3	10.4
PGY-4+	7.1
<b>Specialty Group<sup>***</sup></b>	
Medical	10.0
Surgical	7.9
Hospital-based	4.9
<b>CLE Characteristics</b>	
<b>Region<sup>b***</sup></b>	
Northeast	10.0
Midwest	8.2
South	7.6
West	7.9
<b>Bed Size<sup>**</sup></b>	
<200	8.5
200–299	9.2
300–399	9.2
400–499	9.4
500 or more	7.8
<b>Type of Ownership<sup>*</sup></b>	
Non-government, not-for-profit	8.8
Investor-owned, for-profit	9.1
Government, federal	3.4
Government, non-federal	7.9



### CHANGE IN MEDIAN BETWEEN CLER VISITS: CYCLES 2–3<sup>c,d</sup> (n=504)<sup>\*\*\*</sup>



<sup>a</sup> Missing data (< 4%) have been omitted; percentages based on valid percent.

<sup>b</sup> Results from clinical learning environments (CLEs) in Puerto Rico (< 1%) omitted to ensure anonymity.

<sup>c</sup> Results based on matched observations; see Methodology (pp. 17-26).

<sup>d</sup> The horizontal line in the middle of the box indicates the median and the top and bottom of the box indicate the 75th and 25th percentiles, respectively, also known as the interquartile range (IQR). The whiskers above and below the box mark the maximum and minimum values, respectively. The points beyond the whiskers are outliers.

\* Statistically significant at  $P < .05$ .

\*\* Statistically significant at  $P < .01$ .

\*\*\* Statistically significant at  $P < .001$ .

Abbreviation: PGY, postgraduate year.

## B14. Percentage of Residents and Fellows Who Reported Participating in Formal Interprofessional Educational Activities in How to Transition Patients' Care

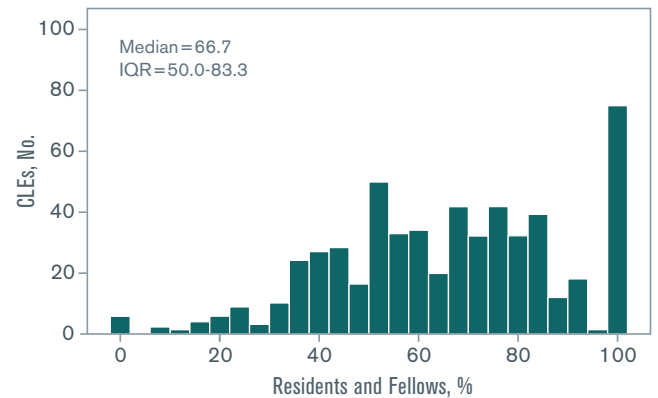
PERCENT OF TOTAL SURVEYED<sup>a</sup> (n = 11,105)

**59.4**

### PERCENTAGE BY RESIDENT AND FELLOW AND CLE CHARACTERISTICS<sup>a</sup>

Residents and Fellows Characteristics	Residents and Fellows, % (n = 11,105)
<b>Gender<sup>***</sup></b>	
Male	59.6
Female	59.1
<b>Level of Training<sup>***</sup></b>	
PGY-1	54.1
PGY-2	64.8
PGY-3	63.4
PGY-4+	53.0
<b>Specialty Group<sup>***</sup></b>	
Medical	62.4
Surgical	60.8
Hospital-based	48.5
<b>CLE Characteristics</b>	
<b>Region<sup>b**</sup></b>	
Northeast	58.3
Midwest	60.3
South	61.2
West	55.8
<b>Bed Size<sup>***</sup></b>	
<200	64.4
200–299	68.9
300–399	58.2
400–499	56.8
500 or more	57.6
<b>Type of Ownership<sup>***</sup></b>	
Non-government, not-for-profit	59.9
Investor-owned, for-profit	59.3
Government, federal	72.8
Government, non-federal	55.8

DISTRIBUTION ACROSS CLEs (n=566)



<sup>a</sup> Missing data (< 4%) have been omitted; percentages based on valid percent.

<sup>b</sup> Results from clinical learning environments (CLEs) in Puerto Rico (< 1%) omitted to ensure anonymity.

\* Statistically significant at  $P < .05$ .

\*\* Statistically significant at  $P < .01$ .

\*\*\* Statistically significant at  $P < .001$ .

Abbreviation: IQR, interquartile range; PGY, postgraduate year.

## B15. Percentage of Residents and Fellows Who Reported Following a Standardized Process for Handling Transitions of Care During Hand-Offs Between Shifts

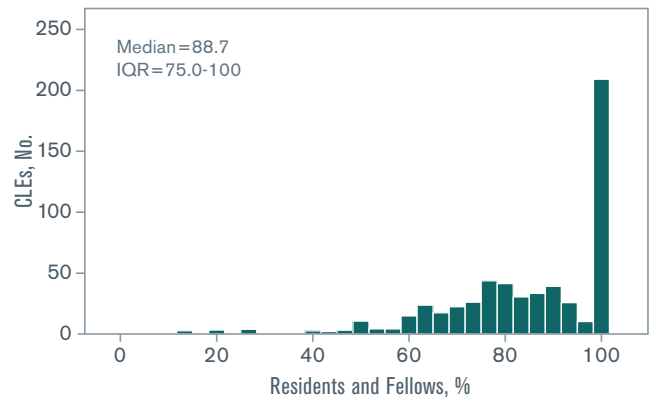
PERCENT OF TOTAL SURVEYED<sup>a</sup> (n = 10,961)

**78.3**

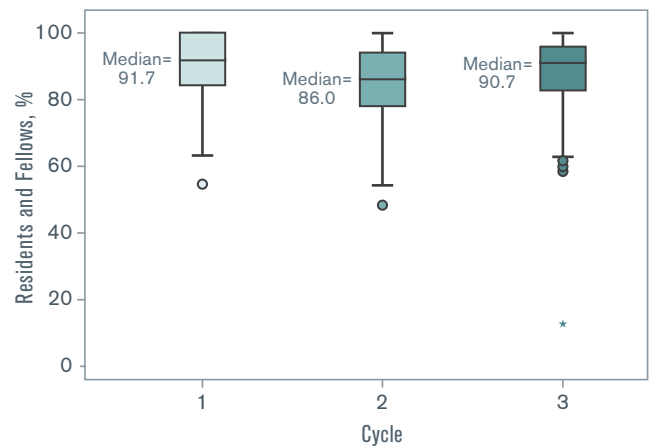
### PERCENTAGE BY RESIDENT AND FELLOW AND FELLOW AND CLE CHARACTERISTICS<sup>a</sup>

Residents and Fellows Characteristics	Residents and Fellows, % (n = 10,961)
<b>Gender<sup>***</sup></b>	
Male	76.9
Female	80.0
<b>Level of Training<sup>***</sup></b>	
PGY-1	89.0
PGY-2	87.8
PGY-3	83.2
PGY-4+	68.1
<b>Specialty Group<sup>***</sup></b>	
Medical	82.9
Surgical	82.5
Hospital-based	59.8
<b>CLE Characteristics</b>	
<b>Region<sup>b**</sup></b>	
Northeast	78.4
Midwest	79.4
South	77.0
West	77.3
<b>Bed Size<sup>***</sup></b>	
<200	87.1
200–299	87.7
300–399	81.4
400–499	74.7
500 or more	75.4
<b>Type of Ownership*</b>	
Non-government, not-for-profit	78.9
Investor-owned, for-profit	79.7
Government, federal	78.0
Government, non-federal	75.8

### DISTRIBUTION ACROSS CLEs<sup>c</sup> (n = 542)



### CHANGE IN MEDIAN BETWEEN CLER VISITS: CYCLES 1–3<sup>d,e</sup> (n = 241)<sup>\*\*\*</sup>



<sup>a</sup> Missing data (<3%) have been omitted; percentages based on valid percent.

<sup>b</sup> Results from clinical learning environments (CLEs) in Puerto Rico (<1%) omitted to ensure anonymity.

<sup>c</sup> Distribution includes 95% or more of the total number of CLEs (N = 566). Of note, results from visits that were held exclusively in the ambulatory care setting (9%) have been omitted due to modifications to the question and/or scenario to better fit the setting. These modifications limited comparability across inpatient and ambulatory care settings.

<sup>d</sup> Results based on matched observations; see Methodology (pp. 17-26).

<sup>e</sup> The horizontal line in the middle of the box indicates the median and the top and bottom of the box indicate the 75th and 25th percentiles, respectively, also known as the interquartile range (IQR). The whiskers above and below the box mark the maximum and minimum values, respectively. The points beyond the whiskers are outliers.

\* Statistically significant at  $P < .05$ . \*\* Statistically significant at  $P < .01$ .

\*\*\* Statistically significant at  $P < .001$ .

Abbreviation: PGY, postgraduate year.

## B16. Percentage of Residents and Fellows Who Reported Following a Standardized Process for Hand-Offs Between Shifts that Included a Standardized Written Template for Communication

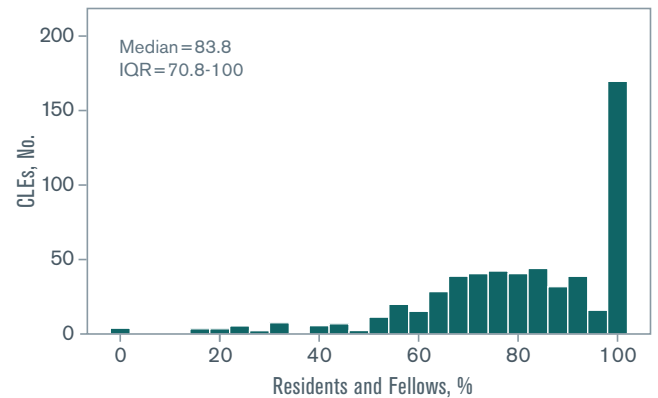
PERCENT OF TOTAL SURVEYED<sup>a</sup> (n = 8,431)

**78.4**

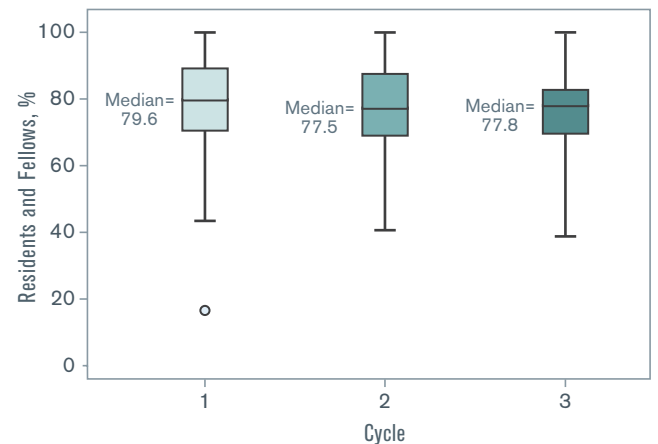
### PERCENTAGE BY RESIDENT AND FELLOW AND CLE CHARACTERISTICS<sup>a</sup>

Residents and Fellows Characteristics	Residents and Fellows, % (n = 8,431)
<b>Gender<sup>***</sup></b>	
Male	75.4
Female	81.7
<b>Level of Training<sup>***</sup></b>	
PGY-1	83.1
PGY-2	83.1
PGY-3	84.1
PGY-4+	69.0
<b>Specialty Group<sup>***</sup></b>	
Medical	85.0
Surgical	73.6
Hospital-based	59.0
<b>CLE Characteristics</b>	
<b>Region<sup>b***</sup></b>	
Northeast	80.3
Midwest	76.7
South	78.7
West	75.7
<b>Bed Size<sup>***</sup></b>	
<200	85.2
200–299	83.8
300–399	79.8
400–499	79.1
500 or more	75.6
<b>Type of Ownership<sup>*</sup></b>	
Non-government, not-for-profit	78.0
Investor-owned, for-profit	82.8
Government, federal	83.4
Government, non-federal	77.6

### DISTRIBUTION ACROSS CLEs<sup>c</sup> (n = 542)



### CHANGE IN MEDIAN BETWEEN CLER VISITS: CYCLES 1–3<sup>d,e</sup> (n = 241)\*



<sup>a</sup> Missing data (< 4%) have been omitted; percentages based on valid percent.

<sup>b</sup> Results from clinical learning environments (CLEs) in Puerto Rico (< 1%) omitted to ensure anonymity.

<sup>c</sup> Distribution includes 95% or more of the total number of CLEs (N = 566). Of note, results from visits that were held exclusively in the ambulatory care setting (9%) have been omitted due to modifications to the question and/or scenario to better fit the setting. These modifications limited comparability across inpatient and ambulatory care settings.

<sup>d</sup> Results based on matched observations; see Methodology (pp. 17-26).

<sup>e</sup> The horizontal line in the middle of the box indicates the median and the top and bottom of the box indicate the 75th and 25th percentiles, respectively, also known as the interquartile range (IQR). The whiskers above and below the box mark the maximum and minimum values, respectively. The points beyond the whiskers are outliers.

\* Statistically significant at  $P < .05$ . \*\* Statistically significant at  $P < .01$ .

\*\*\* Statistically significant at  $P < .001$ .

Abbreviation: PGY, postgraduate year.

## B17. Percentage of Residents and Fellows Who Reported Following Standardized Processes for Handling Transitions of Care from Inpatient to Outpatient Care

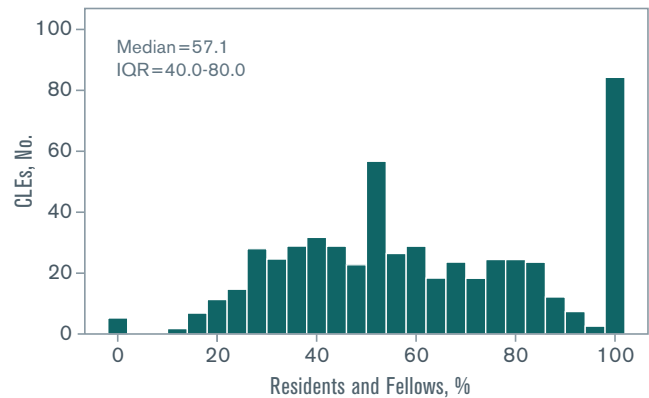
PERCENT OF TOTAL SURVEYED<sup>a</sup> (n = 10,942)

**48.2**

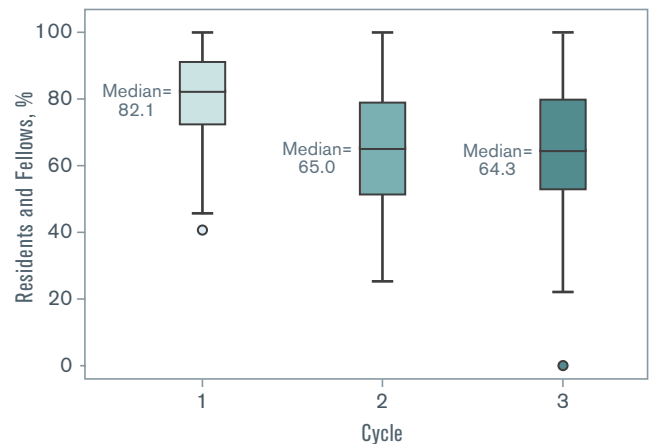
### PERCENTAGE BY RESIDENT AND FELLOW AND FELLOW AND CLE CHARACTERISTICS<sup>a</sup>

Residents and Fellows Characteristics	Residents and Fellows, % (n = 10,942)
<b>Gender<sup>***</sup></b>	
Male	46.3
Female	50.4
<b>Level of Training<sup>***</sup></b>	
PGY-1	60.1
PGY-2	57.2
PGY-3	52.6
PGY-4+	38.6
<b>Specialty Group<sup>***</sup></b>	
Medical	58.8
Surgical	50.2
Hospital-based	14.5
<b>CLE Characteristics</b>	
<b>Region<sup>b***</sup></b>	
Northeast	51.0
Midwest	49.7
South	45.0
West	45.9
<b>Bed Size<sup>***</sup></b>	
<200	64.3
200–299	59.7
300–399	52.4
400–499	46.1
500 or more	43.6
<b>Type of Ownership<sup>***</sup></b>	
Non-government, not-for-profit	49.0
Investor-owned, for-profit	52.3
Government, federal	48.9
Government, non-federal	45.0

### DISTRIBUTION ACROSS CLEs<sup>c</sup> (n = 542)



### CHANGE IN MEDIAN BETWEEN CLER VISITS: CYCLES 1–3<sup>d,e</sup> (n = 242)<sup>\*\*\*</sup>



<sup>a</sup> Missing data (<3%) have been omitted; percentages based on valid percent.

<sup>b</sup> Results from clinical learning environments (CLEs) in Puerto Rico (<1%) omitted to ensure anonymity.

<sup>c</sup> Distribution includes 95% or more of the total number of CLEs (N = 566). Of note, results from visits that were held exclusively in the ambulatory care setting (9%) have been omitted due to modifications to the question and/or scenario to better fit the setting. These modifications limited comparability across inpatient and ambulatory care settings.

<sup>d</sup> Results based on matched observations; see Methodology (pp. 17-26).

<sup>e</sup> The horizontal line in the middle of the box indicates the median and the top and bottom of the box indicate the 75th and 25th percentiles, respectively, also known as the interquartile range (IQR). The whiskers above and below the box mark the maximum and minimum values, respectively. The points beyond the whiskers are outliers.

\* Statistically significant at  $P < .05$ . \*\* Statistically significant at  $P < .01$ .

\*\*\* Statistically significant at  $P < .001$ .

Abbreviation: PGY, postgraduate year.

## B18. Percentage of Residents and Fellows Who Reported Having Been Placed, or Witnessing One of Their Peers Placed, in a Situation Where They Believed There Was Inadequate Supervision at the Clinical Site (e.g., the Attending Physician Was Not Available)

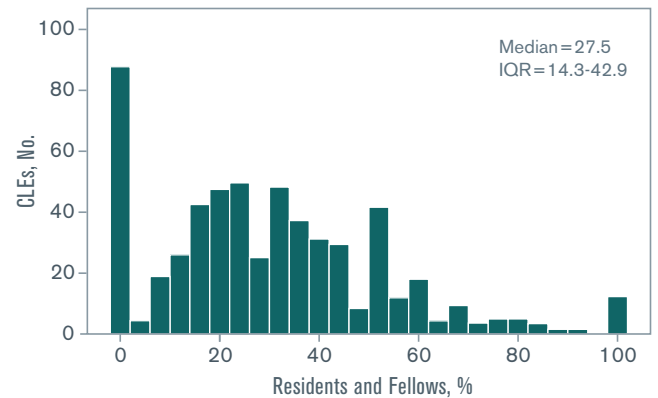
PERCENT OF TOTAL SURVEYED<sup>a</sup> (n = 11,148)

**31.7**

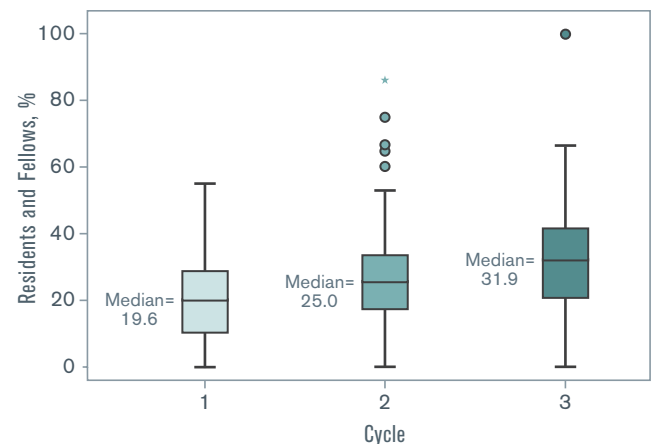
### PERCENTAGE BY RESIDENT AND FELLOW AND CLE CHARACTERISTICS<sup>a</sup>

Residents and Fellows Characteristics	Residents and Fellows, % (n = 11,148)
<b>Gender<sup>***</sup></b>	
Male	29.5
Female	34.2
<b>Level of Training<sup>***</sup></b>	
PGY-1	27.5
PGY-2	33.2
PGY-3	35.3
PGY-4+	28.2
<b>Specialty Group<sup>***</sup></b>	
Medical	31.4
Surgical	28.2
Hospital-based	36.8
<b>CLE Characteristics</b>	
<b>Region<sup>b***</sup></b>	
Northeast	31.8
Midwest	31.5
South	29.8
West	36.8
<b>Bed Size<sup>***</sup></b>	
<200	30.7
200–299	29.5
300–399	31.3
400–499	37.6
500 or more	31.3
<b>Type of Ownership<sup>***</sup></b>	
Non-government, not-for-profit	30.5
Investor-owned, for-profit	38.0
Government, federal	30.6
Government, non-federal	34.6

### DISTRIBUTION ACROSS CLEs (n=566)



### CHANGE IN MEDIAN BETWEEN CLER VISITS: CYCLES 1–3<sup>c,d</sup> (n=242)<sup>\*\*\*</sup>



<sup>a</sup>Missing data (< 4%) have been omitted; percentages based on valid percent.

<sup>b</sup>Results from clinical learning environments (CLEs) in Puerto Rico (< 1%) omitted to ensure anonymity.

<sup>c</sup>Results based on matched observations; see Methodology (pp. 17-26).

<sup>d</sup>The horizontal line in the middle of the box indicates the median and the top and bottom of the box indicate the 75th and 25th percentiles, respectively, also known as the interquartile range (IQR). The whiskers above and below the box mark the maximum and minimum values, respectively. The points beyond the whiskers are outliers.

\* Statistically significant at  $P < .05$ .

\*\* Statistically significant at  $P < .01$ .

\*\*\* Statistically significant at  $P < .001$ .

Abbreviation: PGY, postgraduate year.



## B19. Percentage of Residents and Fellows Who Reported Encountering a Physician (Attending Physician or Consultant) Who Made Them Feel Uncomfortable When Requesting Assistance

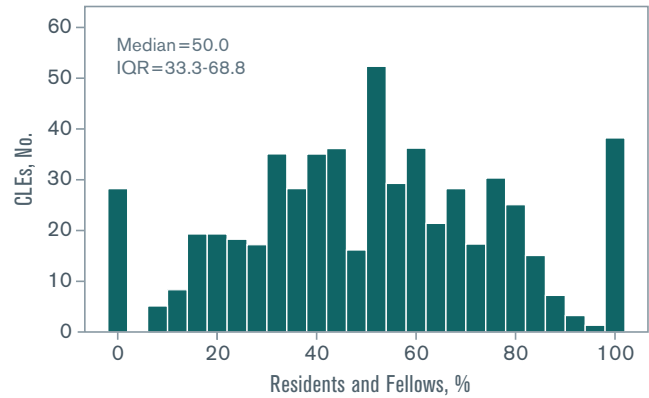
PERCENT OF TOTAL SURVEYED<sup>a</sup> (n = 11,109)

**48.7**

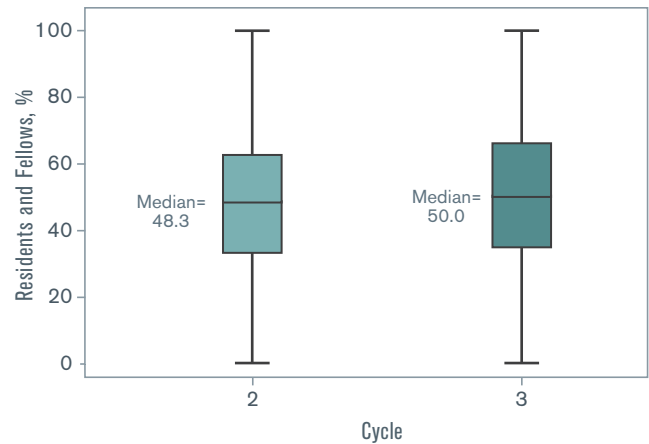
### PERCENTAGE BY RESIDENT AND FELLOW AND CLE CHARACTERISTICS<sup>a</sup>

Residents and Fellows Characteristics	Residents and Fellows, % (n = 11,109)
<b>Gender<sup>***</sup></b>	
Male	45.1
Female	52.7
<b>Level of Training<sup>***</sup></b>	
PGY-1	57.4
PGY-2	55.9
PGY-3	55.0
PGY-4+	38.8
<b>Specialty Group<sup>**</sup></b>	
Medical	49.6
Surgical	47.8
Hospital-based	47.1
<b>CLE Characteristics</b>	
<b>Region<sup>b***</sup></b>	
Northeast	45.7
Midwest	51.1
South	47.9
West	54.7
<b>Bed Size</b>	
<200	50.6
200–299	48.0
300–399	48.6
400–499	51.9
500 or more	48.5
<b>Type of Ownership<sup>***</sup></b>	
Non-government, not-for-profit	50.2
Investor-owned, for-profit	52.3
Government, federal	48.6
Government, non-federal	45.1

### DISTRIBUTION ACROSS CLEs (n=566)



### CHANGE IN MEDIAN BETWEEN CLER VISITS: CYCLES 2–3<sup>c,d</sup> (n=504)<sup>\*\*\*</sup>



<sup>a</sup> Missing data (< 4%) have been omitted; percentages based on valid percent.

<sup>b</sup> Results from clinical learning environments (CLEs) in Puerto Rico (< 1%) omitted to ensure anonymity.

<sup>c</sup> Results based on matched observations; see Methodology (pp. 17-26).

<sup>d</sup> The horizontal line in the middle of the box indicates the median and the top and bottom of the box indicate the 75th and 25th percentiles, respectively, also known as the interquartile range (IQR). The whiskers above and below the box mark the maximum and minimum values, respectively. The points beyond the whiskers are outliers.

\* Statistically significant at  $P < .05$ .

\*\* Statistically significant at  $P < .01$ .

\*\*\* Statistically significant at  $P < .001$ .

Abbreviation: PGY, postgraduate year.

## B20. Percentage of Residents and Fellows Who Reported Knowing What They Were Allowed to Do Without Direct Supervision

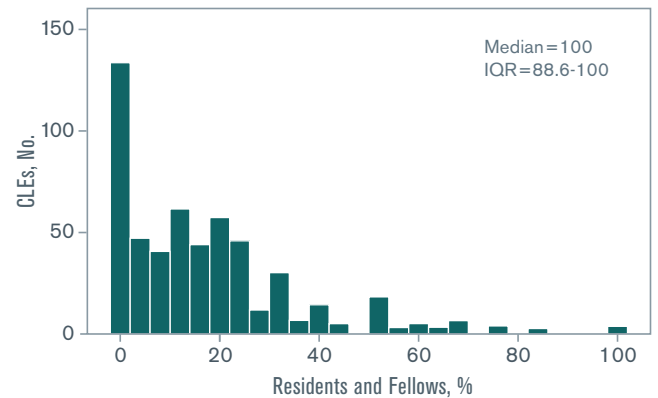
PERCENT OF TOTAL SURVEYED<sup>a</sup> (n = 11,102)

**91.6**

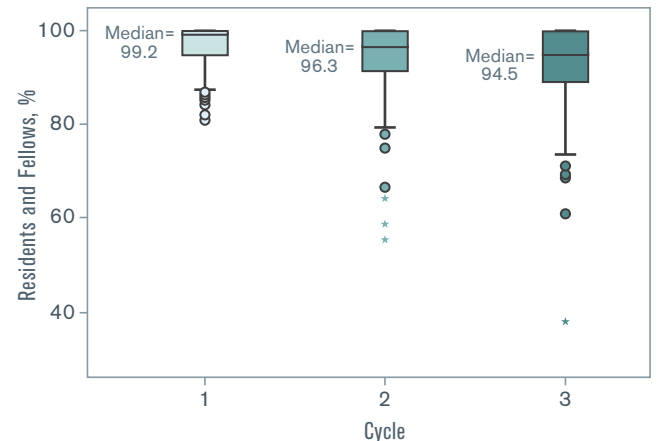
### PERCENTAGE BY RESIDENT AND FELLOW AND CLE CHARACTERISTICS<sup>a</sup>

Residents and Fellows Characteristics	Residents and Fellows, % (n = 11,102)
<b>Gender</b>	
Male	91.4
Female	91.9
<b>Level of Training<sup>***</sup></b>	
PGY-1	87.4
PGY-2	91.0
PGY-3	90.6
PGY-4+	92.7
<b>Specialty Group<sup>*</sup></b>	
Medical	91.6
Surgical	92.5
Hospital-based	90.4
<b>CLE Characteristics</b>	
<b>Region<sup>b*</sup></b>	
Northeast	90.8
Midwest	92.0
South	92.1
West	90.3
<b>Bed Size<sup>*</sup></b>	
<200	91.8
200–299	93.9
300–399	90.9
400–499	89.9
500 or more	91.4
<b>Type of Ownership<sup>**</sup></b>	
Non-government, not-for-profit	91.7
Investor-owned, for-profit	88.2
Government, federal	94.0
Government, non-federal	91.0

### DISTRIBUTION ACROSS CLEs<sup>c</sup> (n = 565)



### CHANGE IN MEDIAN BETWEEN CLER VISITS: CYCLES 1–3<sup>d,e</sup> (n = 238)<sup>\*\*\*</sup>



<sup>a</sup> Missing data (< 4%) have been omitted; percentages based on valid percent.

<sup>b</sup> Results from clinical learning environments (CLEs) in Puerto Rico (< 1%) omitted to ensure anonymity.

<sup>c</sup> Distribution includes 95% or more of the total number of CLEs (N = 566).

<sup>d</sup> Results based on matched observations; see Methodology (pp. 17-26).

<sup>e</sup> The horizontal line in the middle of the box indicates the median and the top and bottom of the box indicate the 75th and 25th percentiles, respectively, also known as the interquartile range (IQR). The whiskers above and below the box mark the maximum and minimum values, respectively. The points beyond the whiskers are outliers.

\* Statistically significant at  $P < .05$ .

\*\* Statistically significant at  $P < .01$ .

\*\*\* Statistically significant at  $P < .001$ .

Abbreviation: PGY, postgraduate year.

## B21. Percentage of Residents and Fellows Who Reported Having an Objective Way to Know What Procedures Residents and Fellows from Other Services Were Allowed to Do Without Direct Supervision When They Consulted on Patients

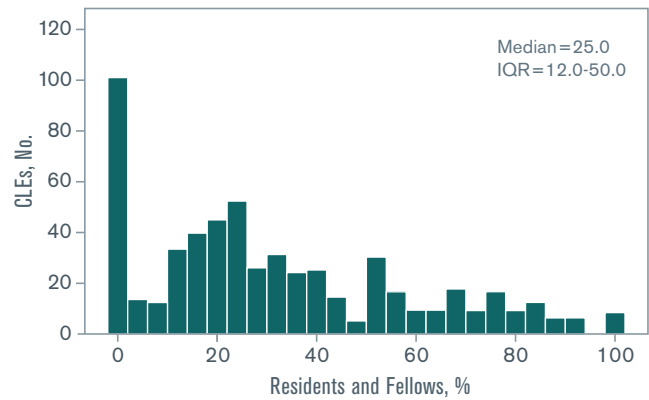
PERCENT OF TOTAL SURVEYED<sup>a</sup> (n = 11,097)

**30.1**

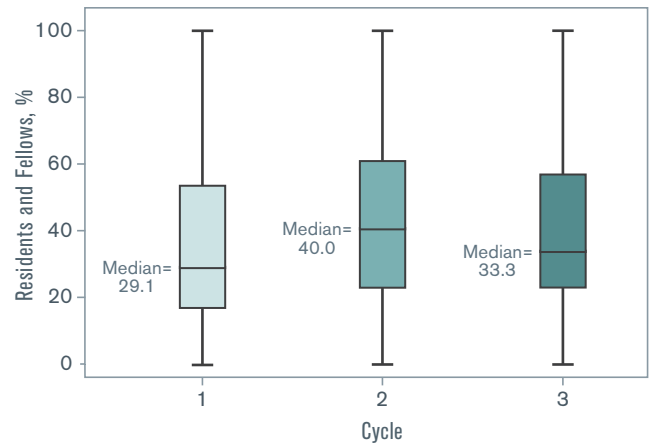
### PERCENTAGE BY RESIDENT AND FELLOW AND FELLOW AND CLE CHARACTERISTICS<sup>a</sup>

Residents and Fellows Characteristics	Residents and Fellows, % (n = 11,097)
<b>Gender<sup>***</sup></b>	
Male	31.6
Female	28.3
<b>Level of Training<sup>**</sup></b>	
PGY-1	39.3
PGY-2	30.4
PGY-3	29.4
PGY-4+	30.0
<b>Specialty Group<sup>***</sup></b>	
Medical	30.6
Surgical	34.9
Hospital-based	22.8
<b>CLE Characteristics</b>	
<b>Region<sup>b***</sup></b>	
Northeast	30.6
Midwest	31.4
South	31.4
West	25.3
<b>Bed Size<sup>***</sup></b>	
<200	31.2
200–299	43.1
300–399	36.5
400–499	24.6
500 or more	27.8
<b>Type of Ownership<sup>***</sup></b>	
Non-government, not-for-profit	31.1
Investor-owned, for-profit	33.6
Government, federal	42.3
Government, non-federal	26.2

### DISTRIBUTION ACROSS CLEs (n=566)



### CHANGE IN MEDIAN BETWEEN CLER VISITS: CYCLES 1–3<sup>c,d</sup> (n=242)\*\*



<sup>a</sup> Missing data (< 4%) have been omitted; percentages based on valid percent.

<sup>b</sup> Results from clinical learning environments (CLEs) in Puerto Rico (< 1%) omitted to ensure anonymity.

<sup>c</sup> Results based on matched observations; see Methodology (pp. 17-26).

<sup>d</sup> The horizontal line in the middle of the box indicates the median and the top and bottom of the box indicate the 75th and 25th percentiles, respectively, also known as the interquartile range (IQR). The whiskers above and below the box mark the maximum and minimum values, respectively. The points beyond the whiskers are outliers.

\* Statistically significant at  $P < .05$ .

\*\* Statistically significant at  $P < .01$ .

\*\*\* Statistically significant at  $P < .001$ .

Abbreviation: PGY, postgraduate year.

## B22. Percentage of Residents and Fellows Who Reported They Would Power through to Hand-Off or the End of Their Workday if Placed in a Situation in Which They Were Impaired by Fatigue, Maxed Out on Caffeine, and a 15-Minute Nap Had No Effect

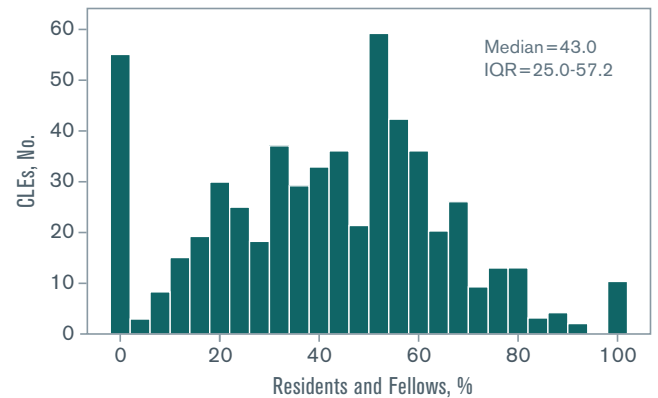
PERCENT OF TOTAL SURVEYED<sup>a</sup> (n = 11,111)

**47.6**

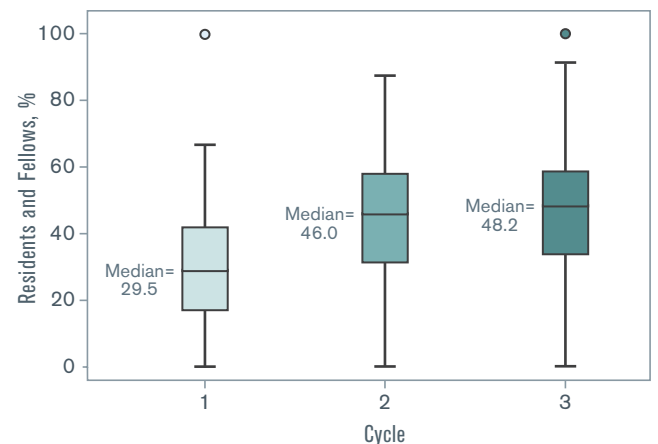
### PERCENTAGE BY RESIDENT AND FELLOW AND CLE CHARACTERISTICS<sup>a</sup>

Residents and Fellows Characteristics	Residents and Fellows, % (n = 11,111)
<b>Gender<sup>***</sup></b>	
Male	44.5
Female	51.1
<b>Level of Training<sup>***</sup></b>	
PGY-1	46.7
PGY-2	50.8
PGY-3	49.6
PGY-4+	44.0
<b>Specialty Group<sup>***</sup></b>	
Medical	45.4
Surgical	51.5
Hospital-based	49.4
<b>CLE Characteristics</b>	
<b>Region<sup>b</sup></b>	
Northeast	47.0
Midwest	46.8
South	48.2
West	49.7
<b>Bed Size<sup>***</sup></b>	
<200	40.8
200–299	41.4
300–399	43.3
400–499	51.2
500 or more	49.8
<b>Type of Ownership<sup>*</sup></b>	
Non-government, not-for-profit	47.1
Investor-owned, for-profit	46.6
Government, federal	42.3
Government, non-federal	50.1

### DISTRIBUTION ACROSS CLEs (n=566)



### CHANGE IN MEDIAN BETWEEN CLER VISITS: CYCLES 1–3<sup>c,d</sup> (n=242)<sup>\*\*\*</sup>



<sup>a</sup>Missing data (< 4%) have been omitted; percentages based on valid percent.

<sup>b</sup>Results from clinical learning environments (CLEs) in Puerto Rico (< 1%) omitted to ensure anonymity.

<sup>c</sup>Results based on matched observations; see Methodology (pp. 17-26).

<sup>d</sup>The horizontal line in the middle of the box indicates the median and the top and bottom of the box indicate the 75th and 25th percentiles, respectively, also known as the interquartile range (IQR). The whiskers above and below the box mark the maximum and minimum values, respectively. The points beyond the whiskers are outliers.

<sup>\*</sup>Statistically significant at  $P < .05$ .

<sup>\*\*</sup>Statistically significant at  $P < .01$ .

<sup>\*\*\*</sup>Statistically significant at  $P < .001$ .

Abbreviation: PGY, postgraduate year.

## B23. Percentage of Residents and Fellows Who Agreed or Strongly Agreed That Their Clinical Site Had Successful Systems to Ensure Patient Safety from the Risks of Resident and Fellow Fatigue

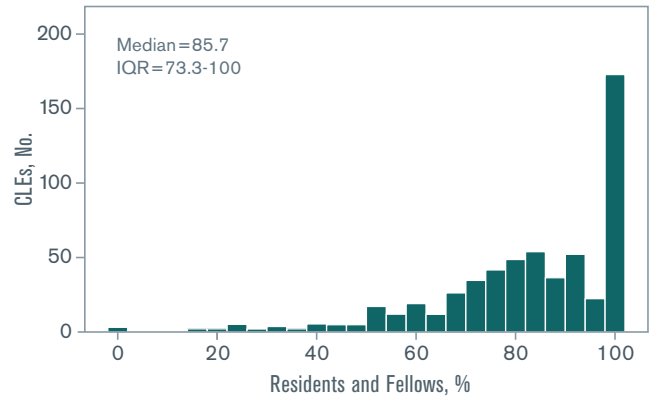
PERCENT OF TOTAL SURVEYED<sup>a</sup> (n = 11,106)

**79.5**

### PERCENTAGE BY RESIDENT AND FELLOW AND CLE CHARACTERISTICS<sup>a</sup>

Residents and Fellows Characteristics	Residents and Fellows, % (n = 11,106)
<b>Gender<sup>***</sup></b>	
Male	81.5
Female	77.2
<b>Level of Training</b>	
PGY-1	85.2
PGY-2	79.3
PGY-3	78.7
PGY-4+	79.9
<b>Specialty Group</b>	
Medical	79.9
Surgical	78.9
Hospital-based	78.9
<b>CLE Characteristics</b>	
<b>Region<sup>b***</sup></b>	
Northeast	74.8
Midwest	83.4
South	81.5
West	76.9
<b>Bed Size<sup>***</sup></b>	
<200	77.6
200–299	82.4
300–399	82.2
400–499	75.3
500 or more	79.2
<b>Type of Ownership<sup>***</sup></b>	
Non-government, not-for-profit	80.1
Investor-owned, for-profit	76.4
Government, federal	84.1
Government, non-federal	77.0

DISTRIBUTION ACROSS CLEs (n=566)



<sup>a</sup> Missing data (<4%) have been omitted; percentages based on valid percent.

<sup>b</sup> Results from clinical learning environments (CLEs) in Puerto Rico (<1%) omitted to ensure anonymity.

\* Statistically significant at  $P < .05$ .

\*\* Statistically significant at  $P < .01$ .

\*\*\* Statistically significant at  $P < .001$ .

Abbreviation: IQR, interquartile range; PGY, postgraduate year.

## B24. Percentage of Residents and Fellows Who Reported Being Moderately or Very Prepared to Recognize Members of Their Clinical Care Team at Risk of or Demonstrating Self-Harm

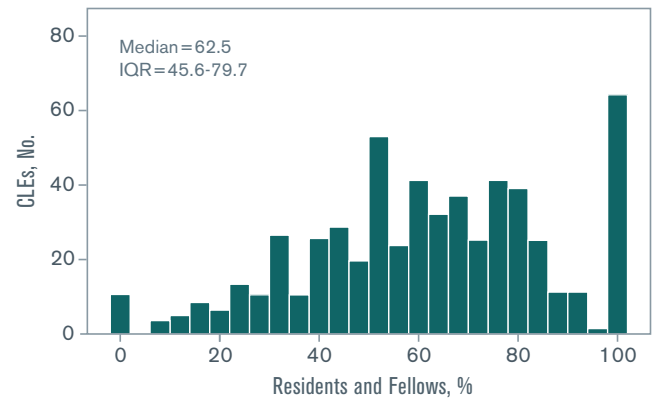
PERCENT OF TOTAL SURVEYED<sup>a</sup> (n = 11,085)

**58.1**

### PERCENTAGE BY RESIDENT AND FELLOW AND CLE CHARACTERISTICS<sup>a</sup>

Residents and Fellows Characteristics	Residents and Fellows, % (n = 11,085)
<b>Gender<sup>***</sup></b>	
Male	60.0
Female	55.9
<b>Level of Training<sup>***</sup></b>	
PGY-1	57.1
PGY-2	61.3
PGY-3	58.1
PGY-4+	56.1
<b>Specialty Group<sup>*</sup></b>	
Medical	58.1
Surgical	60.0
Hospital-based	55.9
<b>CLE Characteristics</b>	
<b>Region<sup>b***</sup></b>	
Northeast	55.9
Midwest	58.4
South	61.9
West	52.7
<b>Bed Size<sup>***</sup></b>	
<200	58.9
200–299	62.8
300–399	60.9
400–499	54.6
500 or more	57.0
<b>Type of Ownership<sup>***</sup></b>	
Non-government, not-for-profit	57.8
Investor-owned, for-profit	53.8
Government, federal	71.6
Government, non-federal	57.3

DISTRIBUTION ACROSS CLEs (n=566)



<sup>a</sup>Missing data (<4%) have been omitted; percentages based on valid percent.

<sup>b</sup>Results from clinical learning environments (CLEs) in Puerto Rico (<1%) omitted to ensure anonymity.

<sup>\*</sup>Statistically significant at  $P < .05$ .

<sup>\*\*</sup>Statistically significant at  $P < .01$ .

<sup>\*\*\*</sup>Statistically significant at  $P < .001$ .

Abbreviation: IQR, interquartile range; PGY, postgraduate year.

## B25. Percentage of Residents and Fellows Who Reported That Their Clinical Site Provided a Supportive, Non-Punitive Environment for Coming Forward with Concerns Regarding Honesty in Reporting (e.g., Patient Data, Work Hours)

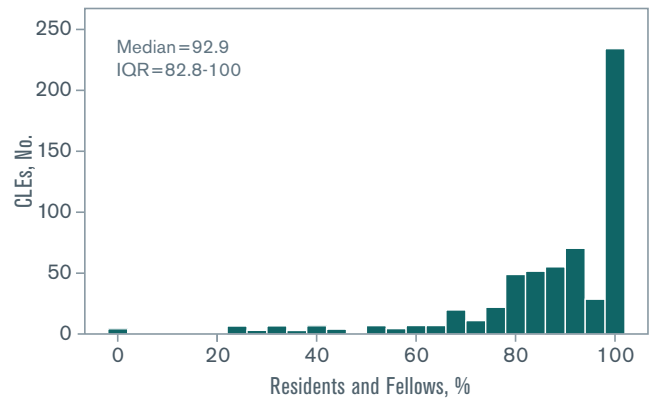
PERCENT OF TOTAL SURVEYED<sup>a</sup> (n = 11,112)

**86.8**

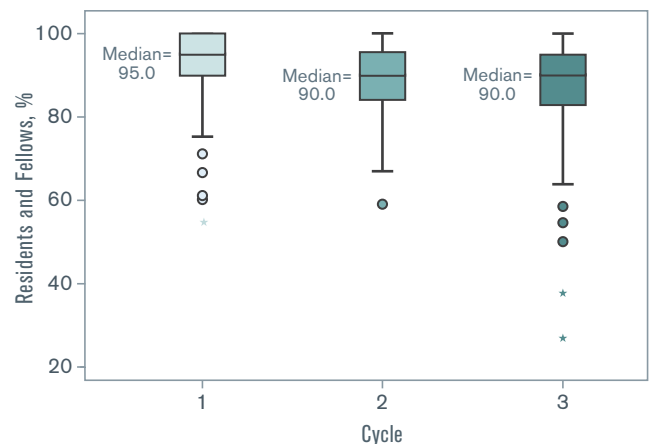
### PERCENTAGE BY RESIDENT AND FELLOW AND CLE CHARACTERISTICS<sup>a</sup>

Residents and Fellows Characteristics	Residents and Fellows, % (n = 11,112)
<b>Gender<sup>***</sup></b>	
Male	87.7
Female	85.7
<b>Level of Training</b>	
PGY-1	91.3
PGY-2	85.9
PGY-3	86.4
PGY-4+	87.4
<b>Specialty Group<sup>***</sup></b>	
Medical	87.7
Surgical	84.2
Hospital-based	87.1
<b>CLE Characteristics</b>	
<b>Region<sup>b***</sup></b>	
Northeast	85.5
Midwest	88.9
South	86.8
West	85.4
<b>Bed Size</b>	
<200	85.7
200–299	87.9
300–399	87.8
400–499	84.5
500 or more	86.8
<b>Type of Ownership<sup>***</sup></b>	
Non-government, not-for-profit	87.6
Investor-owned, for-profit	79.9
Government, federal	88.6
Government, non-federal	85.2

DISTRIBUTION ACROSS CLEs (n=566)



CHANGE IN MEDIAN BETWEEN CLER VISITS: CYCLES 1–3<sup>c,d</sup> (n=242)<sup>\*\*\*</sup>



<sup>a</sup> Missing data (< 4%) have been omitted; percentages based on valid percent.

<sup>b</sup> Results from clinical learning environments (CLEs) in Puerto Rico (< 1%) omitted to ensure anonymity.

<sup>c</sup> Results based on matched observations; see Methodology (pp. 17-26).

<sup>d</sup> The horizontal line in the middle of the box indicates the median and the top and bottom of the box indicate the 75th and 25th percentiles, respectively, also known as the interquartile range (IQR). The whiskers above and below the box mark the maximum and minimum values, respectively. The points beyond the whiskers are outliers.

\* Statistically significant at  $P < .05$ .

\*\* Statistically significant at  $P < .01$ .

\*\*\* Statistically significant at  $P < .001$ .

Abbreviation: PGY, postgraduate year.

## B26. Percentage of Residents and Fellows Who Reported They Had Documented a History or Physical Finding in a Patient Medical Record That They Did Not Personally Elicit at the Clinical Site (e.g., Copying and Pasting from Another Note)

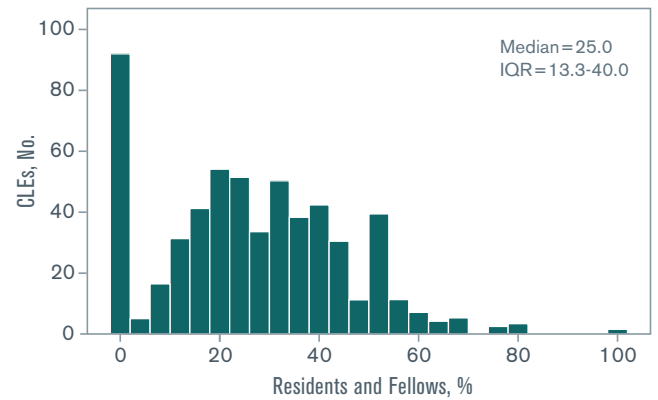
PERCENT OF TOTAL SURVEYED<sup>a</sup> (n = 11,087)

**32.9**

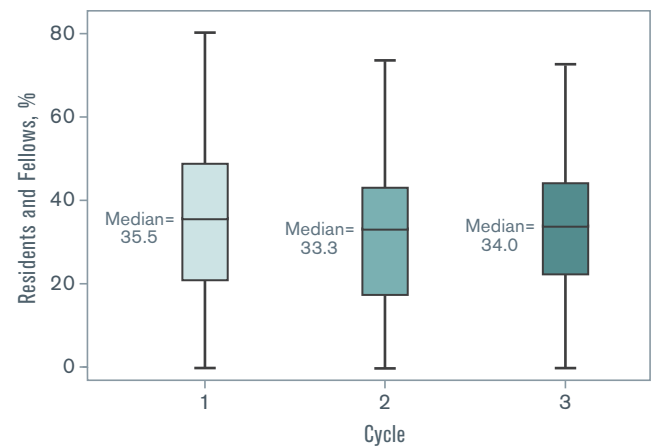
### PERCENTAGE BY RESIDENT AND FELLOW AND CLE CHARACTERISTICS<sup>a</sup>

Residents and Fellows Characteristics	Residents and Fellows, % (n = 11,087)
<b>Gender<sup>***</sup></b>	
Male	34.1
Female	31.5
<b>Level of Training<sup>***</sup></b>	
PGY-1	30.6
PGY-2	32.4
PGY-3	33.4
PGY-4+	32.9
<b>Specialty Group<sup>***</sup></b>	
Medical	32.9
Surgical	35.7
Hospital-based	29.3
<b>CLE Characteristics</b>	
<b>Region<sup>b***</sup></b>	
Northeast	32.5
Midwest	34.5
South	30.7
West	37.5
<b>Bed Size<sup>***</sup></b>	
<200	26.8
200–299	27.7
300–399	28.2
400–499	34.9
500 or more	35.5
<b>Type of Ownership</b>	
Non-government, not-for-profit	32.7
Investor-owned, for-profit	33.5
Government, federal	35.0
Government, non-federal	33.7

### DISTRIBUTION ACROSS CLEs (n=566)



### CHANGE IN MEDIAN BETWEEN CLER VISITS: CYCLES 1–3<sup>c,d</sup> (n=242)\*\*



<sup>a</sup>Missing data (< 4%) have been omitted; percentages based on valid percent.

<sup>b</sup>Results from clinical learning environments (CLEs) in Puerto Rico (< 1%) omitted to ensure anonymity.

<sup>c</sup>Results based on matched observations; see Methodology (pp. 17-26).

<sup>d</sup>The horizontal line in the middle of the box indicates the median and the top and bottom of the box indicate the 75th and 25th percentiles, respectively, also known as the interquartile range (IQR). The whiskers above and below the box mark the maximum and minimum values, respectively. The points beyond the whiskers are outliers.

\* Statistically significant at  $P < .05$ .

\*\* Statistically significant at  $P < .01$ .

\*\*\* Statistically significant at  $P < .001$ .

Abbreviation: PGY, postgraduate year.



## B27. Percentage of Residents and Fellows Who Reported Having Felt Pressured to Compromise Their Honesty or Integrity to Satisfy an Authority Figure During Their Training at the Clinical Site

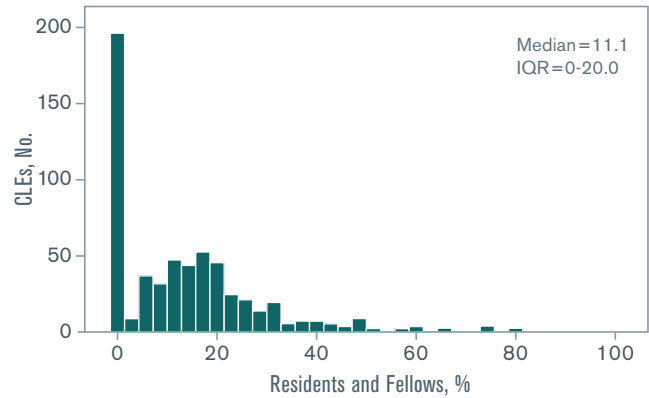
PERCENT OF TOTAL SURVEYED<sup>a</sup> (n = 11,119)

**15.2**

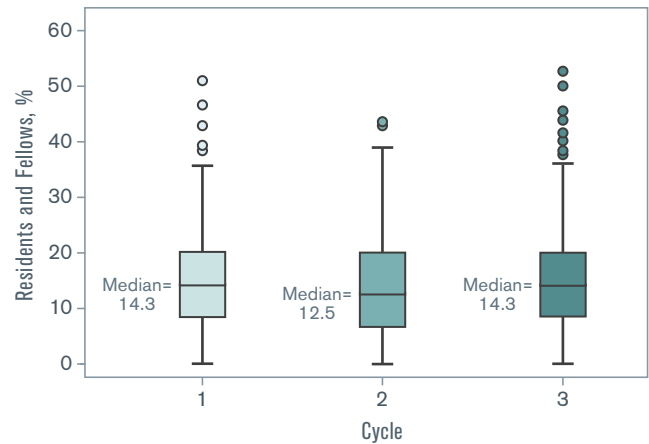
### PERCENTAGE BY RESIDENT AND FELLOW AND CLE CHARACTERISTICS<sup>a</sup>

Residents and Fellows Characteristics	Residents and Fellows, % (n = 11,119)
<b>Gender<sup>***</sup></b>	
Male	14.2
Female	16.0
<b>Level of Training<sup>**</sup></b>	
PGY-1	7.7
PGY-2	14.2
PGY-3	15.6
PGY-4+	15.7
<b>Specialty Group</b>	
Medical	14.8
Surgical	16.1
Hospital-based	14.9
<b>CLE Characteristics</b>	
<b>Region<sup>b*</sup></b>	
Northeast	16.8
Midwest	14.0
South	14.7
West	16.1
<b>Bed Size<sup>**</sup></b>	
<200	15.4
200–299	14.2
300–399	13.9
400–499	18.7
500 or more	15.1
<b>Type of Ownership<sup>***</sup></b>	
Non-government, not-for-profit	14.6
Investor-owned, for-profit	20.8
Government, federal	12.0
Government, non-federal	16.5

DISTRIBUTION ACROSS CLEs (n=566)



CHANGE IN MEDIAN BETWEEN CLER VISITS: CYCLES 1–3<sup>c,d</sup> (n=242)



<sup>a</sup> Missing data (< 4%) have been omitted; percentages based on valid percent.

<sup>b</sup> Results from clinical learning environments (CLEs) in Puerto Rico (< 1%) omitted to ensure anonymity.

<sup>c</sup> Results based on matched observations; see Methodology (pp. 17-26).

<sup>d</sup> The horizontal line in the middle of the box indicates the median and the top and bottom of the box indicate the 75th and 25th percentiles, respectively, also known as the interquartile range (IQR). The whiskers above and below the box mark the maximum and minimum values, respectively. The points beyond the whiskers are outliers.

\* Statistically significant at  $P < .05$ .

\*\* Statistically significant at  $P < .01$ .

\*\*\* Statistically significant at  $P < .001$ .

Abbreviation: PGY, postgraduate year.

## B28. Percentage of Residents and Fellows Who Reported That, Based on Their Experience at the Clinical Site, Faculty Members Often or Always Disclose Whether or Not They Have Potential Conflicts of Interests (e.g., Research Funding or Commercial Interests) During Each of Their Clinical Rotations

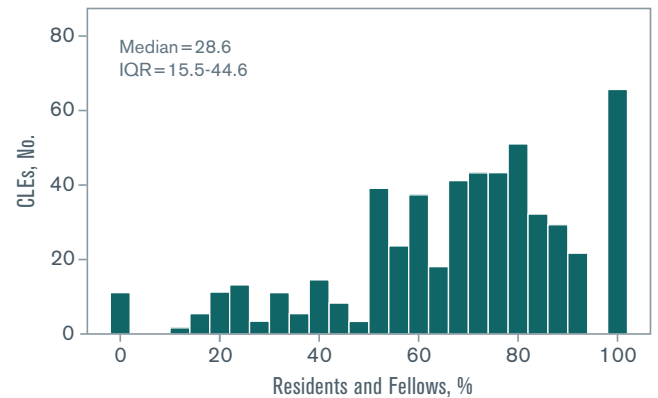
PERCENT OF TOTAL SURVEYED<sup>a</sup> (n = 10,095)

**30.1**

### PERCENTAGE BY RESIDENT AND FELLOW AND CLE CHARACTERISTICS<sup>a</sup>

Residents and Fellows Characteristics	Residents and Fellows, % (n = 10,095)
<b>Gender</b>	
Male	30.9
Female	29.1
<b>Level of Training*</b>	
PGY-1	22.5
PGY-2	29.6
PGY-3	29.5
PGY-4+	31.3
<b>Specialty Group***</b>	
Medical	26.8
Surgical	39.1
Hospital-based	29.3
<b>CLE Characteristics</b>	
<b>Region<sup>b***</sup></b>	
Northeast	29.8
Midwest	28.7
South	33.6
West	25.4
<b>Bed Size***</b>	
<200	34.6
200–299	34.8
300–399	34.0
400–499	27.3
500 or more	28.5
<b>Type of Ownership**</b>	
Non-government, not-for-profit	29.2
Investor-owned, for-profit	32.0
Government, federal	36.7
Government, non-federal	31.5

### DISTRIBUTION ACROSS CLEs<sup>c</sup> (n=527)



<sup>a</sup>Missing data (< 13%) have been omitted; percentages based on valid percent. Of note, data are missing largely due to the development and refinement of the site visit protocol in the early stages of program implementation.

<sup>b</sup>Results from clinical learning environments (CLEs) in Puerto Rico (< 1%) omitted to ensure anonymity.

<sup>c</sup>Distribution includes 90% or more of the total number of CLEs (N = 566).

\*Statistically significant at  $P < .05$ .

\*\*Statistically significant at  $P < .01$ .

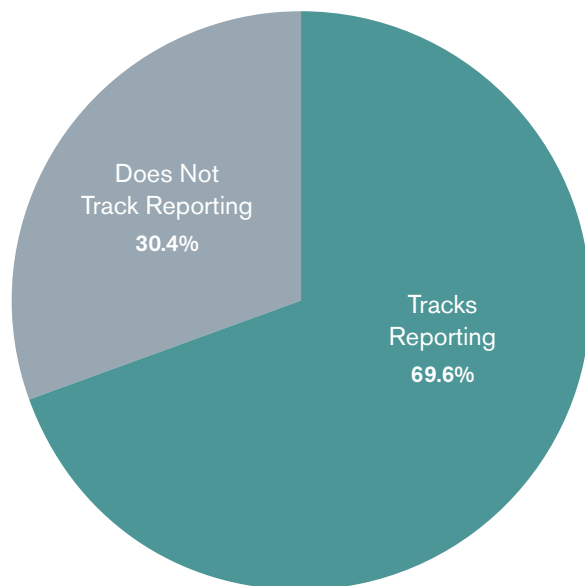
\*\*\*Statistically significant at  $P < .001$ .

Abbreviation: IQR, interquartile range; PGY, postgraduate year.

# APPENDIX C.

## SELECTED QUALITATIVE RESULTS FROM CLINICAL LEARNING ENVIRONMENT REVIEW SITE VISIT REPORTS

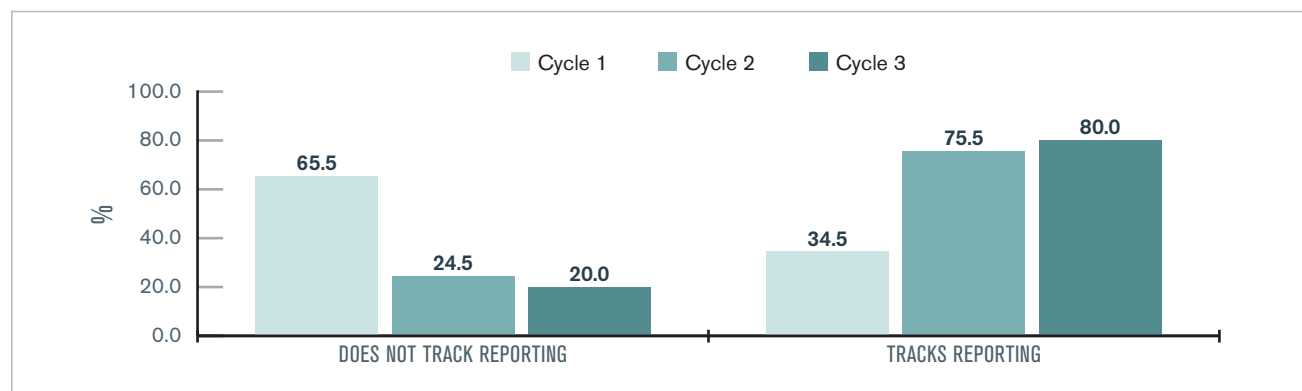
### C1. Percentage of Clinical Learning Environments That Tracked the Number of Patient Safety Event Reports Submitted by Residents and Fellows<sup>a</sup>



PERCENTAGE OF CLEs THAT TRACKED REPORTING, BY CLE CHARACTERISTICS

Characteristics	CLEs, %
<b>Region<sup>b</sup></b>	
Northeast	65.9
Midwest	75.6
South	62.1
West	75.0
<b>Bed Size</b>	
<200	59.1
200–299	71.4
300–399	55.9
400–499	73.6
500 or more	76.5
<b>Type of Ownership</b>	
Non-government, not-for-profit	68.3
Investor-owned, for-profit	54.8
Government, federal	76.2
Government, non-federal	76.1

CHANGES BETWEEN CLER VISITS: CYCLES 1 – 3<sup>c</sup> (n = 200)<sup>\*\*\*</sup>



<sup>a</sup>Missing data (< 1%) have been omitted; percentages based on valid percent. Of note, data are missing largely due to the development and refinement of a formal written CLER Site Visit Report template in the early stages of program implementation.

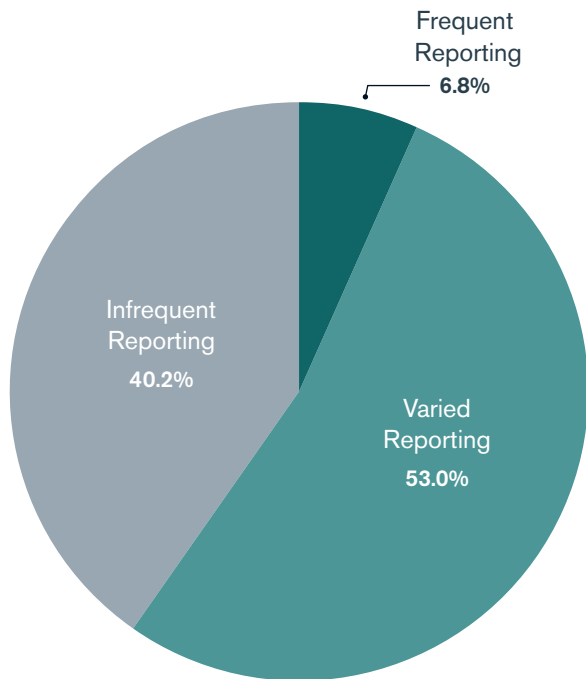
<sup>b</sup>Results from clinical learning environments (CLEs) in Puerto Rico (1%) have been omitted to ensure anonymity.

<sup>c</sup>Results based on matched observations; see Methodology (pp. 17-26).

\*Statistically significant at  $P < .05$ . \*\* Statistically significant at  $P < .01$ . \*\*\* Statistically significant at  $P < .001$ .

Abbreviation: CLER, Clinical Learning Environment Review.

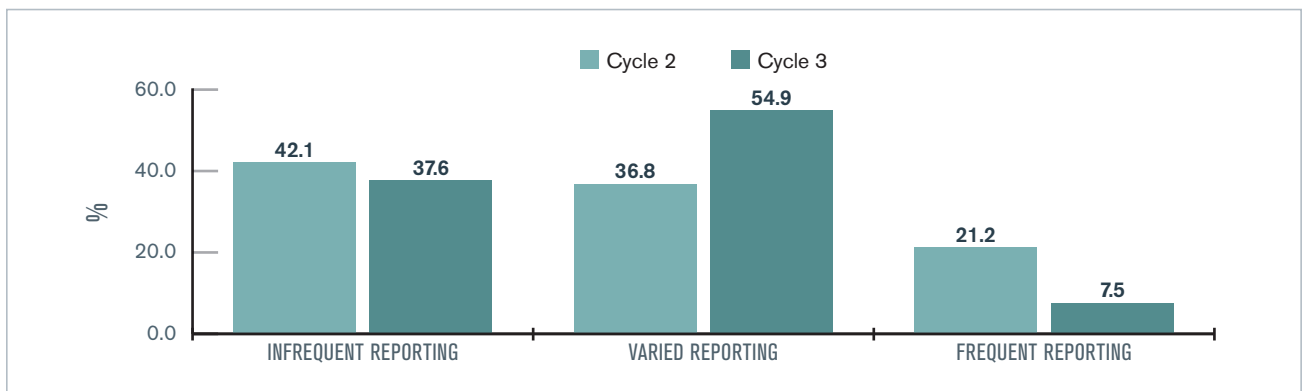
## C2. Percentage of Clinical Learning Environments Where Residents and Fellows Frequently Submitted Patient Safety Event Reports<sup>a</sup>



PERCENTAGE OF CLEs WHERE RESIDENTS AND FELLOWS FREQUENTLY SUBMITTED REPORTS, BY CLE CHARACTERISTICS

Characteristics	CLEs, %
<b>Region<sup>b</sup></b>	
Northeast	5.3
Midwest	10.2
South	8.2
West	4.3
<b>Bed Size</b>	
< 200	9.9
200–299	7.4
300–399	6.7
400–499	4.4
500 or more	7.1
<b>Type of Ownership</b>	
Non-government, not-for-profit	6.9
Investor-owned, for-profit	2.4
Government, federal	18.8
Government, non-federal	8.2

CHANGES BETWEEN CLER VISITS: CYCLES 2 – 3<sup>c</sup> (n = 468)\*



<sup>a</sup>Missing data (< 7%) have been omitted; percentages based on valid percent. Of note, data are missing largely due to the development and refinement of a formal written CLER Site Visit Report template in the early stages of program implementation.

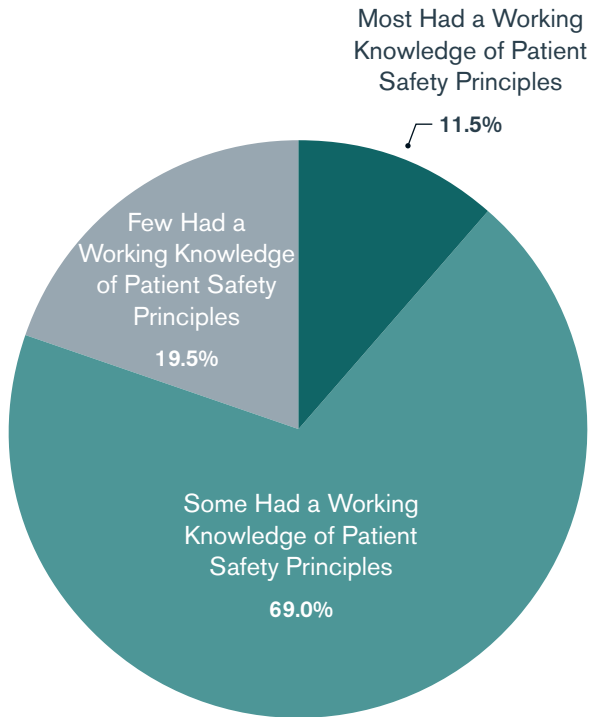
<sup>b</sup>Results from clinical learning environments (CLEs) in Puerto Rico (1%) have been omitted to ensure anonymity.

<sup>c</sup>Results based on matched observations; see Methodology (pp. 17-26).

\*Statistically significant at  $P < .05$ . \*\* Statistically significant at  $P < .01$ . \*\*\* Statistically significant at  $P < .001$ .

Abbreviation: CLER, Clinical Learning Environment Review.

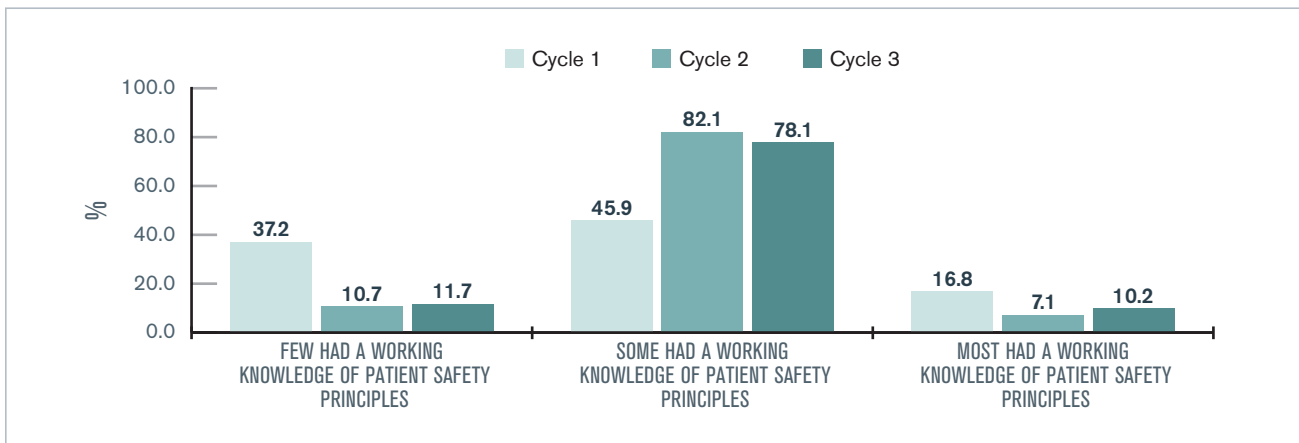
### C3. Percentage of Clinical Learning Environments by Proportion of Resident and Fellow Knowledge of Basic Patient Safety Terminology and Principles<sup>a</sup>



PERCENTAGE OF CLEs WHERE MOST RESIDENTS AND FELLOWS HAD A WORKING KNOWLEDGE OF PATIENT SAFETY PRINCIPLES, BY CLE CHARACTERISTICS

Characteristics	CLEs, %
<b>Region<sup>b</sup></b>	
Northeast	12.2
Midwest	11.1
South	9.3
West	11.5
<b>Bed Size</b>	
<200	9.0
200–299	13.1
300–399	11.8
400–499	12.5
500 or more	9.7
<b>Type of Ownership</b>	
Non-government, not-for-profit	12.9
Investor-owned, for-profit	2.4
Government, federal	9.5
Government, non-federal	6.5

CHANGES BETWEEN CLER VISITS: CYCLES 1–3<sup>c</sup> (n = 196)\*\*



<sup>a</sup>Missing data (< 1%) have been omitted; percentages based on valid percent. Of note, data are missing largely due to the development and refinement of a formal written CLER Site Visit Report template in the early stages of program implementation.

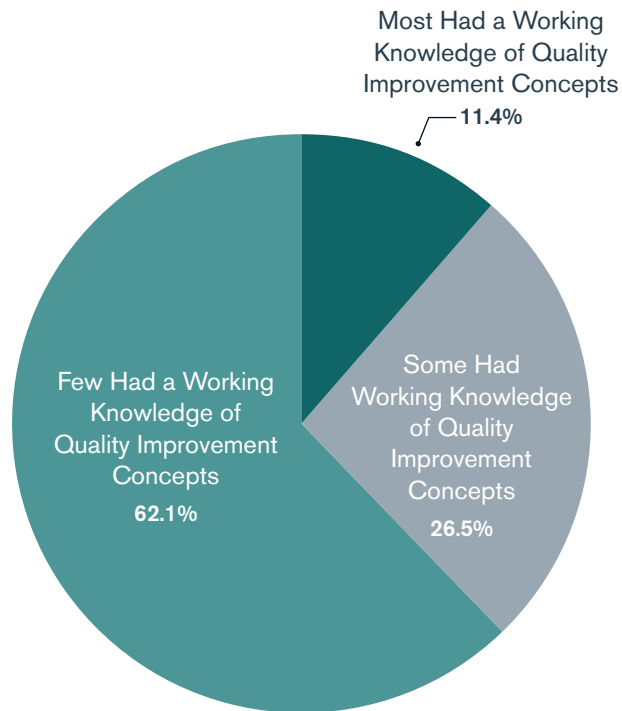
<sup>b</sup>Results from clinical learning environments (CLEs) in Puerto Rico (1%) have been omitted to ensure anonymity.

<sup>c</sup>Results based on matched observations; see Methodology (pp. 17-26).

\*Statistically significant at  $P < .05$ . \*\* Statistically significant at  $P < .01$ . \*\*\* Statistically significant at  $P < .001$ .

Abbreviation: CLER, Clinical Learning Environment Review.

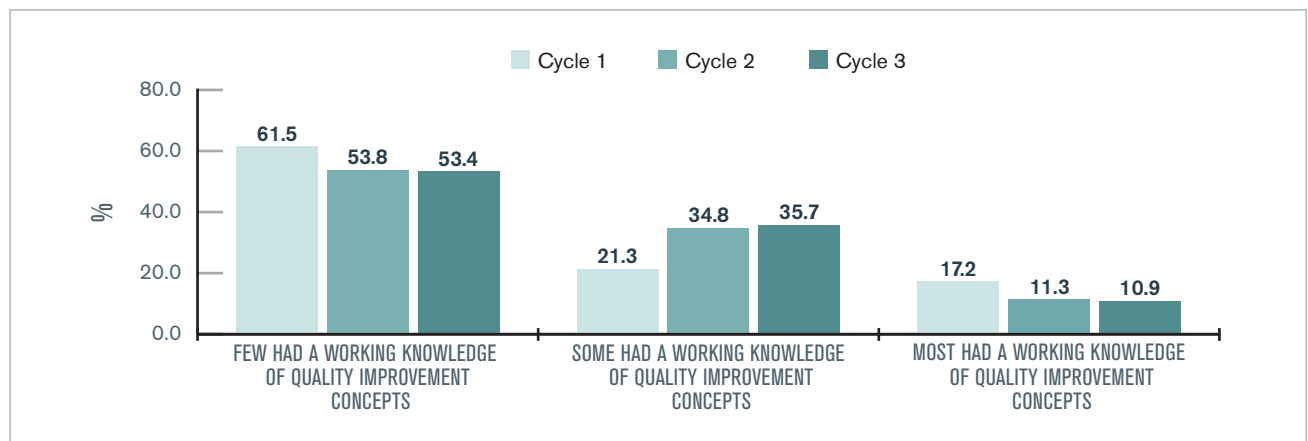
## C4. Percentage of Clinical Learning Environments by Proportion of Resident and Fellow Knowledge of Basic Quality Improvement Concepts<sup>a</sup>



PERCENTAGE OF CLEs WHERE MOST RESIDENTS AND FELLOWS HAD A WORKING KNOWLEDGE OF QUALITY IMPROVEMENT CONCEPTS, BY CLE CHARACTERISTICS

Characteristics	CLEs, %
<b>Region<sup>b</sup></b>	
Northeast	10.8
Midwest	9.0
South	8.1
West	17.9
<b>Bed Size</b>	
<200	12.4
200–299	8.4
300–399	12.9
400–499	12.5
500 or more	9.7
<b>Type of Ownership</b>	
Non-government, not-for-profit	11.7
Investor-owned, for-profit	7.1
Government, federal	9.5
Government, non-federal	9.8

CHANGES BETWEEN CLER VISITS: CYCLES 1 – 3<sup>c</sup> (n = 221)



<sup>a</sup>Missing data (< 1%) have been omitted; percentages based on valid percent. Of note, data are missing largely due to the development and refinement of a formal written CLER Site Visit Report<sup>t</sup> template in the early stages of program implementation.

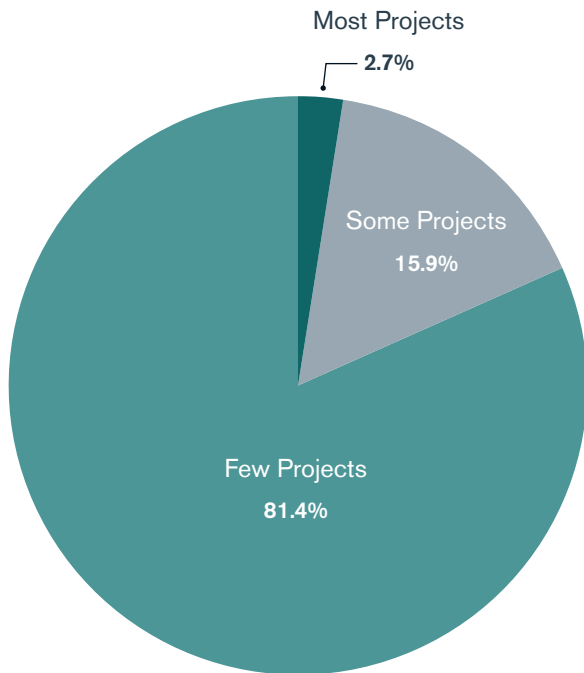
<sup>b</sup>Results from clinical learning environments (CLEs) in Puerto Rico (1%) have been omitted to ensure anonymity.

<sup>c</sup>Results based on matched observations; see Methodology (pp. 17-26).

\*Statistically significant at  $P < .05$ . \*\* Statistically significant at  $P < .01$ . \*\*\* Statistically significant at  $P < .001$ .

Abbreviation: CLER, Clinical Learning Environment Review.

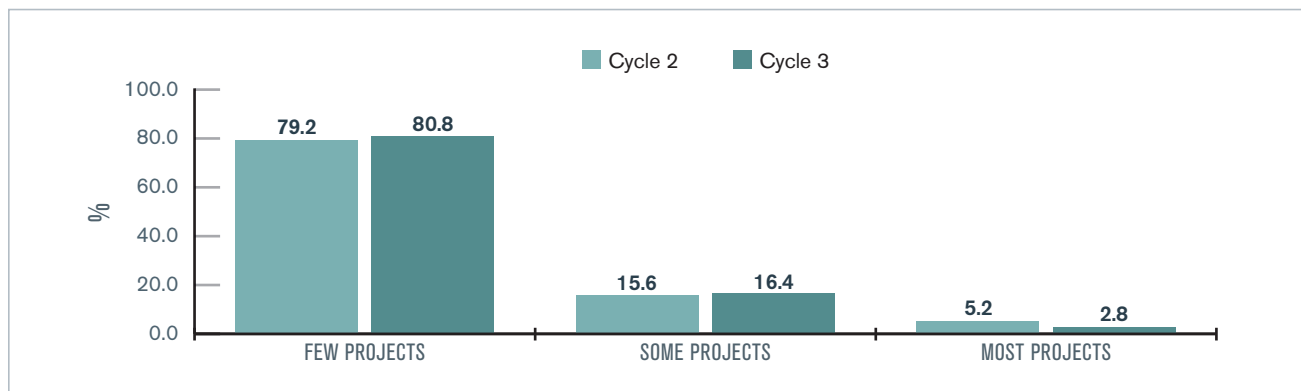
## C5. Percentage of Clinical Learning Environments by Proportion of Resident and Fellow Quality Improvement Projects with Components of a Complete Quality Improvement Cycle<sup>a</sup>



### PERCENTAGE OF CLEs WHERE MOST RESIDENT AND FELLOW QUALITY IMPROVEMENT PROJECTS HAD COMPONENTS OF A COMPLETE QUALITY IMPROVEMENT CYCLE, BY CLE CHARACTERISTICS

Characteristics	CLEs, %
<b>Region<sup>b</sup></b>	
Northeast	1.4
Midwest	0.7
South	2.5
West	5.2
<b>Bed Size</b>	
<200	0.0
200–299	2.4
300–399	4.3
400–499	2.8
500 or more	2.0
<b>Type of Ownership</b>	
Non-government, not-for-profit	2.9
Investor-owned, for-profit	0.0
Government, federal	0.0
Government, non-federal	1.1

### CHANGES BETWEEN CLER VISITS: CYCLES 2 – 3<sup>c</sup> (n = 501)



<sup>a</sup>Missing data (< 1%) have been omitted; percentages based on valid percent. Of note, data are missing largely due to the development and refinement of a formal written CLER Site Visit Report template in the early stages of program implementation.

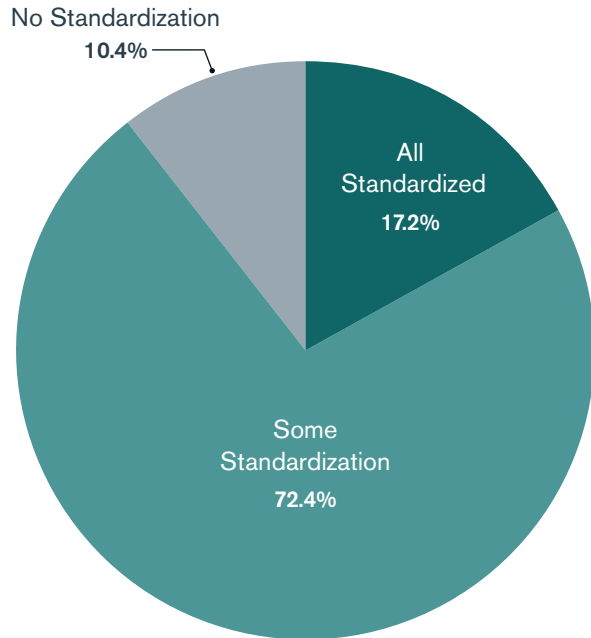
<sup>b</sup>Results from clinical learning environments (CLEs) in Puerto Rico (1%) have been omitted to ensure anonymity.

<sup>c</sup>Results based on matched observations; see Methodology (pp. 17-26).

\*Statistically significant at  $P < .05$ . \*\* Statistically significant at  $P < .01$ . \*\*\* Statistically significant at  $P < .001$ .

Abbreviation: CLER, Clinical Learning Environment Review.

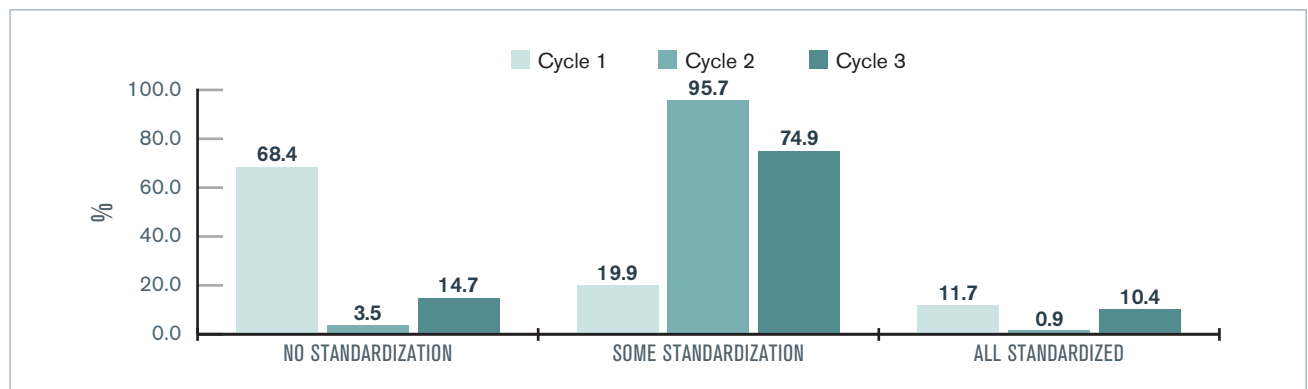
## C6. Percentage of Clinical Learning Environments with Hand-Off Processes that Were Standardized Across Programs, Based on Direct Observations<sup>a</sup>



PERCENTAGE OF CLEs WITH HAND-OFF PROCESSES THAT WERE ALL STANDARDIZED, BY CLE CHARACTERISTICS

Characteristics	CLEs, %
<b>Region<sup>b</sup></b>	
Northeast	11.1
Midwest	11.6
South	21.7
West	28.3
<b>Bed Size</b>	
< 200	28.2
200–299	21.8
300–399	23.3
400–499	14.9
500 or more	9.8
<b>Type of Ownership</b>	
Non-government, not-for-profit	17.8
Investor-owned, for-profit	17.5
Government, federal	35.0
Government, non-federal	12.2

CHANGES BETWEEN CLER VISITS: CYCLES 1 – 3<sup>c</sup> (n = 231)<sup>\*\*\*</sup>



<sup>a</sup>Missing data (< 10%) have been omitted; percentages based on valid percent. Of note, data are missing largely due to the development and refinement of a formal written CLER Site Visit Report template in the early stages of program implementation.

<sup>b</sup>Results from clinical learning environments (CLEs) in Puerto Rico (1%) have been omitted to ensure anonymity.

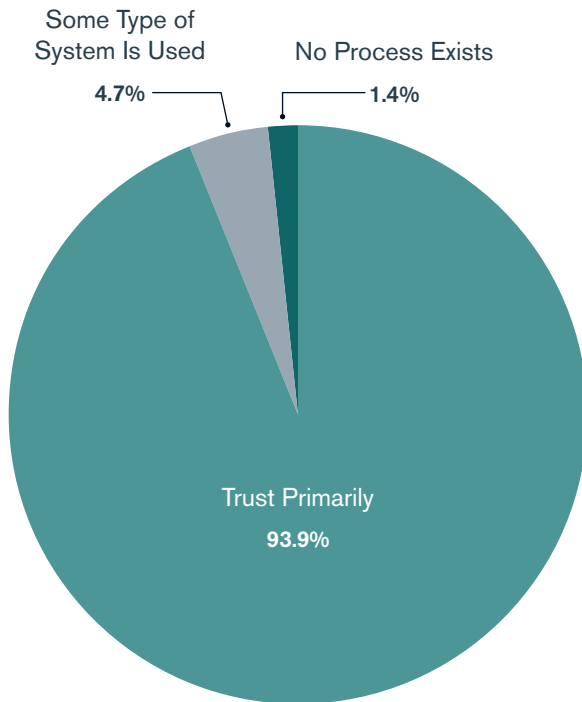
<sup>c</sup>Results based on matched observations; see Methodology (pp. 17-26).

\*Statistically significant at  $P < .05$ . \*\* Statistically significant at  $P < .01$ . \*\*\* Statistically significant at  $P < .001$ .

Abbreviation: CLER, Clinical Learning Environment Review.



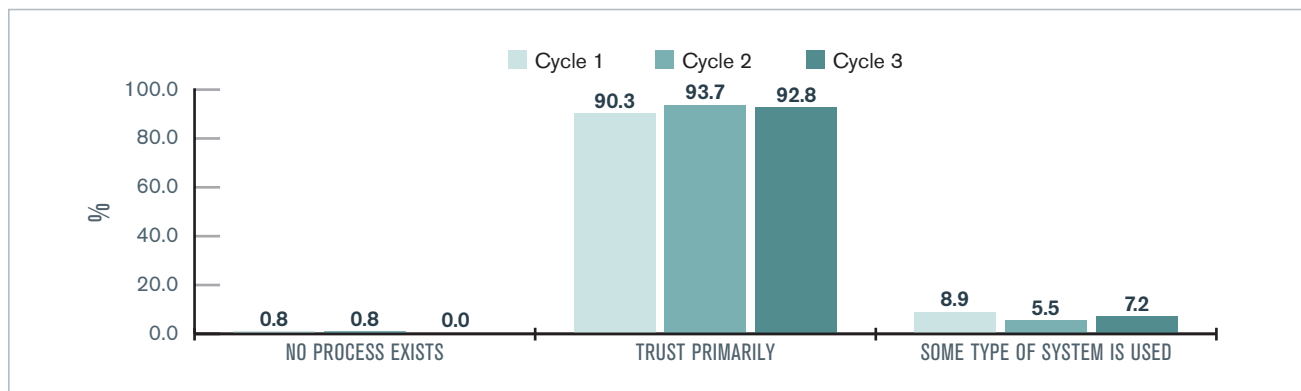
### C7. Percentage of Clinical Learning Environments by Mechanism Used for Identification of Resident and Fellow Competence to Perform Clinical Procedures in the Absence of an Attending Physician, as Reported by Nurses<sup>a</sup>



PERCENTAGE OF CLEs WHERE TRUST IS PRIMARILY USED TO IDENTIFY COMPETENCY, BY CLE CHARACTERISTICS

Characteristics	CLEs, %
<b>Region<sup>b</sup></b>	
Northeast	91.7
Midwest	98.5
South	93.1
West	92.7
<b>Bed Size</b>	
<200	94.1
200–299	93.9
300–399	97.8
400–499	94.4
500 or more	92.3
<b>Type of Ownership</b>	
Non-government, not-for-profit	94.7
Investor-owned, for-profit	92.7
Government, federal	100
Government, non-federal	90.9

CHANGES BETWEEN CLER VISITS: CYCLES 1 – 3<sup>c</sup> (n = 237)



<sup>a</sup> Missing data (<3%) have been omitted; percentages based on valid percent. Of note, data are missing largely due to the development and refinement of a formal written CLER Site Visit Report template in the early stages of program implementation.

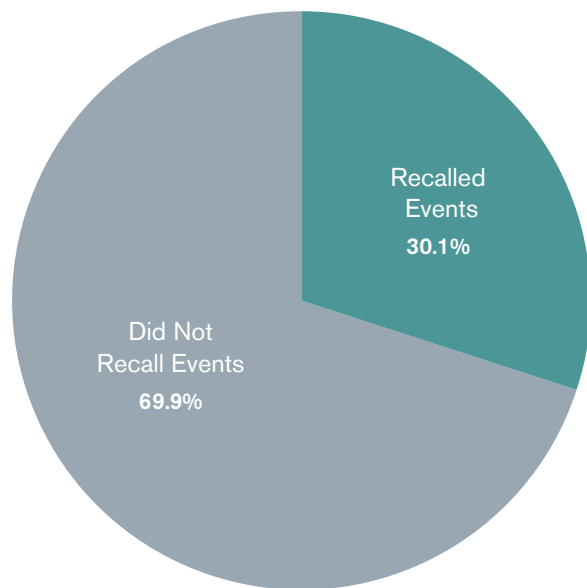
<sup>b</sup> Results from clinical learning environments (CLEs) in Puerto Rico (1%) have been omitted to ensure anonymity.

<sup>c</sup> Results based on matched observations; see Methodology (pp.17-26).

\* Statistically significant at  $P < .05$ . \*\* Statistically significant at  $P < .01$ . \*\*\* Statistically significant at  $P < .001$ .

Abbreviation: CLER, Clinical Learning Environment Review.

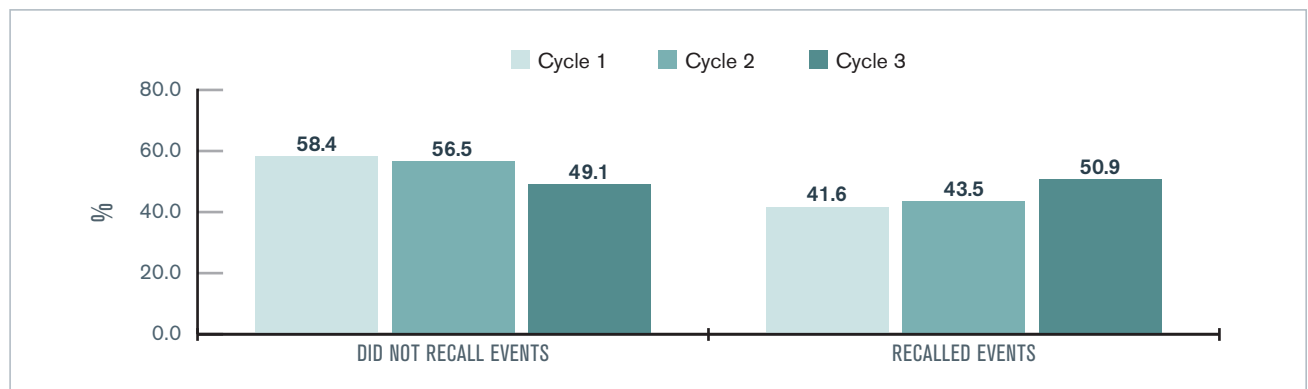
## C8. Percentage of Clinical Learning Environments Where Patient Safety and Quality Leaders Recalled Patient Safety Event Reports Involving Issues of Resident or Fellow Supervision<sup>a</sup>



PERCENTAGE OF CLEs WHERE PATIENT SAFETY AND QUALITY LEADERS RECALLED EVENTS, BY CLE CHARACTERISTICS

Characteristics	CLEs, %
<b>Region<sup>b</sup></b>	
Northeast	27.3
Midwest	25.9
South	34.8
West	37.9
<b>Bed Size</b>	
<200	26.1
200–299	15.5
300–399	29.0
400–499	29.2
500 or more	41.3
<b>Type of Ownership</b>	
Non-government, not-for-profit	29.6
Investor-owned, for-profit	28.6
Government, federal	35.0
Government, non-federal	37.0

CHANGES BETWEEN CLER VISITS: CYCLES 1 – 3<sup>c</sup> (n = 161)<sup>\*\*\*</sup>



<sup>a</sup>Missing data (< 1%) have been omitted; percentages based on valid percent. Of note, data are missing largely due to the development and refinement of a formal written CLER Site Visit Report template in the early stages of program implementation.

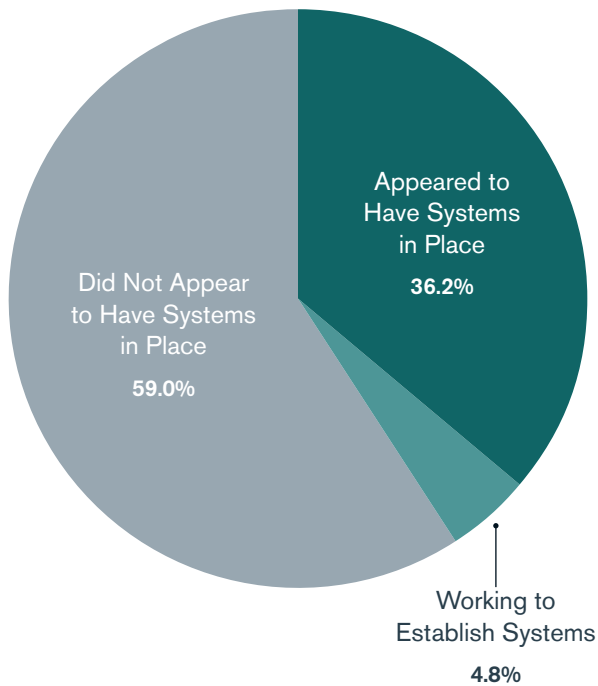
<sup>b</sup>Results from clinical learning environments (CLEs) in Puerto Rico (1%) have been omitted to ensure anonymity.

<sup>c</sup>Results based on matched observations; see Methodology (pp. 17-26).

\*Statistically significant at  $P < .05$ . \*\* Statistically significant at  $P < .01$ . \*\*\* Statistically significant at  $P < .001$ .

Abbreviation: CLER, Clinical Learning Environment Review.

### C9. Percentage of Clinical Learning Environments That Appeared to Have Systems in Place to Identify the Level of Burnout among Faculty Members<sup>a</sup>



PERCENTAGE OF CLEs THAT APPEARED TO HAVE SYSTEMS IN PLACE TO IDENTIFY THE LEVEL OF BURNOUT AMONG FACULTY MEMBERS, BY CLE CHARACTERISTICS

Characteristics	CLEs, %
<b>Region<sup>b</sup></b>	
Northeast	34.1
Midwest	39.3
South	38.1
West	37.2
<b>Bed Size</b>	
<200	28.4
200–299	31.0
300–399	34.4
400–499	34.7
500 or more	45.6
<b>Type of Ownership</b>	
Non-government, not-for-profit	40.5
Investor-owned, for-profit	16.7
Government, federal	47.6
Government, non-federal	29.3

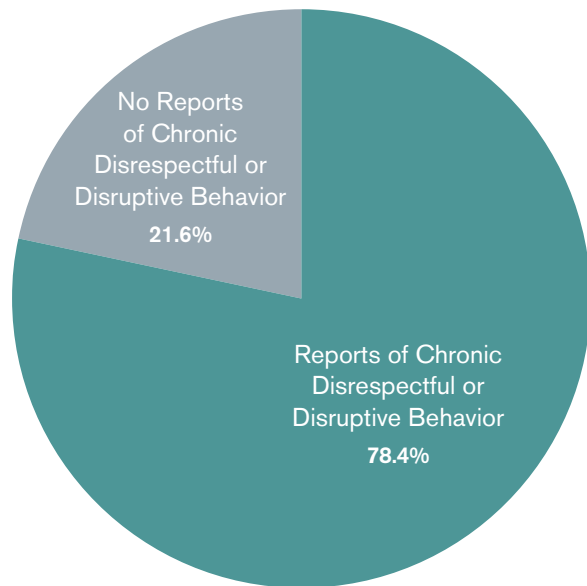
<sup>a</sup>Missing data (< 1%) have been omitted; percentages based on valid percent. Of note, data are missing largely due to the development and refinement of a formal written CLER Site Visit Report template in the early stages of program implementation.

<sup>b</sup>Results from clinical learning environments (CLEs) in Puerto Rico (1%) have been omitted to ensure anonymity.

\*Statistically significant at  $P < .05$ . \*\* Statistically significant at  $P < .01$ . \*\*\* Statistically significant at  $P < .001$ .

Abbreviation: CLER, Clinical Learning Environment Review.

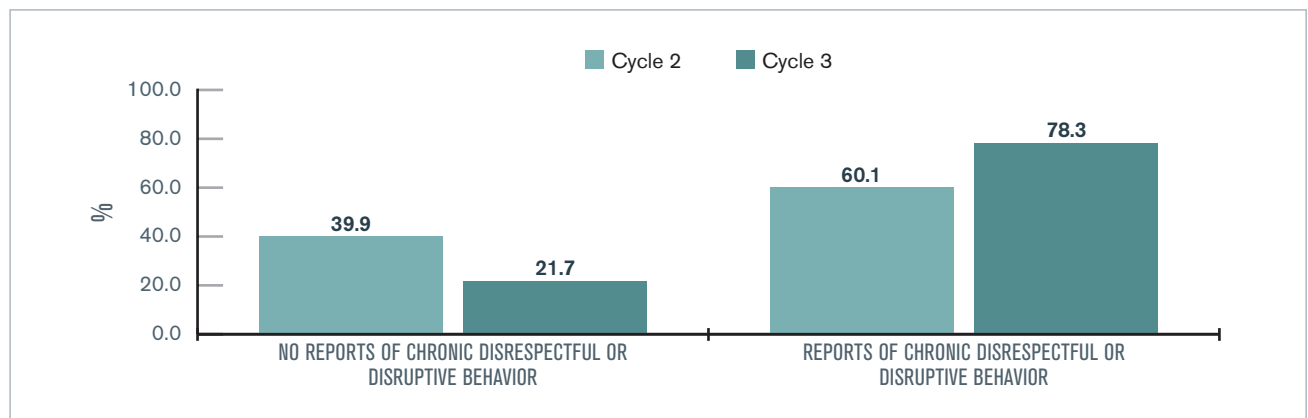
## C10. Percentage of Clinical Learning Environments with Reports of Chronic Disrespectful or Disruptive Behavior Across More Than One Clinical Unit<sup>a</sup>



PERCENTAGE OF CLEs WITH REPORTS OF CHRONIC DISRESPECTFUL OR DISRUPTIVE BEHAVIOR, BY CLE CHARACTERISTICS

Characteristics	CLEs, %
<b>Region<sup>b</sup></b>	
Northeast	86.8
Midwest	82.6
South	76.4
West	79.5
<b>Bed Size</b>	
<200	68.5
200–299	77.0
300–399	85.0
400–499	85.5
500 or more	83.9
<b>Type of Ownership</b>	
Non-government, not-for-profit	81.4
Investor-owned, for-profit	78.4
Government, federal	64.7
Government, non-federal	82.9

CHANGES BETWEEN CLER VISITS: CYCLES 2 – 3<sup>c</sup> (n = 429)<sup>\*\*\*</sup>



<sup>a</sup>Missing data (< 13%) have been omitted; percentages based on valid percent. Of note, data are missing largely due to the development and refinement of a formal written CLER Site Visit Report template in the early stages of program implementation.

<sup>b</sup>Results from clinical learning environments (CLEs) in Puerto Rico (1%) have been omitted to ensure anonymity.

<sup>c</sup>Results based on matched observations; see Methodology (pp. 17-26).

\*Statistically significant at  $P < .05$ . \*\* Statistically significant at  $P < .01$ . \*\*\* Statistically significant at  $P < .001$ .

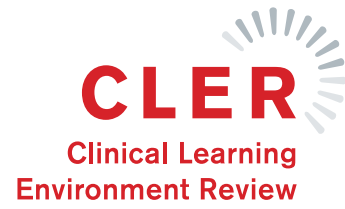
Abbreviation: CLER, Clinical Learning Environment Review.





ACGME

Accreditation Council for  
Graduate Medical Education



Access the full *CLER National Report of Findings 2021* at  
<https://doi.org/10.35425/ACGME.0008>

ISBN Digital: 978-1-945365-40-9