CLER

NATIONAL REPORT OF FINDINGS 2022:

THE COVID-19 PANDEMIC AND ITS IMPACT ON THE CLINICAL LEARNING ENVIRONMENT

ACGME
Accreditation Council for Graduate Medical Education

CLER
Clinical Learning Environment Review

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 participating in this set of Clinical Learning Environment Review site visits. We appreciate the effort that went into arranging the visits and ensuring access to leadership, residents, fellows, and program directors. It was a privilege to speak with you during these challenging times and we recognize your dedication to continually improving graduate medical education and patient care.

SUGGESTED CITATION:

Suggested citation: Koh NJ, Wagner R, Newton RC, Hirsch KW, Kuhn CM, Weiss KB; on behalf of the CLER Evaluation Committee and the CLER Program. *CLER National Report of Findings 2022: The COVID-19 Pandemic and Its Impact on the Clinical Learning Environment.* Chicago, IL: Accreditation Council for Graduate Medical Education; 2022. 10.35425/ACGME.0009

ISBN Digital: 978-1-945365-43-0

TABLE OF CONTENTS

Acknowledgments

The Accreditation Council for Graduate Medical Education (ACGME) thanks Brenda Moss Feinberg, ELS, for editing and overseeing the publication of this report. In addition, the 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 2020 - 2022

Catherine M. Kuhn, MD, Co-Chair

Kevin B. Weiss, MD, Co-Chair

Jenny J. Alexopulos, DO

Michael Apostolakos, MD

Vamsi Aribindi, MD

John Patrick T. Co, MD, MPH, FAAP

Lindsay Dale, MD

Bain J. Farris, MHA

Robert V. Higgins, MD

Sherry C. Huang, MD

Tanya Lord, PhD, MPH

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

David Mayer, MD

Lucie E. Mitchell, DO, MS

Carlie Myers, MD, MS

Carmen Hooker Odom, MRP

Frederick Peng, MD

Chad W.M. Ritenour, MD

Jeffrey M. Rothenberg, MD, MS

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

Ronald Wyatt, MD, MHA, DMS (Hon)

CLER PROGRAM STAFF 2020 - 2022

Octavia Bailey

Mark R. Bixby, MD, FAAFP

Isabelle Bourgeois, MPA

Jennifer J. Buescher, MD, MSPH

Robert Casanova, MD, MHPE

Marian D. Damewood, MD, FACOG

Kevin C. Dellsperger, MD, PhD

Robin Dibner, MD

Brenda Moss Feinberg, ELS

Staci A. Fischer, MD, FACP, FIDSA

Patrick Guthrie

Paula Hensley, MPH

Kristen Ward Hirsch, MBA

John A. Hopper, MD

Sharhabeel Jwayyed, MD, MS

Nancy J. Koh, PhD

Kathryn E. McGoldrick, MD, MAH, FCAI (Hon)

Clifton McReynolds, PhD

Joshua Mirôn, MA

Wardah Mohammad

Robin C. Newton, MD, FACP

Morgan Passiment, MS

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

Kathy B. Porter, MD, MBA, FACOG

Dale Ray, MD, MMM

Ana L. Sainz

Melissa Schori, MD, FACP, MBA, CPPS

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

Philip Jackson, MPA

Paul Foster Johnson, MFA

Laney McDougal, MS-HSM

Olivia Orndorff, MSLIS

Cassie Pritchard, MPP

Cheriden Sablik

REVIEWERS

John R. Combes, MD

Adrienne Green, MD

Scott Holliday, MD

Paul Foster Johnson, MFA

Lynne M. Kirk, MD, MACP

Betsy Lee, RN, BSN, MSPH

Thomas J. Nasca, MD, MACP

Karen Nichols, DO

K. Scott Wester, FACHE

Foreword

Karen Nichols, DO, Chair, ACGME Board of Directors

Since it was established in 2012, the Accreditation Council for Graduate Medical Education's (ACGME) Clinical Learning Environment Review (CLER) Program has provided a continual reminder of how our nation's clinical learning environments (CLEs) can influence residents and fellows as they develop in their chosen specialties and subspecialties. Then, on January 20, 2020, the Centers for Disease Control and Prevention (CDC) reported the first case of COVID-19 in the United States. Shortly thereafter, it was apparent this virus was going to have global impact. Although it was not possible to anticipate the full force of the virus at that time, it was obvious it would have a major influence on health care and graduate medical education (GME).

The ACGME immediately launched efforts to understand this impact and develop responses to support the GME community through this most challenging time. The ACGME has remained focused on its mission throughout the COVID-19 pandemic: to improve health care and population health by assessing and enhancing the quality of resident and fellow physicians' education through advancements in accreditation and education.

A central issue that is reflected across this report's eight overarching themes is the way in which CLEs vary in managing both acute challenges that arose during the pandemic, such as gaps in workforce, and addressing the more intermediate and long-term effects on patient care.

The CLER Program developed a special CLER COVID protocol as one of the ACGME's key efforts to provide its Board of Directors, the GME and CLE communities, and the public with timely snapshots of the pandemic's impact on our nation's CLEs. This protocol represents the first time the CLER Program has addressed unique aspects of health care delivery, such as the pandemic's impact on business and clinical operations in addition to the six CLER Focus Areas[1] (patient safety, health care quality, teaming, supervision, well-being, and professionalism), bringing to light key information that has informed GME and CLE leaders across the country.

A central issue that is reflected across this report's eight overarching themes is the way in which CLEs vary in managing both acute challenges that arose during the pandemic, such as gaps in workforce, and addressing the more intermediate and long-term effects on patient care. An interesting example of a positive impact has been the expanded, often innovative, use of remote/distance technologies to facilitate learning and clinical care. It will be important for the ACGME to closely follow these innovations.

What seem evident from the *CLER National Report of Findings 2022* are the many opportunities for GME leaders at our nation's CLEs and the ACGME to design, test, and implement emerging solutions to pandemic-related challenges—all while keeping current on the impact of COVID-19 and adroitly adapting to changes while fulfilling the ACGME's mission.

REFERENCE

1. 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 Graduation Medical Education. **https://doi.org/10.35425/ACGME.0003**.

Introduction: New Findings, Lessons Learned, and Future Directions

Thomas J. Nasca, MD, MACP, President and Chief Executive Officer, ACGME; Robin Wagner, RN, MHSA, Senior Vice President, Clinical Learning Environment Review, ACGME; and Kevin B. Weiss, MD, Chief Sponsoring Institutions and Clinical Learning Environment Officer, ACGME

In the closing days of 2019, the world found itself bracing for the unknown impact of a newly discovered human illness caused by COVID-19. For nearly three years, this virus caused a pandemic that reached every corner of the globe.

As the COVID-19 pandemic stretched from months to years, the ACGME strove to understand the impact of this virus on the US health care system and, more specifically, on GME. The CLER Program was mobilized to assist the ACGME and the community as we strove to develop a better understanding of the sustained impact of the pandemic on the CLEs of ACGME-accredited Sponsoring Institutions. To achieve this goal, the CLER team developed and implemented a unique protocol that focused on identifying any impact of the COVID-19 pandemic that would likely persist for at least two years.

The *CLER National Report of Findings 2022: The COVID-19 Pandemic and Its Impact on the Clinical Learning Environment* presents information gleaned from this specially commissioned set of site visits to 287 hospitals, medical centers, and other health care environments that serve as CLEs for ACGME-accredited Sponsoring Institutions. The findings represent a stratified random sample of the more than 750 eligible ACGME-accredited Sponsoring Institutions. As per other CLER protocols, site visits addressed only one CLE for each Sponsoring Institution in the sample. The visits were conducted between October 2020 and April 2022.

> As CLEs emerge from what everyone hopes have been the worst phases of the COVID-19 pandemic, it is likely many hospitals, medical centers, and health care systems will endeavor to find a way back to some version of "normal" based on pre-pandemic health care and GME routines. However, it is important to recognize the pandemic has created many opportunities and avenues to harvest and apply new approaches to learning and clinical practice.

The COVID-19 pandemic has had a dynamic and unpredictable impact on society and health care environments. The site visits that are the basis of this report were conducted through pandemic time periods that included the early phases. Specifically, the visits covered (1) the time period prior to vaccine availability and prior to the emergence of a shared set of practices for treatment of the severely ill, (2) the time period during which vaccines and boosters were introduced and treatment of severely ill patients was becoming more standardized, and (3) the time period during which Delta and Omicron Variants emerged (and their consequential impacts). The site visits were completed just before oral treatment agents were becoming widely available. Therefore, these findings must be viewed from the lens of CLEs that recently navigated these challenging times. Efforts were made to avoid visiting CLEs during acute surges of COVID-19 in their communities; as a result, it is difficult to fully understand how

experiences with managing the pandemic's acute phases may have shaped their perceptions of the likely impact over the next two years.

With these challenges in mind, it is noteworthy that, collectively, these site visits allowed us to identify several important, and likely enduring, findings that warrant the attention of the GME community and CLE executive leaders. The full report identifies eight overarching themes as listed below:

1. Clinical learning environments anticipated an ongoing need to develop and implement strategies to retain and rebuild their workforce into the future.
2. Clinical learning environments anticipated long-term changes in patient care delivery models based on the COVID-19 pandemic experience.
3. Few clinical learning environments appeared to have a long-term strategy to address multiple system-level factors that impact the well-being of the clinical care team; most clinical learning environments were primarily focused on individual resilience.
4. The COVID-19 pandemic had a unique impact on resident and fellow well-being with regard to their readiness for future practice.
5. The disruptions associated with the COVID-19 pandemic were anticipated to have a long-term impact on faculty member workload and well-being.
6. The COVID-19 pandemic disrupted many aspects of didactic and experiential learning for residents and fellows with anticipated long-term implications.
7. Clinical learning environments varied in anticipating and recognizing potential patient safety vulnerabilities resulting from the increased and accelerated use of telemedicine.
8. A limited number of clinical learning environments appeared to have a formal strategy or systematic approach to identifying and eliminating health care disparities.

Each theme is described in detail in the body of the report, and each has an important bearing on the future of health care and GME. Collectively, these themes represent an opportunity for reflection on what was done well as well as learning and improvement that will allow CLEs to face the aftermath of the pandemic and to prepare for the next global health care challenge.

As CLEs emerge from what everyone hopes have been the worst phases of the COVID-19 pandemic, it is likely many hospitals, medical centers, and health care systems will endeavor to find a way back to some version of "normal" based on pre-pandemic health care and GME routines. However, it is important to recognize the pandemic has created many opportunities and avenues to harvest and apply new approaches to learning and clinical practice. One example is the dramatic increase in the use of remote technology to facilitate clinical care and learning experiences. Many successful practices that emerged from use of remote technology can serve as a basis for rapid evolution in approaches to patient care and education. Similarly, major workforce disruptions have led to many innovations in how clinical care teams interact with each other, such as accelerated use of text or video communications, which potentially can streamline clinical care and provide new opportunities for learning. These advances in remote and asynchronous learning and clinical care must also be explored for their impact on community, group learning, culture, and identity formation of learners.

Additionally, the pandemic painfully exposed long-standing disparities in health care. This exposure serves as a clarion call to prioritize health care equity as a principal issue in US health care policy and practice and requires the explicit attention of the leadership and membership of health care systems and systems of education at all levels of the continuum for all professions.

This report also provides insights in the section on detailed findings and the accompanying appendices. For example, the report notes that 72.6% of residents and fellows interviewed reported changes in patient care processes at their clinical site as a result of the pandemic that they viewed as sustained improvements in health care. The detailed findings also note that 52.3% of residents and fellows interviewed who were post-graduate year 3 (PGY-3) and above reported participating in an interprofessional investigation of a patient safety event.

The appendices also contain several notable findings that reflect gender differences. For example, for the clinical sites visited, female residents and fellows were more likely than males to report encountering a physician (attending physician or consultant) who made them feel uncomfortable when requesting assistance (48.0% versus 39.1%, respectively, $P < .001$). Females were also more likely than males to report issues regarding supervision of consults conducted by residents and fellows as a result of the pandemic (15.8% versus 11.0%, respectively, $P < .001$). Female residents and fellows were less likely than males to report their clinical site had services and resources to help them manage emotionally stressful patient care situations resulting from the pandemic (76.2% versus 82.8%, respectively, $P < .001$). These findings suggest important gender-specific challenges within CLEs related to diversity, equity, and inclusion that warrant further consideration.

In addition to the findings summarized in this report, the unique design of this specially commissioned set of CLER site visits provided the CLER Program with new insights resulting from innovations in how it conducts CLER visits. Examples of innovations included conducting group interviews via remote technology and reconfiguring the opening and closing meetings with executive leadership to be more conversational. Additionally, the CLER Program conducted the protocol on a sample of Sponsoring Institutions. Insights gained from these recent changes have been incorporated into the next CLER protocol that is currently underway.

The year ahead will be an exciting year for the CLER Program as it engages in a process of strategic transformation and metamorphosis. Throughout this transformation, CLER site visits will continue to serve as the foundation of the CLER Program. These visits provide a critically important evidence base for formative learning for the ACGME and the GME community, including their hospitals, medical centers, and health care systems.

The ACGME Department of Sponsoring Institutions and Clinical Learning Environment Programs, which houses the CLER Program, also will develop new programmatic activities designed to support GME leaders in enhancing their CLEs through collaborative social learning networks and sharing of multimedia resources and toolkits that can amplify successful practices tested in the GME/CLE community. The department is also in the process of designing a new formative learning resource for the nation's Sponsoring Institutions that identifies CLE outcomes that align with the quadruple aim[1,2] and support high-quality GME and patient care.

As US health care systems and the GME community emerge from the acute phases of the COVID-19 pandemic, there are new opportunities to take stock of the many lessons learned from its impact. The CLER

Program trusts that the findings from this special site visit protocol will provide part of the road map on how to focus collective efforts toward harvesting some of the successful innovations in patient care delivery and GME that have emerged from the challenges posed by the pandemic.

REFERENCES

1. 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. **https://doi.org/10.1370/afm.1713**.
2. Sikka, Rishi, Julianne M Morath, and Lucian Leape. 2015. "The Quadruple Aim: Care, Health, Cost and Meaning in Work." *BMJ Quality and Safety* 24 (10): 608. **https://doi.org/10.1136/bmjqs-2015-004160**.

Overview of the CLER Program

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

The ACGME established the CLER Program in 2012[1] 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 six cross-cutting CLER Focus Areas:[2,3] patient safety, health care quality (including health care disparities), supervision, well-being, professionalism, and the newest Focus Area called teaming.

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 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 site 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.

[The CLER COVID] protocol sought to identify challenges and opportunities for patient care and GME that may persist into the coming years as clinical sites recover from the pandemic's acute phases and look toward the future.

From October 2020 to April 2022, the ACGME's CLER Program paused its in-person site visit protocol to develop, test, and implement a special CLER COVID protocol to assess the impact of the COVID-19 pandemic on the CLEs of ACGME-accredited Sponsoring Institutions. Specifically, the protocol sought to identify challenges and opportunities for patient care and GME that may persist into the coming years as clinical sites recover from the pandemic's acute phases and look toward the future.

PROTOCOL ADAPTATIONS FOR THE CLER COVID PROTOCOL

The CLER Program designed a new protocol for this set of site visits. The CLER COVID protocol assessed selected aspects of the six CLER Focus Areas and explored unique areas of focus such as the pandemic's impact on business and clinical operations and the subsequent impact on GME training.
The protocol was designed to be delivered entirely via remote technology to minimize burden to clinical sites as they cycled through various phases of the pandemic. The site visit agenda was shortened to allow for most of the visit to be accomplished in one day. Group meetings were held with executive and GME leadership, patient safety and quality leadership, residents and fellows, and program directors. A brief closing discussion with

senior leadership was held the following day. Because visits were entirely remote, walking rounds in which multiple clinical care team members are interviewed were excluded.

Unlike prior protocols for which the aim was to visit the entire census of ACGME Sponsoring Institutions, the CLER COVID protocol was administered to a stratified random sample of 287 Sponsoring Institutions. The CLER Program avoided contacting or visiting any Sponsoring Institution with Emergency Category status.

To help facilitate the scheduling process, sites traditionally have the opportunity to use up to three passes. When a pass is activated, the site may be contacted again as soon as the following week. For the CLER COVID protocol, the scheduling process was adapted to allow sites to declare one of the three passes as a "COVID surge pass." When a COVID surge pass was activated, the CLER Program would not contact that site again for scheduling for at least two months.

For a more detailed description of the protocol, see the Methodology section of this report (pp. 17-24).

THE CLER EVALUATION COMMITTEE

The CLER Evaluation Committee provides oversight and guidance regarding all aspects of program development. The Committee is composed of members with expertise in patient safety and health care quality improvement, GME leaders, and executive leaders at hospitals and medical centers (e.g., chief medical officer, chief nursing officer). The Committee also includes resident/fellow representatives and public members.

For this report, the Committee worked with CLER Program staff to review and finalize the overarching themes resulting from site visits. In their responses to these findings, committee members provided an external voice. Their views and commentaries on the significance of the overarching themes are reflected in the discussion sections of this report.

REPORTING THE FINDINGS AND ORGANIZATION OF THE REPORT

Similar to prior *CLER National Reports*, this report presents findings in multiple ways with overarching themes, detailed findings, and appendices that include technical tables and graphic displays of selected data.

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: Accreditation Council for Graduation 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: Accreditation Council for Graduate Medical Education. **doi:10.35425/ACGME.0003**.

CLER PROGRAM

Octavia Bailey; Mark R. Bixby, MD, FAAFP; Isabelle Bourgeois, MPA; Jennifer J. Buescher, MD, MSPH; Robert Casanova, MD, MHPE; Marian D. Damewood, MD, FACOG; Kevin C. Dellsperger, MD, PhD; Robin Dibner, MD; Brenda Moss Feinberg, ELS; Staci A. Fischer, MD, FACP, FIDSA; Patrick Guthrie; Paula Hensley, MPH; Kristen Ward Hirsch, MBA; John A. Hopper, MD; Sharhabeel Jwayyed, MD, MS; Nancy J. Koh, PhD; Kathryn E. McGoldrick, MD, MAH, FCAI (Hon); Clifton McReynolds, PhD; Joshua Mirôn, MA; Wardah Mohammad; Robin C. Newton, MD, FACP; Morgan Passiment, MS; Douglas E. Paull, MD, MS, FACS, FCCP, CHSE, CPPS; Kathy B. Porter, MD, MBA, FACOG; Dale Ray, MD, MMM; Ana L. Sainz; Melissa Schori, MD, FACP, MBA, CPPS; 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 CLER COVID site visits to 287 CLEs of ACGME-accredited Sponsoring Institutions, which the CLER Program conducted between October 19, 2020, and April 26, 2022. Recognizing the substantial stress the COVID-19 pandemic placed on CLEs, the CLER COVID site visit protocol was designed to minimize the level of burden associated with the site visit. The site visits were limited to five to six hours of total time over the course of one-and-a-half days and were conducted remotely with videoconferencing to protect the safety of both the CLEs and CLER Field Representatives. The CLER Program also avoided contacting any Sponsoring Institution that was actively in Emergency Category status.[a]

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 (1) the impact of the COVID-19 pandemic on the CLEs of ACGME-accredited Sponsoring Institutions and (2) ways in which CLEs engage residents and fellows in the CLER Focus Areas.[1]

SAMPLING AND SELECTION OF CLINICAL LEARNING ENVIRONMENTS

To expeditiously design, test, and complete the CLER COVID protocol in an 18-month time frame, the CLER Program visited a sample of CLEs of ACGME-accredited Sponsoring Institutions, aiming for approximately 40% of the total population of Sponsoring Institutions. To ensure the sample was proportionally representative of all Sponsoring Institutions, the CLER Program employed stratified random sampling to reflect distribution by region and number of ACGME-accredited core residency programs.

During the cycle of CLER COVID visits, there were 751 ACGME-accredited Sponsoring Institutions with residents and fellows enrolled in ACGME-accredited programs. This report contains findings from 287 CLEs that are affiliated with 287 Sponsoring Institutions, which collectively oversaw 4,584 ACGME-accredited residency and fellowship programs (41.2% of all ACGME programs) and 49,191 residents and fellows (40.5% of all residents and fellows in ACGME-accredited programs).[b] 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. Site 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's designated institutional official (DIO) and chief executive officer (CEO) were available to attend the opening and exit interviews.

[a] The ACGME's framework for Emergency categorization of Sponsoring Institutions provides a process for managing accreditation concerns resulting from pandemic-related educational disruption. The ACGME may classify Sponsoring Institutions facing substantial and sustained disruption of GME operations resulting from the COVID-19 pandemic in the Emergency Category.

[b] Source: The ACGME annual data report. The ACGME annual data report contains the most recent data on the programs, institutions, and physicians in graduate medical education as reported by all ACGME-accredited Sponsoring Institutions and programs.

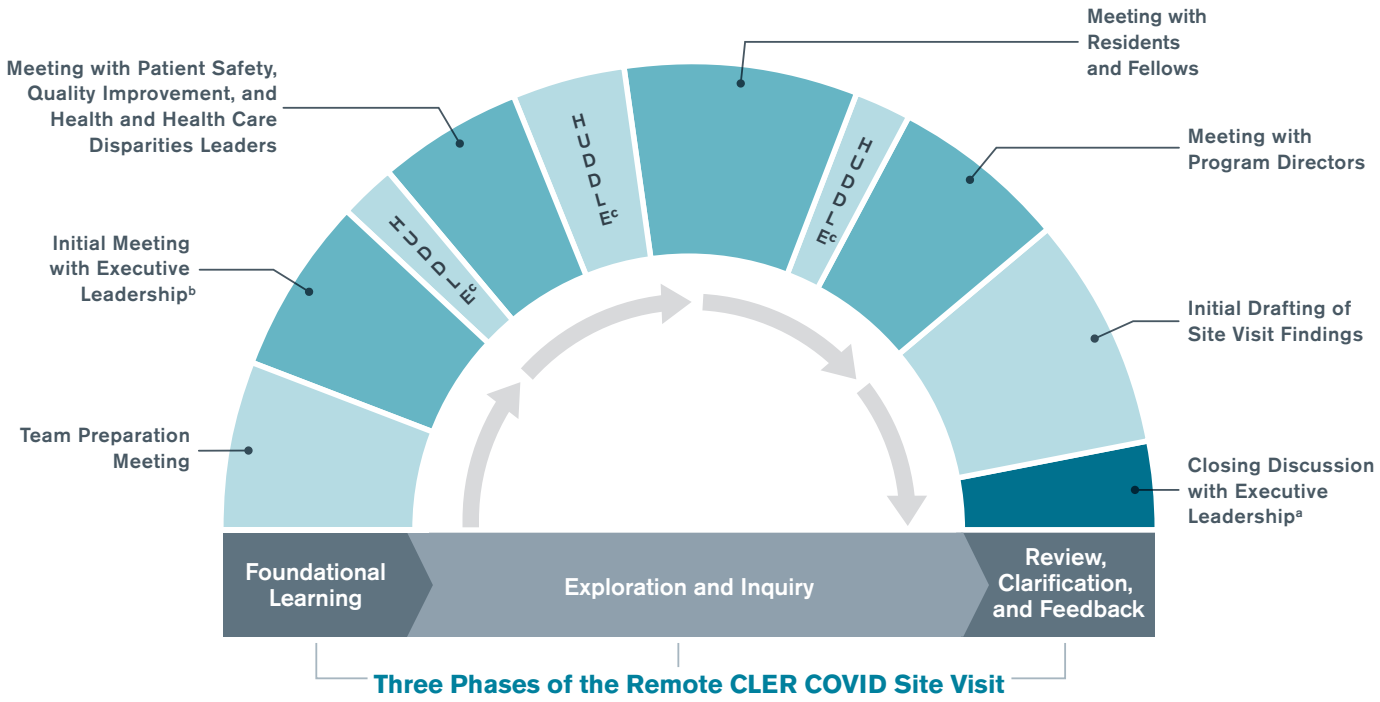
For the majority of the Sponsoring Institutions visited, the remote CLER COVID site visit occurred at the hospital or medical center that served as the major participating clinical site for the Sponsoring Institution. For a small proportion of the Sponsoring Institutions, the site visit was conducted exclusively in the ambulatory care setting, including teaching health centers administered by the Health Resources and Services Administration.

CLER Program staff members notified clinical sites of their CLER COVID 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. A salaried employee of the ACGME led each CLER site visit team. Additional team members included other CLER Field Representatives and ACGME staff members.

CLER COVID SITE VISIT PROTOCOL

The CLER COVID site visit protocol included a structured schedule of events for each visit (*Figure 1*). The CLER Program designed its site visit protocol to be the same for all CLER COVID site visits regardless of the number of core residency programs at a Sponsoring Institution.

Schematic Flow of a Remote CLER COVID Site Visit[a]



[a] Recognizing the significant stress that the COVID-19 pandemic placed on clinical learning environments, the CLER COVID site visit was designed to minimize the level of burden associated with the site visit. The site visits were limited to five to six hours of total time and were conducted remotely to protect the safety of both the clinical learning environments and the CLER Field Representatives.

[b] Executive leadership meetings included the participating site's chief executive officer and designated institutional official (required), as well as other members of executive leadership (e.g., chief medical officer, chief nursing officer, dean).

[c] Throughout the site visit, the CLER Field Representatives conducted huddles to discuss the information they had gathered.

Abbreviation: CLER, Clinical Learning Environment Review.

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

CLER Field Representatives conducted group interviews in the same order for each site visit: (1) 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; (2) a group interview with patient safety, quality improvement, and health and health care disparities leaders; (3) a group interview with residents and fellows; (4) a group interview with program directors; and (5) a closing discussion 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 who would be attending the group interviews before the site visit. The CLER team conducted all group interviews via videoconferencing (i.e., Zoom, Microsoft Teams) and ensured the interviews did not exceed 75 minutes.

The resident and fellow group interviews comprised one to 30 peer-selected participants per session. Specifically, residents and fellows at the Sponsoring Institution, excluding chief residents, selected 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 who were PGY-2 or higher to ensure that interviewees had sufficient clinical experience to assess the learning environment. PGY-1 residents in transitional year residency programs were permitted to attend. For CLEs with more than 30 programs, two separate sets of interviews were conducted with residents and fellows with no more than 30 participants attending an individual session.

Group interviews with program directors comprised one to 20 leaders of ACGME-accredited core residency and fellowship programs at each clinical site; sessions included associate program directors when program directors were not available or when the DIO was also a program director.

Throughout each visit, the CLER team members 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 closing discussion, the CLER team shared its oral report with executive leadership, covering initial feedback on the Focus Areas and information to inform decision making aimed at optimizing GME and patient care based on knowledge gained from the COVID-19 pandemic. 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 closing discussion and written report was to provide formative information that would help executive leaders assess their practices in the six Focus Areas, identify opportunities to address the challenges in the CLE posed by the COVID-19 pandemic, inform resident and fellow training, and guide improvements in the CLE to ensure high-quality patient care.

DATA SOURCES

Survey Instruments

To conduct the group interviews, CLER Field Representatives used a structured questionnaire developed under the guidance of experts in GME and/or the six Focus Areas. The questionnaires contained both closed- and open-ended questions. After the questionnaires were initially content validated by expert review, the CLER Program field tested the instruments on 12 CLER COVID 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 the interviewers.

CLER COVID Site Visit Reports

The CLER Field Representatives synthesized findings from each visit in a written report, working from a formal template developed and refined during the early stages of program implementation. The template guided the CLER site visit team in ensuring that each of the six Focus Areas and areas of exploration beyond the Focus Areas were fully addressed in the written report 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 written report for accuracy and to achieve consensus on the findings.

Other Sources of Data

Several other data sources were used to augment the site visit data, including the ACGME annual data reports[c] and the 2020 American Hospital Association (AHA) Annual Survey Database.[d] 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(s). 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.

Selected data from the CDC were used to provide background on the COVID-19 pandemic and contextualize the CLER COVID site visits.[2,3,4,5] The data focus on a selected set of key indicators such as daily aggregate counts of COVID-19 cases, average percentage of inpatient beds occupied by patients with COVID-19, and average percentage of total population fully vaccinated.

DATA COLLECTION

Group Interviews with an Online Audience Response System

CLER Field Representatives conducted group interviews with residents, fellows, and program directors using an online audience response system (ARS) (Keypoint Connect, 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 two surveys—one for residents and fellows and another for program directors—consisted of 24 and 11 closed-ended questions and 13 and 14 open-ended questions, respectively.

Group Interviews with No Online Audience Response System

CLER Field Representatives documented all responses qualitatively for group interviews with (1) the CEO, members of the executive team, the DIO, and the resident/fellow representative (17 questions) and (2) the patient safety, quality improvement, and health and health care disparities leaders (24 questions).

[c] The ACGME annual data reports contain the most recent data on the programs, institutions, and physicians in GME as reported by all ACGME-accredited Sponsoring Institutions and programs. The ACGME annual data reports are specifically generated for use by the CLER Program.

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

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 member count. Demographic information included gender and clinical specialty type of physicians who participated in the group interviews.

Analysis of the Online Audience Response System Data

Analyses were conducted at both the individual (e.g., resident and fellow) and CLE levels. For 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 provide a national overview of the state of CLE engagement in the six Focus Areas and areas of exploration beyond the Focus Areas and reveal how CLEs compare 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) level of training, and (3) specialty grouping. Chi-square analysis also was 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 the grouping of CLE-specific variables (e.g., bed size).

Individual responses also were aggregated at the CLE level and grouped by quarter (e.g., Quarter 1, 2022). Results are presented as medians and interquartile ranges. The Kolmogorov-Smirnov test was used to test for normality in the data. Based on results of the Kolmogorov-Smirnov test and tests of symmetry, a nonparametric test was employed. The Kruskal-Wallis H test was conducted to determine if there were differences in the median percentage based on individual responses to closed-ended questions that were aggregated at the CLE level and grouped by quarter.

All statistical analyses were conducted using SPSS Statistics version 22.0 (IBM Corp, Armonk, NY). *P* values of .05 or less were considered statistically significant.

Analysis of CLER COVID Site Visit Reports

Specific findings based on responses to non-ARS questions were systematically coded in NVivo qualitative data analysis software version 12 (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 are reported.

Development of Overarching Themes

The overarching themes (i.e., broad, high-level observations) were determined in three stages. First, during debriefing sessions every quarter, CLER Program staff members asked CLER Field Representatives to identify

key findings in both the CLER Focus Areas and in areas of exploration beyond the CLER Focus Areas based on their summative experiences. As part of these discussions, CLER Field Representatives also noted how the findings evolved over time. CLER Program staff members reviewed the information gathered during the debriefing sessions 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 CLER Field Representatives, CLER Program staff members revised the summary of results and presented it to the CLER Evaluation Committee. Lastly, CLER Evaluation Committee members reviewed the results and developed a set of commentaries on the importance of the findings and their impact on patient care and physician training and 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 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 obtained during group interviews) 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, and program directors 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. Considering 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. 2019. "CLER Pathways to Excellence: Expectations for an Optimal Clinical Learning Environment to Achieve Safe and High-Quality Patient Care, Version 2.0." Chicago: Accreditation Council for Graduation Medical Education. https://doi.org/10.35425/ACGME.0003.
2. Centers for Disease Control and Prevention. United States COVID-19 Cases and Deaths by State over Time. Accessed August 30, 2022. https://data.cdc.gov/Case-Surveillance/United-States-COVID-19-Cases-and-Deaths-by-State-o/9mfq-cb36.
3. Centers for Disease Control and Prevention. COVID-19 Diagnostic Laboratory Testing (PCR Testing) Time Series. Accessed August 30, 2022. https://healthdata.gov/dataset/COVID-19-Diagnostic-Laboratory-Testing-PCR-Testing/j8mb-icvb.
4. Centers for Disease Control and Prevention. COVID-19 Reported Patient Impact and Hospital Capacity by State Timeseries. Accessed August 30, 2022. https://healthdata.gov/Hospital/COVID-19-Reported-Patient-Impact-and-Hospital-Capa/g62h-syeh.
5. Centers for Disease Control and Prevention. COVID-19 Vaccinations in the United States, County. Accessed August 30, 2022. https://data.cdc.gov/Vaccinations/COVID-19-Vaccinations-in-the-United-States-County/8xkx-amqh.

CLER PROGRAM

Octavia Bailey; Mark R. Bixby, MD, FAAFP; Isabelle Bourgeois, MPA; Jennifer J. Buescher, MD, MSPH; Robert Casanova, MD, MHPE; Marian D. Damewood, MD, FACOG; Kevin C. Dellsperger, MD, PhD; Robin Dibner, MD; Brenda Moss Feinberg, ELS; Staci A. Fischer, MD, FACP, FIDSA; Patrick Guthrie; Paula Hensley, MPH; Kristen Ward Hirsch, MBA; John A. Hopper, MD; Sharhabeel Jwayyed, MD, MS; Nancy J. Koh, PhD; Kathryn E. McGoldrick, MD, MAH, FCAI (Hon); Clifton McReynolds, PhD; Joshua Mirôn, MA; Wardah Mohammad; Robin C. Newton, MD, FACP; Morgan Passiment, MS; Douglas E. Paull, MD, MS, FACS, FCCP, CHSE, CPPS; Kathy B. Porter, MD, MBA, FACOG; Dale Ray, MD, MMM; Ana L. Sainz; Melissa Schori, MD, FACP, MBA, CPPS; 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 Wedemeyer, MD; Kevin B. Weiss, MD; Esther Woods; Martha S. Wright, MD, Med; James R. Zaidan, MD, MBA; Jose Zayas, DO, FAAP

The CLER Protocol in the Context of the COVID-19 Pandemic

Nancy J. Koh, PhD; Staci A. Fischer, MD, FACP, FIDSA; and Hongling Sun, PhD, on behalf of the CLER Program

INTRODUCTION

Emerging at the end of 2019, the COVID-19 pandemic posed a large-scale public health and safety challenge, leading to major disruptions to health care systems in the United States and the world.[1,2] Early in the pandemic, the rapid surge in hospitalizations in the United States resulted in restructuring and redeploying clinical care team members, including residents and fellows, to care for acutely ill patients with COVID-19. Concerns for viral spread in health care settings also resulted in cancellation of elective procedures, migration of ambulatory care visits to telemedicine, restriction of visitors, and other changes to health care delivery. These changes had an impact on resident and fellow education and training.[3,4] With a high incidence of transmission, COVID-19 continued to spread as new genetic mutations and variants were discovered throughout the pandemic.

Figure 1 provides a general timeline of how the pandemic evolved and progressed with the arrival of vaccines and the emergence of COVID-19 variants in relation to the timeframe in which CLER COVID visits were conducted. During the cycle of visits, there were two dominant variants–Delta and Omicron.

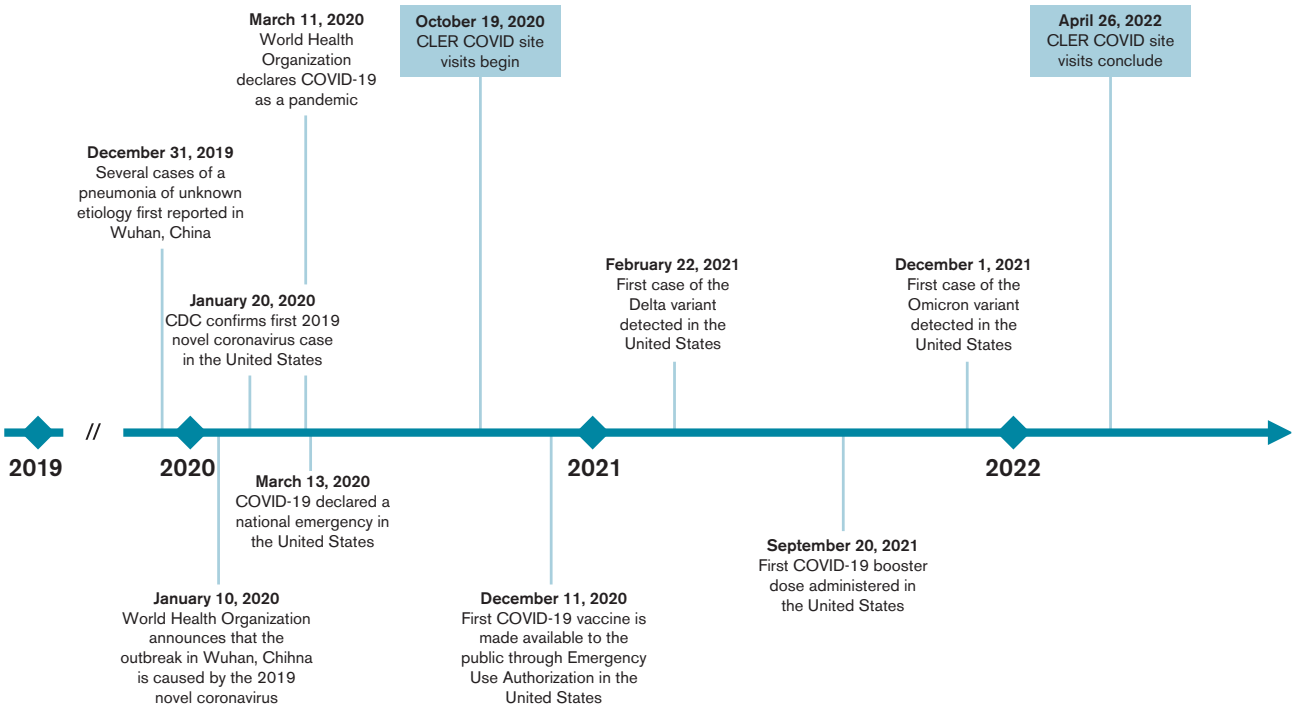


Figure 1. Timeline of the COVID-19 Pandemic in Relation to CLER COVID Visits

This section of the report provides a snapshot of the pandemic based on a selected set of key indicators that are intended to help frame the public health emergency and contextualize the site visits conducted between October 2020 and April 2022.

The trends presented are based on data compiled from the CDC as of August 30, 2022.[5,6,7,8] The selected set of key indicators focus on the following:

- number of COVID-19 cases[a]
- number of COVID-19 deaths[a]
- percent test positivity[b]
- number of inpatient beds occupied by patients with COVID-19[c]
- average percentage of inpatient beds occupied by patients with COVID-19[c]
- average percentage of total population fully vaccinated[d]
- average percentage of total population fully vaccinated and received booster[d]
- number of hospitals reporting a critical staffing shortage[c]

Per the CDC, the data presented may differ from data on state and local websites due to differences in how data were reported (e.g., date reported for cases) or how the metrics were calculated.

When reviewing trends on the selected measures, it is important to consider the rollout of the COVID-19 vaccine and the emergence of COVID-19 variants that contributed to the continuation of the pandemic.

[a] Dataset provides daily aggregate counts of COVID-19 cases and deaths as reported by states, territories, and other jurisdictions.
[b] Dataset includes daily viral COVID-19 laboratory test (polymerase chain reaction) results from more than 1,000 US laboratories and testing locations including commercial and reference laboratories, public health laboratories, hospital laboratories, and other testing locations. Data for each state are sourced from either data submitted directly by the state health department via COVID-19 electronic laboratory reporting or a combination of commercial laboratories, public health laboratories, and in-house hospital laboratories.
[c] Dataset provides weekly state-aggregated data for hospital utilization and is derived from reports with facility-level granularity.
[d] Dataset provides daily county-level counts and represents all vaccine partners including jurisdictional partner clinics, retail pharmacies, long-term care facilities, dialysis centers, Federal Emergency Management Agency and Health Resources and Services Administration partner sites, and federal entity facilities.

COVID-19 CASES IN THE UNITED STATES

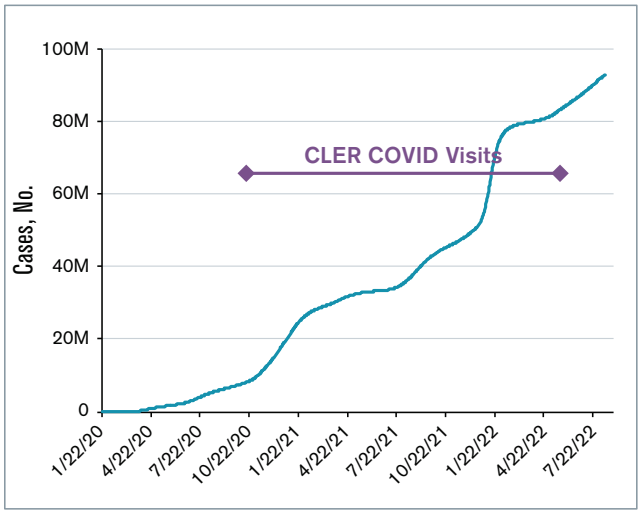


Figure 2. Daily Trends of COVID-19 Cases[5]

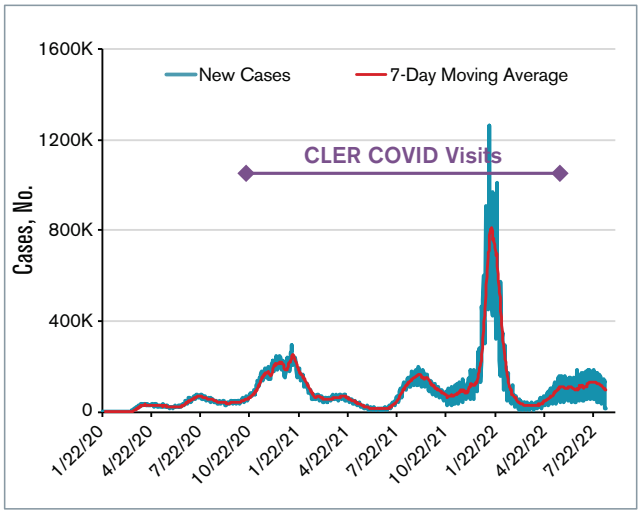


Figure 3. Daily Trends of New COVID-19 Cases[5]

COVID-19 DEATHS IN THE UNITED STATES

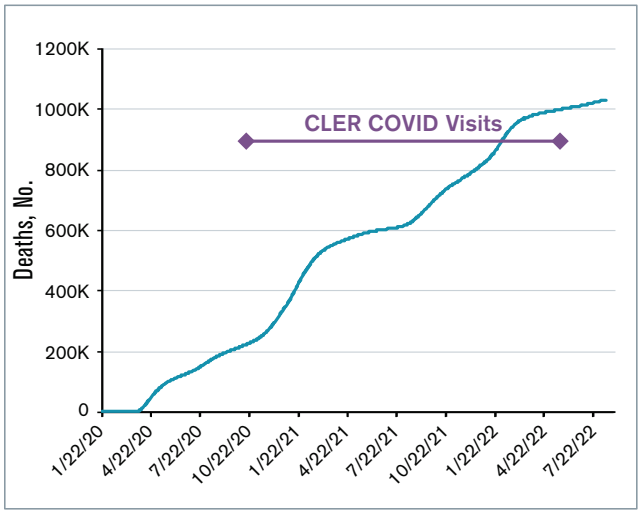


Figure 4. Daily Trends of COVID-19 Deaths[5]

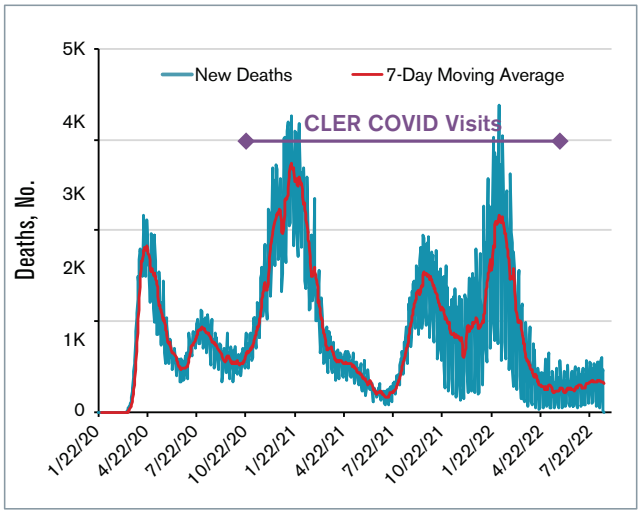


Figure 5. Daily Trends of New COVID-19 Deaths[5]

COVID-19 TESTS IN THE UNITED STATES

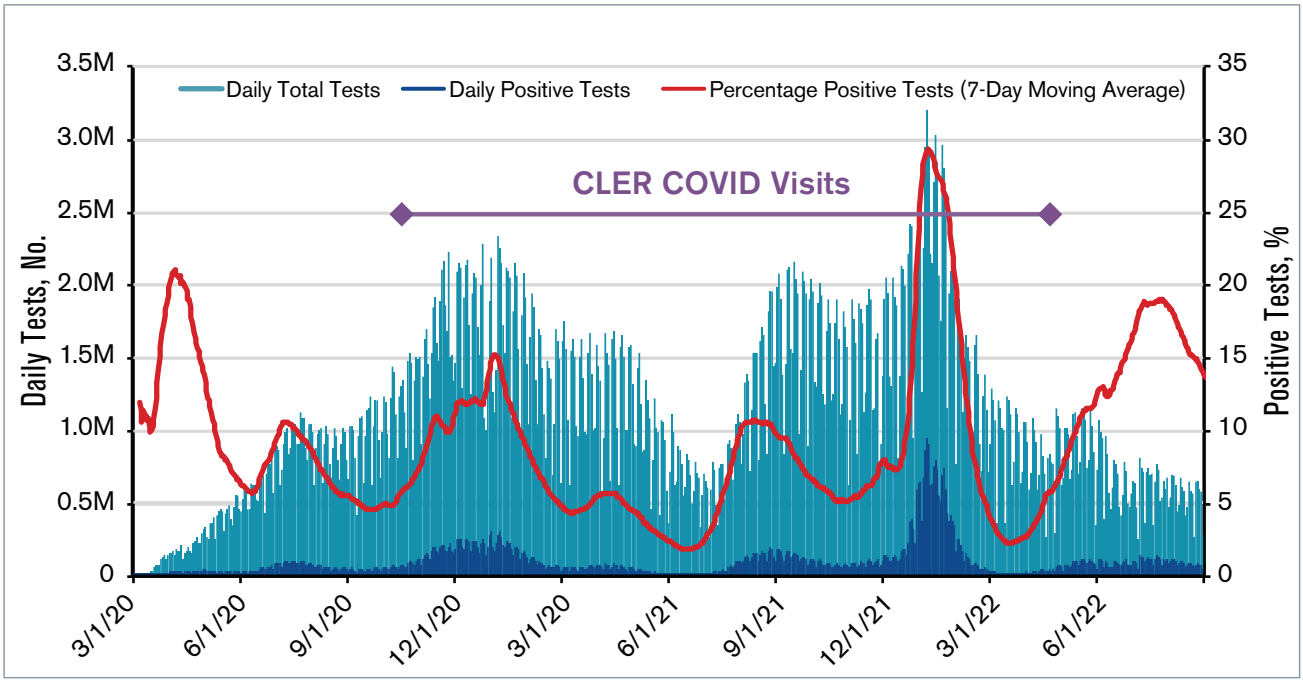


Figure 6. Daily Trends of Total COVID-19 Tests Performed, Positive Tests, and Positivity Rate[6]

INPATIENT BEDS OCCUPIED BY PATIENTS WITH COVID-19 IN THE UNITED STATES

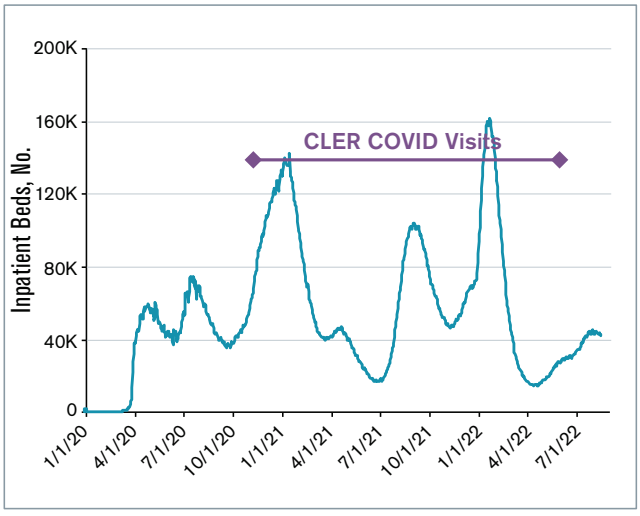


Figure 7. Daily Trends in Number of Inpatient Beds Occupied by Patients with COVID-19[7]

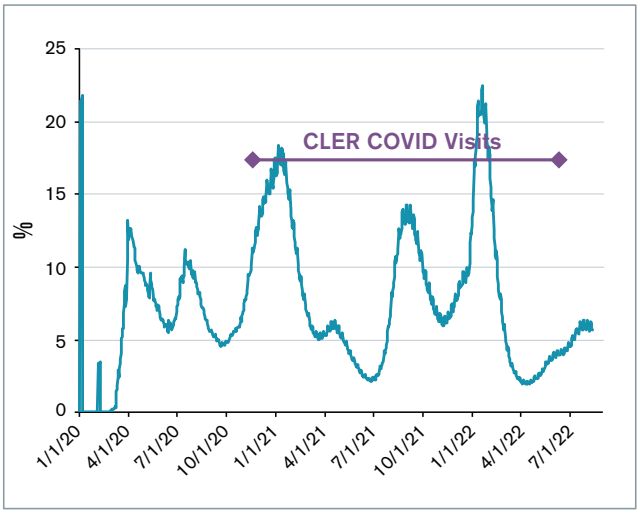


Figure 8. Average Percentage of Inpatient Beds Occupied by Patients with COVID-19[7]

COVID-19 VACCINATIONS AND BOOSTERS IN THE UNITED STATES

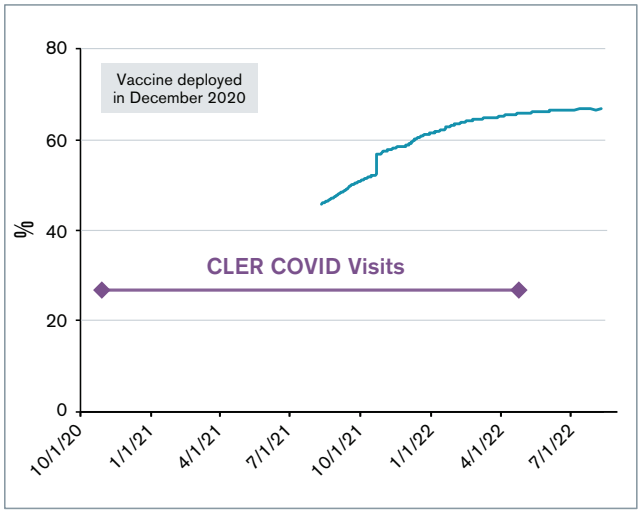


Figure 9. Average Percentage of Population Fully Vaccinated at County Level[8]

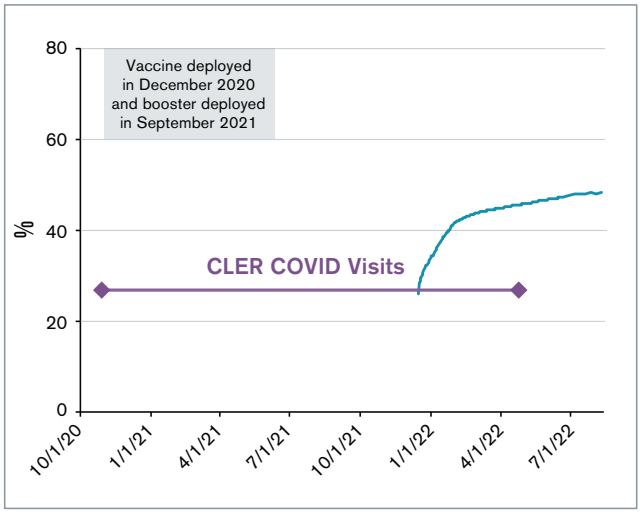


Figure 10. Average Percentage of Population Fully Vaccinated and Received Booster at County Level[8]

CRITICAL STAFFING SHORTAGE IN THE UNITED STATES

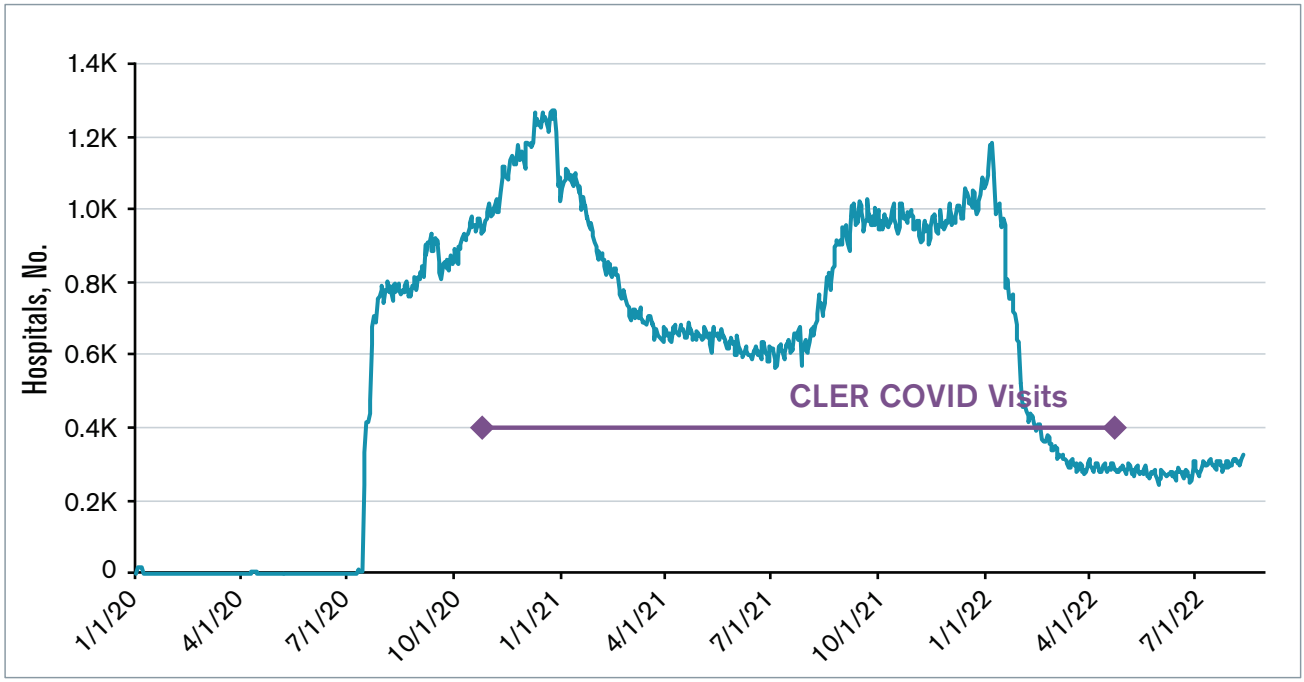


Figure 11. Daily Trends in Number of Hospitals Reporting a Critical Staffing Shortage[7]

REFERENCES

1. Bergquist, Savannah, Thomas Otten, and Nick Sarich. 2020. "COVID-19 Pandemic in the United States." *Health Policy and Technology* 9 (4): 623–38. **https://doi.org/10.1016/j.hlpt.2020.08.007**.
2. Ciotti, Marco, Massimo Ciccozzi, Alessandro Terrinoni, Wen-Can Jiang, Cheng-Bin Wang, and Sergio Bernardini. 2020. "The COVID-19 Pandemic." *Critical Reviews in Clinical Laboratory Sciences* 57 (6): 365–88. **https://doi.org/10.1080/10408363.2020.1783198**.
3. Byrne, Lauren M., Eric S. Holmboe, Lynne M. Kirk, and Thomas J. Nasca. 2021. "GME on the Frontlines–Health Impacts of COVID-19 Across ACGME-Accredited Programs." *Journal of Graduate Medical Education* 13 (1): 145–52. **https://doi.org/10.4300/JGME-D-20-01539.1**.
4. Hogan, Sean O., and Eric S. Holmboe. 2022. "Effects of COVID-19 on Residency and Fellowship Training: Results of a National Survey." *Journal of Graduate Medical Education* 14 (3): 359–64. **https://doi.org/10.4300/JGME-D-22-00351.1**.
5. Centers for Disease Control and Prevention. United States COVID-19 Cases and Deaths by State over Time. Accessed August 30, 2022. **https://data.cdc.gov/Case-Surveillance/United-States-COVID-19-Cases-and-Deaths-by-State-o/9mfq-cb36**.
6. Centers for Disease Control and Prevention. COVID-19 Diagnostic Laboratory Testing (PCR Testing) Time Series. Accessed August 30, 2022. **https://healthdata.gov/dataset/COVID-19-Diagnostic-Laboratory-Testing-PCR-Testing/j8mb-icvb**.
7. Centers for Disease Control and Prevention. COVID-19 Reported Patient Impact and Hospital Capacity by State Timeseries. Accessed August 30, 2022. **https://healthdata.gov/Hospital/COVID-19-Reported-Patient-Impact-and-Hospital-Capa g62h-syeh**.
8. Centers for Disease Control and Prevention. COVID-19 Vaccinations in the United States, County. Accessed August 30, 2022. **https://data.cdc.gov/Vaccinations/COVID-19-Vaccinations-in-the-United-States-County/8xkx-amqh**.

CLER PROGRAM

Octavia Bailey; Mark R. Bixby, MD, FAAFP; Isabelle Bourgeois, MPA; Jennifer J. Buescher, MD, MSPH; Robert Casanova, MD, MHPE; Marian D. Damewood, MD, FACOG; Kevin C. Dellsperger, MD, PhD; Robin Dibner, MD; Brenda Moss Feinberg, ELS; Staci A. Fischer, MD, FACP, FIDSA; Patrick Guthrie; Paula Hensley, MPH; Kristen Ward Hirsch, MBA; John A. Hopper, MD; Sharhabeel Jwayyed, MD, MS; Nancy J. Koh, PhD; Kathryn E. McGoldrick, MD, MAH, FCAI (Hon); Clifton McReynolds, PhD; Joshua Mirôn, MA; Wardah Mohammad; Robin C. Newton, MD, FACP; Morgan Passiment, MS; Douglas E. Paull, MD, MS, FACS, FCCP, CHSE, CPPS; Kathy B. Porter, MD, MBA, FACOG; Dale Ray, MD, MMM; Ana L. Sainz; Melissa Schori, MD, FACP, MBA, CPPS; 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 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, and Kevin B. Weiss, MD, on behalf of the CLER Evaluation Committee

INTRODUCTION

As in prior *CLER National Reports*, this report reveals a number of overarching themes that speak to opportunities for optimizing patient care and physician education as CLEs navigate the COVID-19 pandemic and look to the future. Of note, the CLER COVID protocol did not directly assess for these themes. Rather, they are based on the CLER Field Representatives' overall observations for this cycle of CLER visits. The development of these themes is described in detail in the Methodology section of this report (pp. 17-24).

The overarching themes appear in 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 train.

OVERARCHING THEMES

Theme 1: Clinical learning environments anticipated an ongoing need to develop and implement strategies to retain and rebuild their workforce into the future.

Clinical learning environments experienced challenges, often perceived as serious, in maintaining a health care workforce—physicians, nurses, and other members of the clinical learning environment—due to multiple stressors related to and/or exacerbated by the cumulative effects of the COVID-19 pandemic. Workforce shortages and challenges with recruitment and retention impacted the ability of the clinical care team to effectively collaborate and ensure continuity of patient care.

Clinical learning environments appeared to be in various stages of assessing gaps, forecasting, and designing and implementing plans to address short- and long-term workforce needs at their clinical sites, including new approaches to staffing models. Executive leaders in many clinical learning environments anticipated that rebuilding efforts as part of workforce planning into the future will likely continue for the next several years and the cumulative effects of these challenges will also have a long-term impact on graduate medical education.

Discussion

CLEs are currently facing significant workforce shortages and related challenges that will likely persist into the foreseeable future amid aggressive competition for human resources. These challenges are compounded when viewed through the lenses of patient safety and GME.

When addressing workforce shortages and challenges, many CLEs are engaged in intense efforts to recruit and retain staff members and implement changes to care models, processes, and workflow patterns that may fluctuate according to patient census and CLE capacity.

Many CLEs have increased their reliance on contracting of professionals for temporary or locum tenens assignments (e.g., traveling nurses and other clinical staff members) as an ongoing solution to workforce challenges. Although these individuals have clinical expertise, they lack organizational knowledge about the way things work at the CLE (e.g., hospital processes, team dynamics). They also may lack experience working in a GME environment. These temporary workforce solution deficits can impact clinical care team members' ability to work efficiently and effectively with one another and similarly impact residents' and fellows' understanding of how team members can work together to optimize patient care. CLEs are encouraged to consider these impacts when contemplating their long-term strategies to address workforce challenges.

Marked increases in the number of staff members rotating into and out of the CLE also pose challenges to continuity of care and thereby increase patient safety risks (e.g., breakdowns in transitions of care). As frontline providers, residents and fellows are ideally situated to both identify many of these risks and mitigate them. They are likely doing so informally every day through workarounds that circumvent the usual processes of care. As such, CLEs would benefit from formally including residents and fellows in developing systems-based approaches to anticipating and mitigating these new risks to patient safety.

Current workforce shortages also have given rise to a climate in which CLEs place demands on residents and fellows that fall outside the parameters of pre-pandemic expectations. Some of these new responsibilities may enrich the resident and fellow experience (e.g., inclusion in systems-based problem solving), while others are less helpful (e.g., assisting with patient transport). CLE and GME leadership need to work together to ensure residents and fellows are protected from demands that are outside of or interfere with the usual scope and pace of their GME experience.

In addition to focusing on recruitment, CLEs are expanding their efforts to retain existing staff members. Workforce reductions challenge CLE capacity to provide patient care and support education. The most experienced staff and faculty members are at risk to retire or transition to less demanding health care positions. Additionally, new and mid-career providers are also leaving and contributing to retention problems. These departures used to happen at a predictable pace that allowed for succession planning and smooth transitions. The COVID-19 pandemic accelerated that pace, introducing a potential detrimental impact on resident and fellow access to supervisors, mentors, role models, and overall institutional knowledge within and across professions.

CLEs will likely benefit from specific efforts to retain staff members who serve as educators (both formal and informal) and in the case of GME, from working with the DIO and GME program leaders to explore new approaches to filling gaps to maintain consistency of educational experiences for residents and fellows.

As noted earlier, CLEs are addressing workforce challenges through recruitment and retention efforts and by adapting care models and workflows. In the short term, CLEs have had to deploy staffing models that often increase the workload of the remaining staff members (e.g., higher patient-to-nurse ratios) to meet urgent needs. In some settings, CLEs have had to close units or floors due to insufficient staffing capacity. These measures are not sustainable without accompanying efforts to fundamentally redesign care models.

Although care model redesign, such as the movement toward increased ambulatory care, was underway before the pandemic occurred, COVID-19 has accelerated the need to test and implement new care models already in progress and to further innovate and develop new models. Care model redesign provides an ideal opportunity for CLEs to tap the knowledge and experience of the GME community in the thoughtful and purposeful redesign of health care for the future. Given their positions on the front lines of care, residents, fellows, and GME leaders are

well positioned to work with CLE leadership in the design, testing, and implementation of short- and long-term systems-based solutions. See Theme 2 for further discussion about workforce issues as they relate to the impact on redesign of health care delivery.

Theme 2: Clinical learning environments anticipated long-term changes in patient care delivery models based on the COVID-19 pandemic experience.

In many clinical learning environments, there were changes in patient care processes such as the move to increased ambulatory-based surgery and procedural care, expanded and enhanced home-based services, and increased use of remote technology. These and other changes were perceived to have led to both efficiencies and deficiencies as part of delivering care and were anticipated to lead to sustained and continued evolution in patient care delivery. In many clinical learning environments, there appeared to be challenges in ensuring that members of the clinical care team, including residents and fellows, attain the necessary knowledge, attitudes, and skills to keep pace with new and evolving health care delivery models, especially in a rapidly changing environment.

Discussion

In CLEs across the country, the pandemic has prompted or accelerated testing and implementation of new approaches to delivering patient care. Some of these approaches, such as expanded use of telemedicine, artificial intelligence (AI), and new approaches to enhancing home health care, have emerged quickly and organically out of urgent needs to limit exposure to the COVID-19 virus. Other changes to patient care models precipitously emerged in response to staffing shortages and were accompanied by intentional or unintentional shifting of roles and responsibilities of clinical care team members. In other instances, the pandemic accelerated change that was already in process–such as morning rounds conducted via remote technologies.

During the last several years, these changes to care models have been implemented unevenly across various clinical service lines and units and are often superimposed upon more traditional models of care. For CLEs, this state of dynamic change and innovation is both a challenge and an opportunity. Absent careful monitoring and oversight, this continual state of change has the potential to cause disruption, confusion, and lack of cohesion among the members of the care team, thereby increasing risk to patient safety. Yet these challenges also introduce opportunities for innovation and robust testing of various ways to deliver care–whether they are new delivery mechanisms (e.g., a new platform to deliver telemedicine or increase electronic health record efficiency, use of artificial intelligence) or new roles and responsibilities for the care team members (e.g., enhanced roles for licensed practical nurses, advanced practice providers, emergency medical technicians, and students).

As health care delivery is increasingly extending into homes and use of personal device monitoring, evolving care models also involve family members as important contributors to the care team. Home-based care models likely will expand in step with developments in distance monitoring and telemedicine. To help ensure continuity of care and patient safety, GME and CLEs need to work together to ensure residents and fellows have the skills to effectively communicate with family caregivers of patients receiving care in their homes.

CLE leaders are encouraged to make purposeful team-based efforts to examine both existing and new care models to understand what works, what could be improved, and what is no longer relevant. Through this

examination, the goal would be to emerge with a strong, integrated set of approaches to optimize patient care. While it takes extra effort to ensure team-based approaches to improvement, it is important to bring the various members of the clinical care team together at the same time to help the CLE innovate, problem solve, and learn (rather than collecting their inputs asynchronously). Physicians, nurses, social workers and other frontline staff members all have different perspectives that potentially affect other members of the care and administrative teams and would benefit from a live exchange of ideas.

Additionally, in many CLEs, care models are changing at an unprecedented pace and may not optimize the potential impact on GME. For example, faculty members accustomed to traditional educational models may not be aware of or acclimatized to the changes in patient care delivery. This lack of familiarity may in turn challenge their ability to model, teach, and supervise in the context of these rapidly changing care models. While the movement toward telemedicine, ambulatory and home-based care, and use of AI has been underway for many years, the pandemic expanded and accelerated these efforts—perhaps outpacing GME processes for how faculty train and educate, supervise, and support residents and fellows in these different settings. Moreover, the degree to which residents and fellows were exposed to a wide range of patient care experiences varied within and across CLEs throughout the pandemic. As a result, some residents and fellows may be coming to these new care models with gaps in clinical knowledge and experience that hinder their ability to fully function in their roles within the clinical care team, thereby creating new challenges for the team. For the reasons mentioned above, CLE and GME leaders need to approach changes to care models with intention and purpose at each phase of development and testing so as not to outpace one another and place patient safety at risk.

While the ongoing changes to care models have created many challenges for GME, they have also created new opportunities for residents and fellows to understand how health care can rapidly adapt to change during a crisis, thereby preparing them to care for a more diverse patient population in a variety of settings. In many instances, individuals in residency and fellowship programs during the pandemic have had a more intense exposure to certain care models (e.g., video-enabled telemedicine, home health monitoring) and have developed new skills or enhanced their existing skills in these areas. CLEs are encouraged to tap into and build upon the knowledge of the residents and fellows—similar to the way they would engage and learn from "superusers" when implementing a new electronic health record. In this manner, residents and fellows can serve key roles in spreading and amplifying successful new approaches to care throughout the CLE.

CLE and GME leaders need to join with leaders across the professions and patients in a purposeful examination of new care models to consider changes to roles, responsibilities, workflows, and communications that will optimize both learning and patient care. For example, with the expansion of home care, the team needs to reflect on how to work differently, yet efficiently and effectively, to deliver more intensive care to patients with higher acuity health needs while also meeting the educational needs of the various learners in the CLE. Without purposeful consideration of roles, responsibilities, and workflow, patient care and GME are at risk of becoming more transactional and fragmented. CLEs need to ensure the various health care professionals that comprise clinical care teams address these challenges together, with input from patients and families, to develop a shared vision that promotes teaming and learning. Creating a shared vision would also serve to mitigate breakdowns in team function and risks to patient safety that have emerged as a result of organic growth.

As the acute surges in COVID-19 abate and crisis management teams begin to stand down, there may be a natural tendency to passively maintain the changes to care models that have naturally and often chaotically

evolved since the start of the pandemic. At this critical juncture, CLEs need to pause and formally assess the intermediate and long-term effects of these changes to identify and keep those with positive impacts and minimize those with potentially negative consequences.

The pandemic has prompted or accelerated a tremendous amount of change—more than can easily be absorbed through a CLE's usual processes for assessment and quality improvement. The leadership of the Centers for Medicare & Medicaid Services has recognized the impact that the challenges of the pandemic have had on patient safety and quality improvement programs in our nation's hospitals and health systems.[1] Currently, these disruptions provide an opportunity to allow for CLEs to creatively recover the momentum of their patient safety and quality improvement efforts. As CLEs look toward a steadier state of pandemic management, they need to view this next phase as an opportune time for purposeful reflection and organizational learning that receives special attention and enhanced resources. In doing so, CLEs are encouraged to increasingly partner with front line clinical staff members to find optimal solutions to these challenges. The CLE's GME community of residents, fellows, and faculty members are ideal frontline clinical staff members to engage in the review, design (or redesign), testing, and implementation of different models of care to ensure educational needs are met while patient care and patient safety are optimized.

Theme 3: Few clinical learning environments appeared to have a long-term strategy to address multiple system-level factors that impact the well-being of the clinical care team; most clinical learning environments were primarily focused on individual resilience.

As the COVID-19 pandemic continued to progress, evolve, and disrupt health care systems, multiple contributing factors (e.g., staffing shortages and high turnover, inefficient and ineffective workflows, intense workload demands) were reported to negatively impact the overall well-being of the clinical care team. This appeared to contribute to increased stress, anxiety, and other behavioral and mental health challenges.

Across clinical learning environments, well-being efforts were primarily focused on providing resources for individuals' acute needs and resilience. With regard to addressing system-level factors, many clinical learning environments were focused on recruitment and retention of staff members. Few clinical learning environments appeared to address other system-level factors (e.g., workflow designs, electronic health record platforms), including a long-term strategy to proactively safeguard and ensure staff members' well-being and safe patient care.

Discussion

Within and across CLEs, the COVID-19 pandemic has adversely affected clinical care team well being, thereby potentially increasing patient safety risks and exacerbating issues that existed prior to the pandemic. It is therefore essential that CLE leaders pause to examine the changes made to their business and clinical operations throughout the pandemic for their impact on clinical care team well-being. Notably, the pandemic has amplified a need previously identified by the CLER Program and other national organizations (e.g., the National Academy of Medicine) for CLEs to create and implement long-term strategies that focus on systems-based approaches to optimizing well-being.

Numerous, often rapid, disruptions to workflows coupled with changes to workload and burden have the potential to impact the clinical team's ability to provide care efficiently and effectively. This in turn may contribute to varying degrees of exhaustion, frustration, divisiveness, and moral distress among the various members of the team, especially if they perceive that they are not meeting the standard of care they are accustomed to providing.

While all members of the team likely recognize the extraordinary circumstances that prompted changes to care models, potentially few were engaged in their design—which can lead to feelings of helplessness and loss of control. As such, it is important for CLE leaders to reflect on how rapidly they made changes to accommodate pandemic-related needs, how well they engaged the clinical care team in designing and implementing these changes, and how well they addressed well-being amid rapid change. Additionally, as part of proactive efforts, CLE leaders need to consider how best to promote a culture of well-being and anticipate issues rather than solely operating in a reactive mode. These reflections could provide an important window to understanding clinical care team well-being and its potential impact on quality of care.

Across CLEs, the pandemic contributed to many different types of behavioral and mental health challenges for the clinical care team. In response, many CLEs enhanced their focus on early recognition and support of team members under stress (e.g., counseling services, chaplaincy services). In addition to support services, CLEs also focused on developing or enhancing resources to promote individual employee resilience (e.g., respite rooms, mindfulness training). These resources primarily focus on strengthening individuals so they can more effectively withstand stressors.

While it is essential for CLEs to build and sustain resources to assist individuals who are adversely affected by their work environment, it is equally important for CLEs to anticipate and mitigate the underlying causes of workforce stress as part of a long-term strategy. CLEs need to view their approach to achieving clinical care team well-being as addressing an entire spectrum of need. Support services and resources aimed at strengthening individuals are at one end of the spectrum. At the other end of the spectrum is the need for strategic approaches to identify and solve for systems-based factors that negatively impact clinical care team well-being (e.g., challenges to patient throughput, increases to workload).

To design long-term strategies with systems-based solutions that optimize well-being, CLE leaders are encouraged to:

- **Engage representatives from all roles within the clinical care team to identify problematic care processes (especially those identified by members of the clinical care team) and prioritize activities to address them.** CLE leaders need to engage members of the care team closest to the patient care experience such that the issues and challenges with patient care processes that are strongest contributors to staff member frustration and inefficiencies receive top priority and resources to support improvements. In doing so, CLE leaders demonstrate to the clinical care team that their input is necessary and valued.
- **Optimize communication efforts as part of actively managing change**. Recognizing the residual burnout and fragility of the clinical care team resulting from the pandemic, CLE leaders are encouraged to both enhance and appropriately pace bi-directional communication. Effective two-way communication allows leaders to continually maintain a pulse on the state of well-being across the organization, hear firsthand about issues having the most negative impact on well-being, and solicit input to build trust and identify potential solutions.

- **Solicit and promote coordinated solutions to enhancing well-being**. Many CLEs have made targeted efforts to address the psychological and emotional impact of the pandemic for various groups within the clinical care team such as nurses, residents, and fellows. However, solving well-being issues for one group does not consider the needs of other members of the care team and diminishes the opportunity to enhance team-based patient care. Systems-based efforts to support well-being necessitate a team-based approach.
- **Explore lessons learned by other health care organizations and non-health care organizations**. Every health care organization committed to finding systems-based solutions to addressing the negative impacts on clinical care team well-being likely would benefit from learning about how other health care and non-health care organizations (e.g., aviation, other service organizations) have solved similar problems. CLE leaders are encouraged to find ways to engage in collaborative learning, seek partnerships, and learn from and participate in national efforts to innovate and improve clinical care team well-being as part of a comprehensive strategy to improve patient care. Ultimately, optimizing the well-being of the health care clinical care team will require CLE leaders to focus considerable attention on engaging representatives from across the health care professions (including the GME community) to address the full spectrum of needs—from strengthening individual resilience to the important task of collectively addressing the complex systems-based issues that negatively impact the entire care team. Clinical care team well-being affects patient care. As such, the two are inextricably linked as a common challenge for CLEs to address.

Theme 4: The COVID-19 pandemic had a unique impact on resident and fellow well-being with regard to their readiness for future practice.

In addition to the many system-level stressors impacting the overall well-being of the clinical care team, residents and fellows expressed concern about the impact on their academic trajectories and the uncertainties regarding their readiness for independent practice. In general, clinical learning environment leaders did not appear to fully recognize the pandemic's unique impact on resident and fellow well-being.

Discussion

Throughout the pandemic, many residents and fellows have experienced some degree of challenges in fulfilling the complete range of clinical experiences outlined by their programs in a timely manner, resulting in varying levels of anxiety.

As CLEs have addressed the urgent care needs resulting from the pandemic, many residents and fellows were called upon to divert their training and education elsewhere. Residents and fellows were asked to forgo clinical rotations (e.g., away rotations) and temporarily halt clinical services (e.g., non-emergency surgery). Many were asked to increase the time spent in a single service line or specialty (e.g., multiple rotations spent in intensive care) or temporarily provide care in specialties or clinical areas that are not part of their planned training and education.

Any one of these departures from usual training and education can negatively impact individual residents' and fellows' well-being, and it is likely that many experienced multiple diversions to their educational experiences (either simultaneously or in succession). These diversions potentially compound their anxiety regarding

whether they will complete their program as originally scheduled and whether they will feel prepared to enter independent practice in their chosen specialty.

Additionally, the pandemic has led to ongoing, often rapid, changes in care processes and workflows—often leading to sudden shifts in the roles and responsibilities of the various care team members. These shifts in responsibilities often displace the valuable time residents and fellows would otherwise devote to gaining essential knowledge and skills in their specialty and therefore further contribute to their frustration and anxiety over readiness for independent practice.

These negative impacts on resident and fellow well-being also potentially compromise patient safety and quality of care. Residents who are struggling to achieve well-being may have difficulty concentrating in the present, which in turn may increase vulnerabilities for patient safety. Additionally, residents and fellows who graduate while feeling inadequately prepared for independent practice may carry the internal burden of self-doubt for quite some time in their new roles as clinicians and faculty members. These doubts potentially affect their approach to clinical decision-making and ability to supervise and may erode their confidence when interacting with other members of the care team. All of these challenges to well-being, while not always vocalized, may impact the residents' and fellows' educational experiences and, in turn, can influence the quality of future patient care.

CLE and GME leaders need to partner to understand the issues specific to residents and fellows resulting from the changes to health care delivery during this pandemic, to provide them with support and encouragement to speak up when feeling unsure, and to identify resources to address gaps in knowledge and skills. For example, CLE leaders can be instrumental in allocating resources that allow faculty members and program directors to devote more of their time to addressing the educational gaps and increased needs of residents, fellows, and junior faculty members in the coming years. CLE leaders could also assist the GME community in securing opportunities for residents and fellows to gain additional clinical exposures, especially for those in specialties for which access to depth and breadth of experiences has been adversely impacted. Additionally, in situations where residents and fellows need extra time to complete their programs, CLE leaders may choose to allocate resources to allow for these extensions.

Importantly, it is essential that CLE and GME leaders recognize that the actions mentioned above are not solely short-term solutions. The pandemic's impact on residents and fellows is likely cumulative. In that context, short-term solutions that increase access to additional clinical experiences are both necessary and insufficient as they may not fully alleviate the negative impact on well-being. CLE and GME leaders need to recognize that for some residents and fellows there is likely a persistent negative impact on well-being that may be silent but real—thereby placing them at increased risk for adverse events in patient care, depression, or self-harm.

To improve resident and fellow well-being in both the short and long term, CLE and GME leaders need to commit to designing, testing, and implementing solutions that specifically address the educational gaps in training and education with options residents and fellows can visualize and anticipate. These efforts can be contextualized within the ACGME's commitment toward a more competency-based rather than time-based approach to GME. This also opens opportunity for CLE and GME leaders to reflect on the mechanisms for assessing and monitoring the mental health status of residents, fellows, and those transitioning to independent practice. Doing so will mitigate the stressors associated with perceived or real readiness for independent practice—especially if the CLE communicates and demonstrates this commitment on an ongoing basis so residents and fellows feel supported now and well into their careers.

Theme 5: The disruptions associated with the COVID-19 pandemic were anticipated to have a long-term impact on faculty member workload and well-being.

In many clinical learning environments, the impact of the pandemic on faculty member well-being appeared to vary across specialties. In some specialties, ongoing stress appeared to be associated with increased workload due to multiple factors such as continuing increases in patient volume and acuity, staffing shortages, faculty member attrition, and a greater need to closely supervise and educate residents and fellows whose clinical experiences were limited by the pandemic. Conversely, faculty members in other specialties expressed concerns related to the many consequences resulting from reductions in clinical volume. Across clinical learning environments, it was perceived that these issues would persist as long-term challenges.

Discussion

Physicians, like other members of the clinical care team, have been deeply affected by the COVID-19 pandemic. They have experienced to varying degrees the impacts of staffing shortages, surges in inpatient care, delays in patient throughput, rapid changes to care processes, and increases in patient morbidity and mortality. These conditions have negatively affected both workload and well-being for all members of the care team, including the portion of the physician community that serves as faculty members for residency and fellowship programs. For these faculty members, the pandemic has also affected their ability to teach, mentor, and supervise residents and fellows, thereby compounding the stressors to workload and well-being and placing them at greater risk for attrition and/or challenges to behavioral health such as depression and burnout.

Faculty members are dealing with both general issues affecting the physician community and GME-specific issues. General issues are numerous and include: personal concerns for themselves and their families; the need to care for a sicker patient population (both those with COVID-19 and those with higher acuity and presenting with advanced disease); inability to easily address disparities in patient outcomes; productivity pressures to recover and maintain patient volumes at pre-pandemic levels (and in some cases make up for revenue lost during the acute phases of the pandemic); and the need to assume responsibilities for colleagues who took early retirement.

The physician community is also trying to manage new, often unrealistic, expectations for availability associated with increased patient access to remote care (telemedicine) and patient portals. Additionally, for some physicians with private practices, the pandemic had a substantial negative impact on their personal business operations. These physicians encounter many of the same issues affecting hospitals and medical centers, such as difficulties with staffing recruitment and retention, maintaining patient volume, and absorbing COVID-19-related expenses such as increased personal protective equipment. For faculty physicians, these issues place increased stress on their workload and well-being.

The CLER COVID protocol also illuminated the considerable challenges faculty members are facing in their GME roles as educators, supervisors, and mentors. Due to the pandemic, medical students, residents, and fellows are presenting with gaps in clinical knowledge and skills resulting from uneven exposure to the depth and breadth of clinical experiences that would normally comprise their training and education. The details of

these gaps are unique to each student, resident, and fellow. In their response to uneven clinical exposures, faculty members likely will need to create customized, enhanced plans for experiential learning and increase supervision to optimize both learning and patient care. Providing this degree of customized education is extremely burdensome for faculty members, especially when layered on top of the other challenges faced by the physician community. Overall, faculty members embrace their roles as educators, yet their enthusiasm may wane and be replaced with feelings of exhaustion, frustration, or more serious impacts on their well-being. CLE and GME leaders need to work together to address these challenges.

Throughout the pandemic, GME faculty members have also experienced challenges to their ongoing professional development due to limitations placed on reimbursement for continuing medical education (CME), restrictions on work-related travel, and the need for increased time devoted to teaching and patient care. Faculty members' growing workload diminishes their abilities to keep up with the medical literature, research, community service, and for some, the ability to fulfill ongoing requirements for promotion and tenure, and these challenges are likely to continue into the coming years. All of these aspects of their professional responsibilities are needed if they are to continue to serve as teachers, mentors, and role models for the next generation of physicians.

CLEs have varying arrangements with the physicians who serve as GME faculty members. Some faculty members are directly employed by the CLE, and others are appointed to the medical staff either full time or part time. They may have voluntary privileges or receive compensation through a university, faculty practice plan, or other entity. These various arrangements make it difficult for CLE leaders to have a standard approach to engaging with the faculty physician community to address issues of workload and well-being. However, it is important for CLE leaders not to allow the complexity of faculty arrangements to deter them from partnering with the GME community to explore, test, and implement various approaches to mitigating systems-level factors that diminish well-being. CLEs that can address these needs in a timely manner may benefit by experiencing lower levels of faculty attrition and less well-being deterioration among those who remain to cover the responsibilities of their former colleagues. If faculty member attrition is high and well-being is low, the GME programs may lose expertise in teaching, supervision, and mentorship, and the CLE may lack valuable clinical expertise and capacity to address the growing volume of patients needing care. As such, CLE leaders need to join with GME leaders to identify solutions that will stabilize and secure the future of health care.

Theme 6: The COVID-19 pandemic disrupted many aspects of didactic and experiential learning for residents and fellows with anticipated long-term implications.

The pandemic has had an immediate and ongoing impact on the long-established structure and approach to graduate medical education. The pandemic accelerated the use and wider acceptance of technology-enabled education for both didactic and experiential learning (e.g., remote patient care). Some recognized aspects of this learning modality as a positive experience (e.g., ongoing didactic instruction without disruption, greater access to national and international expertise). Remote education also presented new opportunities and challenges. One of the noted challenges was the potential for decreased interpersonal interactions and fewer opportunities for bedside teaching, in-person role-modeling, and in-person learner assessment. Clinical experiences were reported to vary by specialty. Reduced patient volume and the curtailment of elective procedures limited the opportunity to experience the depth and breadth of clinical conditions. Decreased clinical experience was also noted to potentially impede resident and fellow ability to progress in their educational programs. These disruptions to the structure and approach to graduate medical education were anticipated to continue for the next several years.

Discussion

Across CLEs, the pandemic caused numerous disruptions to GME. Some of these disruptions, such as the need for social distancing during didactic sessions or patient rounds, were managed by shifting to use of remote technology. Other disruptions, such as reduced opportunities for exposure to a wide range of clinical conditions, were more challenging. There are many lessons to be learned from the interruptions and changes to GME. CLE and GME leaders need to consider these lessons to better understand which of the changes were able to optimize learning while minimizing negative consequences. Many of these lessons are specialty-specific; however, as noted below, some of the knowledge gained is likely generalizable to many specialties.

The pandemic served to underscore the value of interdisciplinary and interprofessional teamwork—both to optimize patient care and for the educational benefits for learners such as residents and fellows. The changes to team processes resulting from the pandemic have revealed both challenges and opportunities. For example, during the pandemic, many CLEs shifted to use of remote technologies for key components of residents' and fellows' experiential learning, such as bedside rounding, consults, and direct supervision. While the technologies allowed these processes to continue during acute surges in the volume of patients with COVID-19, they decreased opportunities for hands-on teaching and role modeling by faculty members and other members of the care team. Having various care team members together at the beside both facilitates efficiency of care and enhances the resident and fellow educational experiences. As such, GME and CLE leaders may need to consider restoring opportunities for in-person experiential learning when safely possible while also exploring new ways to enhance team processes conducted via remote technologies.

While most of the physical aspects associated with diagnosing and treating patients are difficult to accomplish via remote technologies, there are benefits to the use of remote technology that also can potentially improve experiential learning for residents and fellows. For example, remote or mixed-remote and in-person care allows for more members of the interprofessional care team to join a group discussion, potentially enhancing the conversation with a richness of varied perspectives. However, adding more individuals to patient rounds or

huddles does not necessarily enhance the discussion. GME and CLE leaders need to develop and implement specific training on how to best engage various team members when care is being discussed via remote technology to optimize the experience for the entire team.

The rapid movement from in-person to remote patient care has increased the need for GME leaders to improve assessment of experiential learning in this type of care setting. Historically, much of the GME community's approach to assessment is based on an implicit expectation that faculty members are conducting in-person observations. The pandemic has presented an opportunity for GME leaders to consider how current methods and strategies for assessing residents and fellows translate to a hybrid or solely remote patient care model.

For many residents and fellows, the pandemic resulted in decreased exposure to diagnosing and treating a broad array of clinical conditions and decreased opportunities to gain operative and procedural experience. This reduced exposure may have resulted in gaps in knowledge and competencies that are unique to each resident and fellow. These gaps are most critical during times of transition into, within, or out of their residency or fellowship program. At each of these critical junctures, GME and CLE leaders will benefit from working together to identify new approaches to support learners (e.g., new resident, advancing resident, new fellow) or newly independent clinicians and address gaps in knowledge and experience while ensuring optimal patient care.

At a minimum, GME leaders need to conduct a detailed assessment of clinical skills and competence for residents and fellows nearing completion of their GME program. As residents and fellows transition into a new phase of practice, particularly at a new clinical site with new mentors and fellows, knowledge of gaps in skills and competence is critical to identify needs for additional training and education. This is especially important at the juncture of transition to independent practice.

GME leaders also need to ensure the information regarding gaps is shared with residents/fellows prior to graduation so they enter new positions with an awareness of their abilities and limitations.[2] Additionally, GME and CLE leaders are encouraged to design processes to facilitate transfer of information on individual skills and competencies from one CLE to another such that CLE leaders and faculty members at the receiving clinical site can assist new physicians entering independent practice in closing gaps in knowledge and skills.[3,4] Importantly, the transfer of information and subsequent actions to address the gaps need to be accomplished in a manner that recognizes these gaps may have been due to pandemic-related circumstances outside the control of the learner and should not be communicated or perceived to be punitive in nature.

While the pandemic amplified the need to identify and communicate gaps in knowledge and skills to residents and fellows at critical junctures in training and education, this issue will continue after the pandemic. Therefore, it is worthwhile for GME and CLE leaders, in concert with the ACGME and other national organizations, to invest time and effort in developing approaches to improve medical education across the continuum, with attention to the needs of each learner and clinical site.

One of the positive impacts of the pandemic was that it placed GME leaders in a position in which they had to rapidly adapt their educational efforts; this rapid adaption led to experimentation with new approaches to education and gave them a reason to pause and examine the traditional models of GME. Upon reflection, GME leaders may find that some of the changes resulting from this need for experimentation led to improvements in more traditional educational models.

As the acute impact of the pandemic diminishes, it will be important for GME leaders to quickly harvest the knowledge gained from recent innovations in education. Delays in doing so risk loss of valuable knowledge and information as many GME programs will likely return to more traditional approaches once the pressures for social distancing diminish and programs are drawn back to their familiar processes. Impacts to education resulting from the pandemic likely will endure (e.g., enhanced use of telemedicine).

Whether the changes to GME were prompted by innovation, necessity, or both, GME and CLE leaders need to pause, review, and think strategically about how to best capitalize on these experiences to optimize both learning and patient care.

Theme 7: Clinical learning environments varied in anticipating and recognizing potential patient safety vulnerabilities resulting from the increased and accelerated use of telemedicine.

During the pandemic, patient safety and quality leaders in many clinical learning environments did not appear to anticipate or recognize the breadth of potential patient safety vulnerabilities associated with the accelerated and/or expanded use of telemedicine (e.g., remote patient visits, specialty consultations, team-orientated care). Patient safety and quality leaders generally did not describe efforts to proactively assess and identify potential patient safety risks, including monitoring the quality of supervision of residents and fellows related to the use of telemedicine, indicating they relied on GME faculty members for these assessments.

Discussion

The COVID-19 pandemic has caused rapid and sometimes dramatic changes in the use of various applications of telemedicine. While phone-based provider/patient communications have been a staple in medical care for a century, the use of video-based communication is relatively recent, and, until the start of the pandemic, was principally confined to specific applications and uses such as behavioral health services. The pandemic increased the need for quarantine, isolation, and social distancing and exacerbated patient fears and hesitancy to seek in-person care. In response, CLEs engaged in health systems redesign and enrolled in new reimbursement models that led to rapid expansion of telemedicine and increases in the breadth and scope of patient care delivered via telephone and videoconference. As the pandemic progressed, CLE use of telemedicine shifted frequently and dramatically as reimbursement models changed and the need for social distancing lessened. However, many CLEs anticipate ongoing expanded use of telemedicine and video-based communication to serve selected patient care needs.

The expanded use of telemedicine presents both benefits and challenges for patients and clinical care teams, including residents, fellows, and faculty members. One of the most significant benefits is increased access to care, particularly for patients who need to travel long distances to access health care facilities or may have other difficulties navigating acute or chronic care.

Telemedicine also creates challenges for many individuals, such as patients who do not have easy access to the needed technology (e.g., internet services), are unfamiliar with the required technology (e.g., elderly patients and those with low health technology literacy), and/or have living arrangements that may not allow for

private communication between patient and provider. In addition, increased use of telemedicine introduces layers of complexity for patients requiring interpreter services or those needing follow-up laboratory tests. Telemedicine also requires schedulers and providers to be equipped with new skills so they can determine which visits are appropriate for telemedicine and which need to be conducted in person.

The increased use of telemedicine necessitates physician aptitude with the technology so they can rapidly assess conditions and adapt telemedicine services to both the patient's home/environmental circumstances and their clinical care needs. These challenges may also constrain physicians' ability to perform appropriate diagnostic or therapeutic patient care. Additionally, the faculty members and program directors who supervise residents and fellows in providing care via telemedicine, especially videoconference, may need to develop new skills in conducting and overseeing care and assessing resident performance delivered via these technologies. In many CLEs, there is likely also need to establish guidelines and instruction for residents and fellows who are new to the technology.

The challenges noted above introduce new risks to patient safety and health care quality and equity. Nearly all of the CLEs visited recognized the many benefits of telemedicine. Many of the patient safety and quality leaders at CLEs visited, however, indicated they were not actively focused on anticipating and recognizing the breadth of potential vulnerabilities to patient safety or taking additional steps to mitigate these new risks. There also appeared to be little awareness of the challenges these new applications and rapid expansion of services posed to supervision of residents and fellows. While supervision of care provided by residents and fellows is a GME responsibility, the increased risks to patient safety add new roles for a CLE's patient safety and quality leaders. In partnership with GME, the CLE's patient safety and quality leaders need to set new guidelines and expectations for oversight, ensure faculty members are assessing the quality and safety of patient care provided by residents and fellows when using telemedicine, and ensure the CLE is providing the needed technology to support patient encounters and supervision of learners who are providing care.

The pandemic has also provided the CLEs' patient safety and quality leaders with an opportunity to partner with frontline providers and staff members (e.g., residents, fellows, faculty members, clinic staff members, and schedulers) and patients to better illuminate risks to patient safety arising from the most recent changes to telemedicine and develop and prioritize efforts to optimize training and education and patient care in these circumstances. Many CLEs have experience using robust tools such as proactive risk assessments (e.g., Health Care Failure Modes and Effects Analysis) that could be applied to telemedicine. CLE leaders in patient safety and quality also need to take this opportunity to examine telemedicine (particularly video-assisted telemedicine) to better understand how it may improve or exacerbate health care disparities. As frontline users of this technology, residents and fellows would be excellent team members to work through issues within their CLEs.

In summary, the findings from the CLER visits indicate the approaches to telemedicine that existed prior to the pandemic are very different from the practices that have emerged and will continue to evolve into the future. CLE leaders in patient safety and quality need to partner with GME leaders to identify the many challenges and opportunities associated with these changes to mitigate risks to patient safety and optimize both learning and patient care.

Theme 8: A limited number of clinical learning environments appeared to have a formal strategy or systematic approach to identifying and eliminating health care disparities.

Across clinical learning environments, executive leaders indicated the COVID-19 pandemic highlighted health and health care disparities. There was also recognition that with the significant health consequences stemming from the pandemic, health and health care disparities have been exacerbated.

The heightened awareness of health care disparities related to COVID-19 did not appear to translate to a broader exploration of health care disparities related to other health care services. Occasionally, executive leaders noted the pandemic emphasized a need for improved data collection and analysis for the purposes of identifying and taking a more comprehensive approach to eliminating health care disparities.

A limited number of clinical environments appeared to have a strategy or systematic approach to eliminate health care disparities among patient populations receiving care at their various clinical sites. Occasionally, executive leaders described being in what appeared to be the early stages of developing a strategy or systematic approach to identify variability in care provided to and clinical outcomes among their patient populations at risk for experiencing health care disparities.

Discussion

Health care disparities have been a priority for the CLER Program since its inception.[5] Similar to the findings in previous CLER national reports, the CLER COVID protocol reported that CLEs in general lacked health systems strategies and systematic approaches to eliminate health care disparities. Much of what CLE leaders describe as work to eliminate health care disparities appears to be siloed, project-based quality improvement efforts that, while important, are not identified by senior leadership as being integrated into their health system's strategic plan.

CLER COVID site visits were conducted during a national health care crisis, and the impact of social determinants of health on patient outcomes quickly rose to national prominence with reports of increased hospitalization and mortality related to COVID-19 for minoritized populations. CLE leadership commonly recognized these populations as being at risk for health care disparities and sought ways to best address these risks. Their efforts were perhaps best demonstrated through enhanced initiatives to partner with communities to increase COVID-19 vaccinations and testing across the United States.

Throughout the CLER COVID protocol, awareness regarding health care disparities remained solidly focused on COVID-19—one of the more noteworthy findings in this report. However, this awareness did not appear to result in rapid expansion in the number of CLEs that are formally setting organizational strategies to better characterize or address non-COVID-related health care disparities that may exist among their patient populations.

The pandemic presents a unique opportunity to bring health care disparities to the forefront of CLEs' strategic priorities. This is a fitting time during which CLE senior leaders can look beyond disparities specific to COVID-19 to determine if other health care disparities are present within their health systems. Enhancing

data collection is key to these efforts, and it is encouraging to note that CLE leaders recognized the need to improve and expand their patient data. However, increasing the amount of data collected is only a partial solution. Absent a comprehensive strategy to analyze these data proactively and systematically, critical information on health care disparities remains untapped as a resource CLE leaders can utilize to identify organizational priorities. Additionally, from year to year, many CLEs focus their efforts on addressing a few key areas of health care disparities. However, as seen in the field of patient safety, CLEs that focus solely on a few areas of critical need (e.g., serious safety events) have the potential to miss other important risks such as those revealed in reports of close calls and near misses. CLE leaders are encouraged to use the tools and system enhancements developed to report, explore, identify, and address the broad range of potential health care disparities among their vulnerable patient populations.

It is encouraging to see that a limited number of CLEs are beginning to build systematic approaches to address disparities. As noted in prior CLER national reports, the advantages of engaging residents and fellows in CLE efforts to improve health care quality and eliminate health care disparities can benefit both learners and patients.[6,7,8] CLEs and their patients benefit from the frontline perspective of residents and fellows; the residents and fellows in turn benefit as they broaden their understanding of a health system's perspective that considers the needs of patient cohorts, subpopulations, and individuals.

CLEs that systematically focus on health care disparities will likely place themselves in a good position to identify challenges in patient care delivery, such as issues that are related to implicit and explicit bias among the members of the clinical care team. Additionally, when health care disparities are presented as a CLE priority, the entire clinical care team can advance discussions about community and social determinants of health for the patients they serve. When the clinical care team participates in efforts to eliminate health care disparities, team members are more motivated to engage with their community to design, test, and implement innovative solutions.

REFERENCES

1. Fleisher, Lee A., Michelle Schreiber, Denise Cardo, and Arjun Srinivasan. 2022. "Health Care Safety during the Pandemic and Beyond – Building a System That Ensures Resilience." *New England Journal of Medicine* 386 (7): 609–11. **https://doi.org/10.1056/NEJMp2118285**.
2. American Association of Colleges of Osteopathic Medicine (AACOM), the Association of American Medical Colleges (AAMC), the Accreditation Council for Graduate Medical Education (ACGME), and the Educational Commission for Foreign Medical Graduates (ECFMG). 2022. "Transition in a Time of Disruption: Practical Guidance to Support Learners in the Transition to Graduate Medical Education." Updated April 2022. https://www.ecfmg.org/annc/ume-gme.pdf.
3. Association of American Medical Colleges (AAMC), American Association of Colleges of Osteopathic Medicine (AACOM), Accreditation Council for Graduate Medical Education (ACGME), and the Educational Commission for Foreign Medical Graduates (ECFMG). 2022. "Transitions in Medical Education: Practical Guidance to Support Important Transitions: Residency to Fellowship." April 2022. https://www.acgme.org/globalassets/documents/covid-19/medicaleducationtransitions.residencyfellowship.pdf.
4. Association of American Medical Colleges (AAMC), American Association of Colleges of Osteopathic Medicine (AACOM), Accreditation Council for Graduate Medical Education (ACGME), and the Educational Commission for Foreign Medical Graduates (ECFMG). 2022. "Transitions to Clinical Practice: Practical Guidance to Support Important Transitions: Residency and Fellowship to Practice." April 2022. **https://www.acgme.org/globalassets/documents/covid-19/medicaleducationtransitions.gmetopractice.pdf**
5. Weiss, Kevin B., James P. Bagian, and Robin Wagner. 2014. "CLER Pathways to Excellence: Expectations for an Optimal Clinical Learning Environment (Executive Summary)." *Journal of Graduate Medical Education* 6 (3): 610–11. **https://doi.org/10.4300/JGME-D-14-00348.1**.
6. Weiss, Kevin B. and James P. Bagian on behalf of the CLER Evaluation Committee. 2016. "Challenges and Opportunities in the Six Focus Areas: CLER National Report of Findings 2016." *Journal of Graduate Medical Education* 8 (2s1): 25–34. **https://doi.org/10.4300/1949-8349.8.2s1.25**
7. Weiss Kevin B., John Patrick T. Co, and James P. Bagian on behalf of the CLER Evaluation Committee. 2018. "Challenges and Opportunities in the 6 Focus Areas: CLER National Report of Findings 2018." *Journal of Graduate Medical Education* 10 (4s): 25–48. **https://doi.org/10.4300/1949-8349.10.4s.25**
8. Koh, Nancy J., Robin Wagner, Robin C. Newton, Catherine M. Kuhn, John Patrick T. Co, and Kevin B. Weiss on behalf of the CLER Evaluation Committee and the CLER Program. 2021. "CLER National Report of Findings 2021." Accreditation Council for Graduate Medical Education. **https://doi: 10.35425/ACGME.0008**.

CLER EVALUATION COMMITTEE

Detailed Findings

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 section includes detailed findings from the CLER COVID site visits of the CLER Program. The findings are based on site visits to the major participating clinical sites (i.e., hospitals, medical centers, and ambulatory care sites) for 287 ACGME-accredited Sponsoring Institutions. These clinical sites serve as CLEs for the Sponsoring Institutions.[1,2]

Collectively, these 287 Sponsoring Institutions oversee 4,584 ACGME-accredited residency and fellowship programs, with a range of 1 to 164 programs per Sponsoring Institution (median = 5). These Sponsoring Institutions account for 40.5% of all residents and fellows in ACGME-accredited programs, with a range of 5 to 1,314 trainees per Sponsoring Institution (median = 73).

Among the CLEs visited, 31% were located in the southern region of the United States, 24.0% in the northeast, 23.3% in the midwest, and 20.6% in the west. The sites ranged in size from 40 to 1,545 acute care beds (median = 378). The majority (72.1%) were non-government, not-for-profit organizations; 15.1% were government, non-federal; 7.2% were investor-owned, for-profit; and 5.7% were government, federal.

In total, the CLER teams interviewed more than 1,500 members of executive leadership (including chief executive officers), 5,270 residents and fellows, and 2,009 program directors of ACGME-accredited programs during group interviews. Additionally, the CLER teams interviewed CLE leadership in patient safety, quality improvement (QI), and health and health care disparities.

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. 17-24). As such, some of the findings are represented quantitatively, while others are described qualitatively.

This 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 with program directors may appear more positive than information gathered during the group interviews with residents and fellows. Alternatively, reported practices during discussions with executive leadership may have been verified during group interviews with the physician groups.

INTERPRETING QUANTITATIVE RESULTS FROM THE GROUP INTERVIEWS

During the group interviews with residents, fellows, and program directors, an online audience response system (ARS; Keypoint Connect, Innovision Inc., Commerce, MI) was used to collect anonymous responses to closed-ended questions. The results from the ARS were analyzed at both the individual (e.g., resident and fellow) and 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, 45.1% of residents and fellows reported they were aware of results from patient safety event analyses 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 43.7% (28.6%-66.7%) of residents and fellows reported they were aware of results from patient safety event analyses at their clinical site."*

Statistically significant differences (i.e., $P \leq .05$) in responses attributed 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 these differences may not be meaningful or large enough to have practical relevance or implications.

ADDITIONAL CONSIDERATIONS

As described in the Methodology section (pp. 17-24), 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 COVID 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. This information, by design, was not intended to be enumerated. For these questions, the site visit teams assessed 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 that are 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 COVID 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 287 Sponsoring Institutions. Those who seek additional detail may consult the appendices (pp. 72-91).

LASTING IMPACT OF THE COVID-19 PANDEMIC ON THE CLINICAL LEARNING ENVIRONMENT

Although the experiences and impact of the COVID-19 pandemic varied across CLEs, common themes emerged on ways in which executive leaders managed the immediate challenges and navigated their CLEs during the pandemic. In general, executive leaders noted the many lessons learned about their organizational capacity, flexibility, and crisis management ability.

In many CLEs, executive leaders indicated discussions with their governance or other organizational oversight body did not result in changes in their CLE's mission, vision, or publicly available key strategies due to the pandemic's impact.

Impact of COVID-19 on Business and Clinical Operations

Executive leaders in nearly all CLEs (95.5%) indicated there had been major changes in business and clinical operations that likely will remain over the next two years as a result the COVID-19 pandemic. They emphasized different aspects of business and clinical operations based on the timing of when their CLEs entered and exited their most acute phase of surge in patients with COVID-19 during the pandemic.

When asked to characterize the overall impact of COVID-19 on the finances of the CLE over the next two years, executive leaders in 32.9% of CLEs indicated the impact was large; 45.9%, moderate; and 21.2%, minimal. Of those that indicated the impact was large, 57.6% described the impact as negative; 19.6%, neutral; and 22.8%, positive (*Figure 1*).

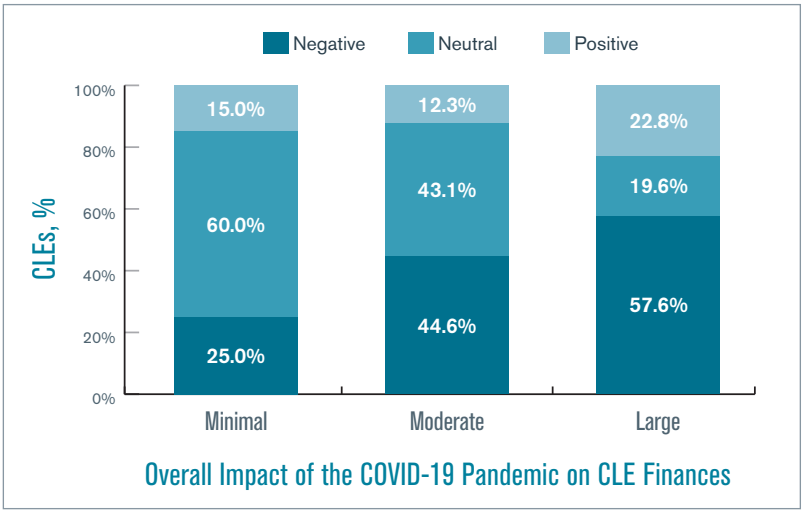


Figure 1. Percentage of Clinical Learning Environments (CLEs) Based on the Overall Impact of the COVID-19 Pandemic on CLE Finances

Early in the pandemic, executive leaders in a number of CLEs indicated that additional government assistance (e.g., Coronavirus Aid, Relief, and Economic Security Act) allowed them to achieve neutral to positive financial short-term outcomes.

As the pandemic progressed, there appeared to be variability across CLEs in terms of the anticipated financial impact over the next two years. This variability was attributed to several factors, including recurrent

surges in COVID-19 cases, geographic variation in COVID-19 cases, associated government and public health interventions, and financial health (i.e., hospital margins) prior to the pandemic. During this time, some CLEs anticipated establishing financial stability and recovering from the initial revenue decline and negative operating margins. Other CLEs anticipated greater financial challenges depending upon the uncertain trajectory of COVID-19 over the next two years. Executive leaders in many CLEs noted that the mounting expenses associated with caring for greater numbers of high-acuity patients who required longer hospital stays, more supplies and personnel costs, and more resources overall could further complicate business and clinical operations.

Additionally, executive leaders varied in their plans for managing their major capital investments in the next two years. Some deferred or delayed decisions to proceed with pre-pandemic plans (e.g., implementing new electronic health records). Others redirected funds to invest in build-out of floors or units (e.g., negative pressure rooms, additional intensive care units) that could better address infectious disease both now and into the future (e.g., preparing for future pandemics). There were also executive leaders who indicated the pandemic had not affected their current business operations or future plans for capital investment.

Lingering Workforce Disruptions Due to COVID-19

At the onset of the pandemic, executive leaders in many CLEs indicated they were experiencing challenges to maintain an adequate workforce—especially nursing staff—and anticipated this would continue for the next several years. In the short term, CLEs diverted resources to temporary and traveling agencies. Integrated health care systems also balanced or redeployed staffing resources (e.g., physicians and nurses) across their various clinical sites. For the long term, executive leaders occasionally mentioned considering new approaches to staffing models that used advanced practice providers, nursing technicians, and student nurses with increased expectations and efforts to cross-train existing and incoming staff members.

Of the CLEs visited in the mid and late cycle of CLER COVID visits, executive leaders described ongoing challenges in retaining and recruiting a skilled health care workforce. It was reported that pandemic-related stressors resulted in physicians, nurses, and other health care professionals retiring early or leaving their jobs. Executive leaders mentioned critical shortages of nurses, respiratory therapists, and other allied health professionals. They noted the challenges of addressing immediate staffing shortages, managing these challenges throughout the remainder of the pandemic, and rebuilding efforts as part of future workforce planning, including solving for chronic workforce shortages.

Executive leaders also described the increased cost and financial strain associated with workforce recruitment and retention efforts. For example, they noted that traveling nurse agencies contributed to staff turnover and could indirectly increase attrition costs. While CLEs employed traveling nurses (a) for short-term, critical staffing needs; (b) to augment clinical care teams; and (c) to solve specific challenges on a case-by-case basis during the pandemic, executive leaders indicated the need to look for ways to recruit long-term, skilled staff nurses to bring stability to their CLEs.

Overall, CLEs varied in how they were addressing short- and long-term staffing needs, including changes to clinical care team configurations and adjustments to roles and responsibilities within and across professions. Across CLEs, there were challenges to the efficiency and effectiveness of clinical

care teams (and the resident and fellow roles within those teams) resulting from ongoing and varied approaches to solving short- and long-term staffing needs. Occasionally, executive leaders noted establishing, enhancing, or expanding partnerships with local universities and colleges to increase pipeline programs for multiple types of health care professionals as part of addressing staffing shortages and building the workforce of the future.

Impact of COVID-19 on Health Care Delivery and Patient Care Processes in the Future

Executive Leadership Perspectives on Changes in Health Care Delivery

The CLER teams asked executive leaders about changes in health care delivery in inpatient and outpatient settings that were expected to be sustained over the new two years at their clinical site due to COVID-19.

Early during the cycle of CLER COVID visits, many executive leaders noted that lower patient volumes (e.g., emergency department and inpatient) experienced during the acute phase of the pandemic had not rebounded to pre-pandemic levels and were anticipated to continue for the next several years. This caused a shift in emphasis on enhancing outpatient treatment modalities, including expansion of ambulatory care sites and rural services, telemedicine, hospital-at-home programs, remote monitoring technologies (e.g., heart, blood pressure, and pulse oximetry home monitoring), and new clinics for patients with prolonged COVID-19 symptoms and/or sequelae of infection.

As the pandemic progressed and with the rollout of COVID-19 vaccines, many executive leaders indicated patient volumes were increasing and anticipated to return to pre-pandemic levels for most clinical areas. Others noted uncertainty amid the emergence of COVID-19 variants (e.g., Delta and Omicron Variants) and breakthrough infections attributed to waning immunity that presented challenges and risks to patients. Throughout the pandemic, many CLEs continued to enhance outpatient services and leverage advancements in medical technologies to provide outpatient care. Enhancements included expanding existing facilities for outpatient surgery, accelerating home-based post-acute care options and programs to include virtual physician visits, remote monitoring, and diagnostic testing.

At the onset of the pandemic, executive leaders in many CLEs visited also noted that provider and patient care processes for communication abruptly changed during the acute phases of the pandemic. These changes, which were expected to continue as a safety precaution for the next several years, included the increased use of computer technologies (e.g., tablets, virtual platforms) for provider, patient, and family/visitor conferencing and restrictions on the number of providers on rounds and in inpatient rooms. As the pandemic progressed, executive leaders continued to mention these changes to provider and patient care processes for communication as a safety precaution. Occasionally, executive leaders also noted sustained use of computer technologies for case conferences and other meetings.

Throughout the cycle of CLER COVID visits, executive leaders in many CLEs noted lasting delays in patient throughput both in and out of inpatient and ambulatory surgical facilities due to the need for COVID-19 testing and infection prevention measures. They expressed uncertainty regarding the associated impact over the next several years (e.g., delays in admitting to floors pending COVID-19 test results, delays transferring to acute rehabilitation and skilled nursing facilities due to policies on testing and acceptance of patients with COVID-19) and recognized the need to address capacity for high-volume rapid testing.

Physician Perspectives on Changes in Patient Care Processes

Overall, 72.6% of residents and fellows in the group interviews reported changes in patient care processes at their clinical site that represent sustained improvements in health care as a result of the COVID-19 pandemic. Responses varied by level of training and specialty grouping. Across CLEs, the median (IQR) finding was 75.5% (62.5%-87.5%); responses varied by CLE bed size and type of ownership. Responses also varied by quarter, with a marked decline in the median percentage from Quarter 3, 2021, to Quarter 4, 2021 (*Figure 2*); the median percentage differences between quarters were statistically significant ($P < .01$). Appendix B1 provides detailed information on variability.

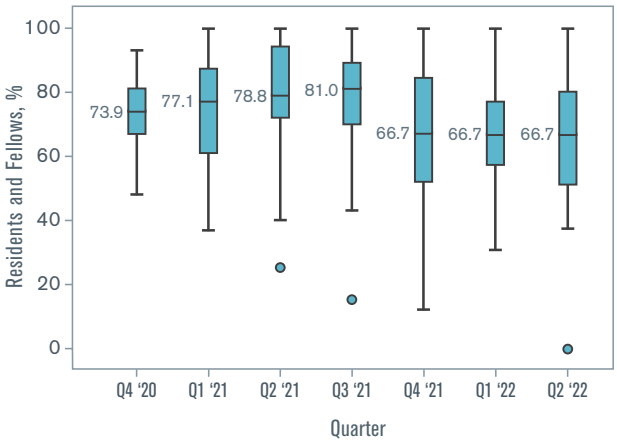


Figure 2. Median Percentage of Residents and Fellows Who Reported Changes in Patient Care Processes at Their Clinical Site That Represent Sustained Improvements in Health Care as a Result of the COVID-19 Pandemic, by Quarter

When asked the same question, 81.9% of program directors in the group interviews indicated there were changes in patient care processes that represent sustained improvements in health care. Across CLEs, the median (IQR) finding was 100% (75.0%-100%); responses varied by region and type of ownership.

When describing changes in patient care processes they believe represent sustained improvements in health care as a result of the pandemic, the physician groups often mentioned:

- use of telemedicine visits to replace in-person follow-up appointments for patients who have transportation issues or reside in remote locations;
- expanded use of remote home monitoring;
- improved adherence to infection prevention measures; and,
- use of videoconferencing to facilitate care coordination with family members and the clinical care team.

The CLER teams also asked the physician groups about persistent challenges in patient care processes. During group interviews with residents and fellows, 52.9% reported challenges in patient care processes at their clinical site that will persist for the next two years as a result of the COVID-19 pandemic.

Responses varied by gender, level of training, and specialty grouping. Across CLEs, the median (IQR) finding was 51.0% (38.5%-66.7%), with responses varying by region and CLE bed size (*Figure 3*). Appendix B2 provides complete information on variability.

When asked the same question, 52.2% of program directors in the group interviews reported this to be the case. This finding ranged from 0% to 100%, with a median (IQR) of 57.9% (40.0%-100%); responses varied by type of ownership.

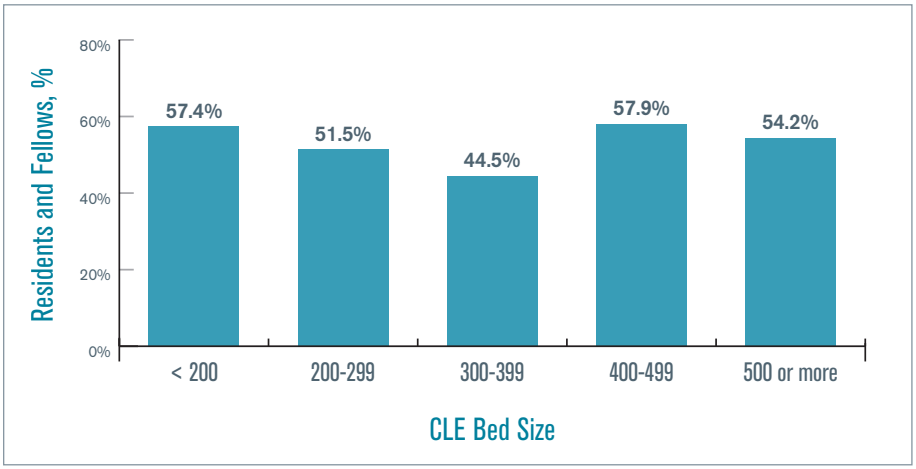


Figure 3. Percentage of Residents and Fellows Who Reported Challenges in Patient Care Processes at Their Clinical Site That Will Persist for the Next Two Years as a Result of the COVID-19 Pandemic, by Clinical Learning Environment (CLE) Bed Size

When asked to describe challenges in patient care processes they believe will persist for the next two years as a result of the pandemic, the physician groups often noted challenges associated with:

- providing safe and high-quality patient care due to the expected continuation of high patient volume and acuity;
- managing the influx of patients presenting with more advanced diseases due to delaying or avoiding medical care at the height of the pandemic;
- limited access to video-enabled technology or internet service that prevents patients from receiving care using telemedicine;
- the preference of some consultants to provide remote consultations, presenting challenges in patient care and optimal teaching;
- repeated pre-procedure COVID-19 testing requirements and other tests for patients (leading to delays in care);
- visitation policies limiting engagement of family members in care planning; and,
- staffing shortages in nursing and ancillary staff, leading to delays in patient scheduling and throughput that affected the quality of patient care and exacerbated by new and temporary staff who were unfamiliar with organizational protocols.

Use of Telemedicine in Patient Care

The use of telemedicine for remote delivery of health care services and clinical information has grown over the last several decades with advances in technology, increased acceptance of its use, and changes to telemedicine policy.[3,4,5] In addition to the more "traditional" use of telemedicine (e.g., voice-to-voice), the COVID-19 pandemic necessitated creative thinking on how to broadly increase and evolve its use across health care settings (e.g., videoconferencing for remote patient encounters, remote patient monitoring, virtual consults, and use of electronic health record systems to facilitate patient-physician communication).[6,7] As a way to meet the health care needs of patients during the pandemic, telemedicine provided a way to reduce exposure to COVID-19, mitigate the spread of the virus, and improve access to health care for patients who faced barriers such as geographic location, transportation, leave time from work, child care expenses, or caretaker availability.

Nearly all CLEs quickly implemented or rapidly increased use of telemedicine during the acute phases of the pandemic. It appeared there was variability within CLEs in the use of technology and software platforms to operationalize telemedicine. Across CLEs, there was also variability in patient access to, familiarity with, and skills regarding use of telemedicine (e.g., digital literacy, troubleshooting problems on device or with internet connection) and CLE approaches to addressing these challenges.

As the pandemic progressed, executive leaders varied across CLEs regarding the potential benefits of continuing to use telemedicine in the future. At the onset of the pandemic, telemedicine permitted new ways to access and deliver health care in a remote environment, including extending access to specialty services or specialty care. Occasionally, executive leaders of the CLEs visited in the mid and late cycle of CLER COVID visits noted that certain medical specialties would continue to use telemedicine more than others in the future. Others indicated that the limitations of telemedicine (detailed below) prompted them to consider developing criteria for the appropriate use of telemedicine in the future. In light of expected changes to reimbursement policies, executive leaders also noted that the future of reimbursement for telemedicine services will continue to have implications for patient safety and health care quality.

Perceived Vulnerabilities in Use of Telemedicine

Across CLEs, residents, fellows, and program directors identified many patient safety vulnerabilities related to the rapid increase in use of telemedicine at their clinical sites–posing risk for misdiagnosis, inaccurate diagnosis, complications, overtreatment, and delays in care, as well as limiting the ability to monitor conditions. Examples included:

- inability to perform a complete and accurate patient assessment, including performing a direct physical examination, obtaining vital signs, and collecting medical history information;
- lack of formal training on conducting a telemedicine visit, inclusive of conducting a physical examination in a virtual environment;
- lack of well-defined guidance or protocols that outline criteria for appropriateness of use of telemedicine versus in-person visits;
- delays in care or risk of misdiagnosis when patients are inappropriately triaged to a telemedicine visit when an in-person visit would have been more appropriate;

- vulnerabilities associated with converting telemedicine visits to telephone-only calls, creating risks such as loss of visual physical findings;
- challenges in establishing rapport with patients, resulting in suboptimal communication;
- receiving incomplete information when patients are not forthcoming or find it difficult to have conversations on sensitive topics during remote visits because of privacy concerns or lack of privacy in the home setting;
- challenges with accessing or coordinating the use of translation or interpretive services for non-English-speaking patients;
- challenges in being able to escalate care when emergency situations arise during telemedicine visits;
- risk of an incomplete or inaccurate medication reconciliation when unable to review medication bottles as in during an in-person visit; and,
- delays in completing in-person diagnostic testing after a telemedicine visit, resulting in presentation with more advanced disease in the future.

Within CLEs, there was inconsistent recognition among patient safety and quality leaders and residents, fellows, and program directors regarding the breadth of patient safety risks associated with the expanded use of telemedicine. There were instances when patient safety and quality leaders did not identify any vulnerabilities recognized by residents, fellows, and program directors related to the rapid increase in use of telemedicine.

Education on Use of Telemedicine

In general, CLEs appeared to lack robust training for residents, fellows, and members of the clinical care team in the clinical application of telemedicine to address different patient settings, patient populations, and health and medical conditions. Across CLEs, residents, fellows, and program directors often recommended the following examples as ways to improve resident and fellow training in the use of telemedicine for patient care:

- standardized guidance and training to determine when a telemedicine visit is appropriate (including when telephone-only communcation is acceptable) versus an in-person visit;
- standardized processes for coordinating care across the clinical care team during a telemedicine visit (e.g., ordering tests, scheduling follow-up appointments, arranging for interpreter services as part of the visit);
- training in how to optimally interview patients, recognize nonverbal communication and visual cues, and engage patients in sensitive discussions during telemedicine visits;
- training in how to maximize telemedicine visits to include elements of a physical exam (inclusive of visual diagnosis techniques and instructing patients to perform maneuvers that aid in diagnosis) and how to maximize information gained during telemedicine visits when a physical exam is not possible;
- adopting a standardized telemedicine platform that allows real-time, direct observation of patient encounters for instructional purposes and allows the supervising faculty member to provide specific, timely feedback to the resident or fellow;

- establishing standardized processes for including residents and fellows in faculty members' telemedicine visits for educational purposes;
- developing learning objectives and supervision requirements for telemedicine (virtual and telephone) visits;
- developing standardized patient simulations to practice telemedicine visits; and,
- faculty member development in the optimal use of telemedicine, how to teach telemedicine skills, and how to supervise residents and fellows during telemedicine visits.

Supervision of Telemedicine Visits

While telemedicine provided an additional approach to health care delivery while minimizing exposure to COVID-19 for patients and members of the clinical care team, its increased use also posed new challenges and opportunities regarding supervision of telemedicine visits conducted by residents and fellows.

Across CLEs, there appeared to be challenges associated with supervising residents and fellows throughout the rapid deployment of telemedicine, further posing vulnerabilities in patient safety. Many program directors noted challenges such as:

- inability of faculty members to supervise multiple residents and fellows scheduled for simultaneous telemedicine visits;
- inability of faculty members to supervise telemedicine visits in real time when telemedicine platforms do not allow for more than two simultaneous participants; and,
- inability of faculty members to supervise when residents/fellows and faculty members are in different locations due to limitations with devices, software, etc.

In general, patient safety and quality leaders indicated they did not monitor the quality of supervision of residents and fellows related to the use of telemedicine. Responsibility for resident and fellow supervision was viewed as the responsibility of GME faculty members.

Impact of COVID-19 on Graduate Medical Education and Future Implications for Resident and Fellow Training and Education

As a result of COVID-19, 1.7% of executive leaders anticipated making changes to their clinical site's educational mission over the next two years, and 31.8% envisioned GME evolving over the next two years (*Figure 4*). When describing how they envisioned GME evolving, executive leaders often noted accelerating pre-pandemic plans for GME expansion or developing and expanding residency and fellowship programs. Approximately 5.0% of executive leaders indicated that COVID-19 had changed how GME is reflected in the clinical site's formal strategic plan.

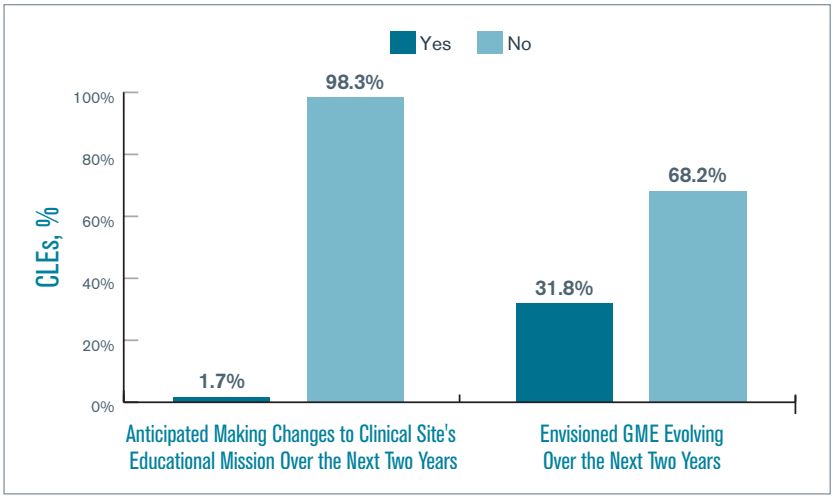


Figure 4. Percentage of Clinical Learning Environments (CLEs) that Anticipated Making Changes to Their Clinical Site's Educational Mission and Evolving Graduate Medical Education (GME) Over the Next Two Years

During the group interviews, the CLER teams asked program directors to describe the changes in resident and fellow training they expect will be sustained over the next two years at their clinical site as a result of the pandemic. In many CLEs, program directors anticipated the ongoing use of videoconferencing for didactic sessions and case conferences, which allows greater learner flexibility, improved attendance, and the ability to access national and international experts, thus broadening the range of topics offered and enhancing the quality of sessions. Additionally, they anticipated expanding asynchronous learning modules, expanding use of simulation to mitigate loss of clinical experiences, and increasing supervision of training and education for residents and fellows who had less clinical experience due to decreases in patient volume and mandated service cancellations during the pandemic.

When the CLER teams asked residents and fellows about changes in resident and fellow training they believe represent challenges for the next two years as a result of the pandemic, many described how limited clinical experience with certain procedures or in-person patient encounters representing a broad range of patient diagnoses delayed their acquisition of clinical skills, potentially resulting in being less prepared for independent practice. Occasionally, residents and fellows also indicated the continuation of virtual didactic sessions and case conferences could decrease educational quality by limiting in-person interactions with colleagues and faculty members.

Across CLEs, GME leaders, residents, and fellows expressed concerns about the transition from undergraduate medical education to GME and the need to provide more intensive training of new residents over the next several years to address gaps in training and education caused by the pandemic.

PATIENT SAFETY

Inclusion in Patient Safety Event Investigations

Nearly 80% of CLEs tracked resident and fellow participation in patient safety event investigations (e.g., root cause analysis). It was uncommon for patient safety and quality leaders to describe measurable goals with regard to including residents and fellows in patient safety event investigations as members of the event analysis team.

Across CLEs, patient safety and quality leaders indicated that when residents and fellows participate in the clinical site's patient safety event investigation process, they are typically interviewed during the discovery process if they were involved in the event, and they may subsequently be involved in analysis and action plan development. It was uncommon for patient safety and quality leaders to indicate that residents and fellows are fully engaged in the entire investigation process, including implementing action plans and monitoring action plan implementation and effectiveness.

In the group interviews, 52.3% of residents and fellows who were PGY-3 and higher indicated 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. Reponses varied by level of training and specialty grouping. Across CLEs, the median (IQR) finding was 52.9% (36.4%-75.0%) (*Figure 5*), with responses varying by CLE bed size. Appendix B3 provides detailed information on variability.

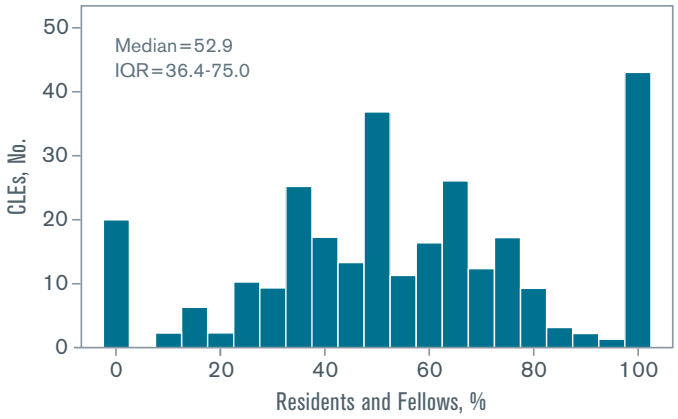


Figure 5. Percentage of Residents and Fellows (Post-Graduate Year 3 and Above) Who Reported Participating in an Interprofessional Investigation of a Patient Safety Event, by Distribution of Clinical Learning Environments (CLEs)

In a separate query during the group interviews, 7.6% of residents and fellows and 22.8% of program directors indicated they had participated in a patient safety event investigation related to COVID-19 led by their clinical site.

Across CLEs, resident and fellow participation in interprofessional patient safety event investigations was often limited to residents and fellows who were involved in the event or a resident/fellow representative. It was uncommon for CLEs to extend this experience to others so that every resident and fellow completed their clinical training and education prepared to engage effectively in systems-based approaches to patient safety event investigations.

In general, resident and fellow involvement in interprofessional comprehensive systems-based approaches to patient safety event investigations was uncommon across CLEs. Program directors often noted departmental morbidity and mortality conferences, case conferences, and departmental quality conferences as ways to engage residents and fellows in patient safety activities. However, their descriptions of these educational experiences appeared to lack the components of a formal patient safety event investigation aimed at preventing future adverse events, improving patient care, and sustaining improvements in patient safety.

Feedback on Patient Safety Event Investigations

In the group interviews, 45.1% of residents and fellows reported they were aware of results from patient safety event analyses at their clinical site; responses varied by gender. Across CLEs, this finding ranged from 0% to 100%, with a median (IQR) of 43.7% (28.6%-66.7%) (*Figure 6*); responses varied by region and type of ownership. Appendix B4 provides additional information on variability.

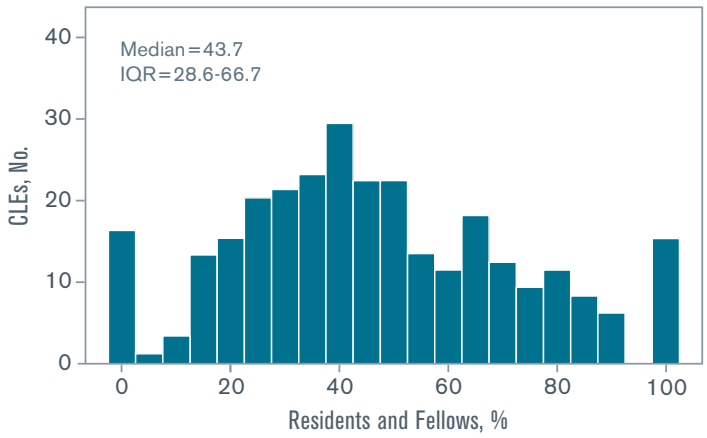


Figure 6. Percentage of Residents and Fellows Who Reported They Were Aware of Results from Patient Safety Event Analyses at Their Clinical Site, by Distribution Across Clinical Learning Environments (CLEs)

Of those who reported they were aware of results from patient safety event analyses at their clinical site, 88.9% agreed or strongly agreed that these analyses consistently resulted in sustained improvements in patient care at their clinical site (median [IQR], 100% [83.3%-100%] across CLEs; see Appendix B5).

HEALTH CARE QUALITY (INCLUDING HEALTH CARE DISPARITIES)

Involvement in Institutional Quality Improvement Committees

As part of understanding the CLE's approach to improving health care quality, the CLER teams reviewed each organization's strategic plan for quality. In many CLEs, resident and fellow membership in institutional QI committees was uncommon. Additionally, residents and fellows were rarely included in the governing body's patient safety and quality committees.

Engagement in Quality Improvement Projects

Overall, 78.8% of 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 or department, with responses varying by level of training and specialty grouping (*Figure* 7). Of this group, 43.6% reported their QI project was directly linked to one or more of the CLE's goals; 48.6% were uncertain. Appendices B6 and B7 provide complete information on variability.

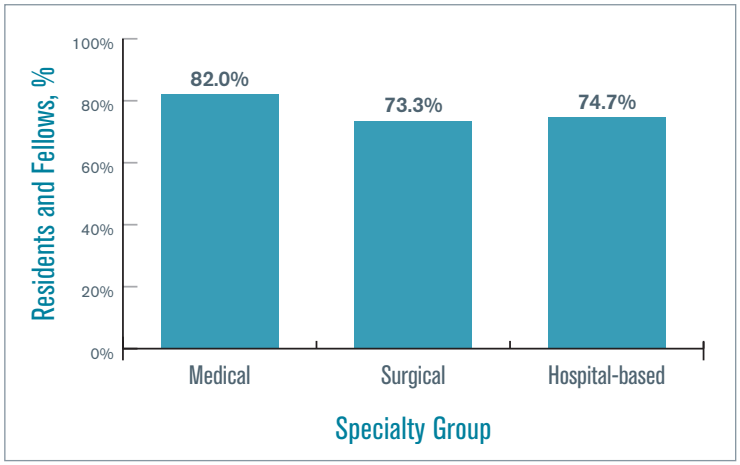


Figure 7. Percentage of Residents and Fellows Who Reported Participating in a Quality Improvement Project of Their Own Design or One Designed by Their Program or Department, by Specialty Group

In a separate query, 12.4% of residents and fellows indicated they were experiencing challenges in participating in health care QI activities at their clinical site (median [IQR], 10.0% [0%-18.3%] across CLEs). Of this group, 32.4% noted the challenges were a result of COVID-19 (median [IQR], 15.5% [0%-50.0%] across CLEs). When describing the challenges, they often mentioned:

- inability to complete QI projects due to pandemic-related disruptions in patient visits or cancellation of QI rotations;
- lack of protected time to participate in QI projects due to high clinical workload;
- delays in Institutional Review Board exemption approval as COVID-19 studies were prioritized;
- lack of available QI experts and staff members to assist with QI projects and data collection; and,
- inability to implement QI interventions due to rapid turnover of clinical staff members.

Communication of Quality Improvement Outcomes

Although patient safety and quality leaders occasionally noted converting meetings to a virtual format and using virtual platforms to disseminate information, in many CLEs, the overall process for sharing QI outcomes across the organization had not changed as a result of COVID-19.

Approximately 67% of residents and fellows in the group interviews agreed or strongly agreed that COVID-19-related QI activities were well communicated at their clinical site; responses varied by gender, year of training, and specialty grouping. Across CLEs, the median (IQR) finding was 73.8% (56.8%-88.6%); responses varied by region, type of ownership, and CLE bed size (*Figure 8*). Appendix B8 provides complete information on variability.

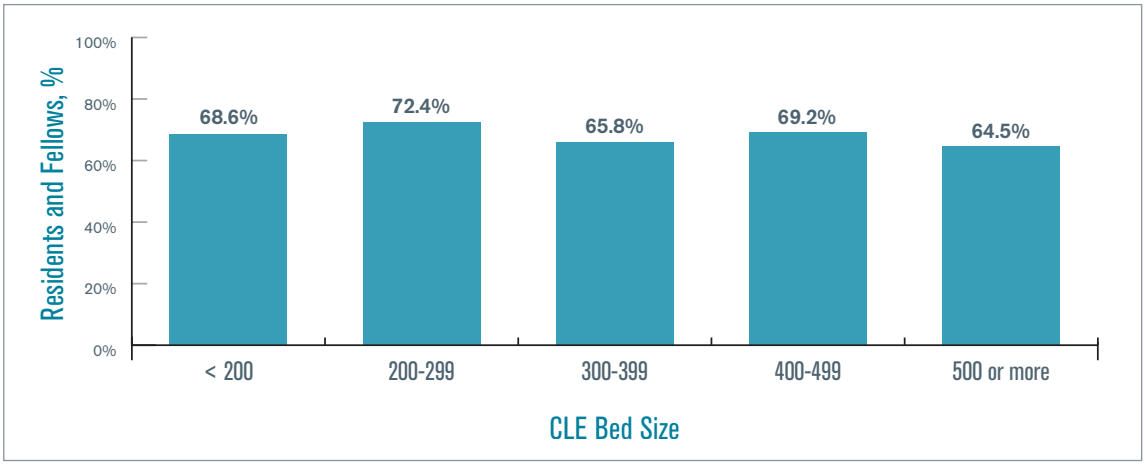


Figure 8. Percentage of Residents and Fellows Who Agreed or Strongly Agreed That COVID-19-Related Quality Improvement Activities Were Well Communicated at Their Clinical Site, by Clinical Learning Environment (CLE) Bed Size

CLE Efforts to Eliminate Health Care Disparities

Across many CLEs, executive leaders were aware of health disparity issues affecting their surrounding communities. Many described using information gleaned from their community health needs assessments to improve access to care and provide free or low-cost care and clinics for underserved populations.

Based on their experience with COVID-19, executive leaders in many CLEs noted the pandemic affirmed their pre-pandemic understanding of health disparities within the community served by their CLE. They also indicated their experience with COVID-19 translated into new actions associated with ways in which their CLE addresses health disparities in their community, often describing efforts to expand existing outreach activities and partner with community organizations to support COVID-19 health education, testing, and vaccination. A limited number of CLEs indicated they were applying learning from their experience with COVID-19 to identify and address other health disparities.

Across CLEs, a limited number of executive leaders indicated that their CLE had performance measures focused on health care disparities as part of their process for tracking quality and safety. Other than COVID-19-related data, many CLEs did not appear to periodically review performance measures to identify disparities in patient care or outcomes in the patient populations who receive care at their clinical site. When measures of health care disparities existed, it was often unclear how CLEs interpreted and prioritized differences in care and outcomes across their patient populations, including the magnitude of the disparities and why these disparities were occurring within their patient populations.

Overall, 1.8% 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. In 11.0% of CLEs, 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 (*Figure 9*).

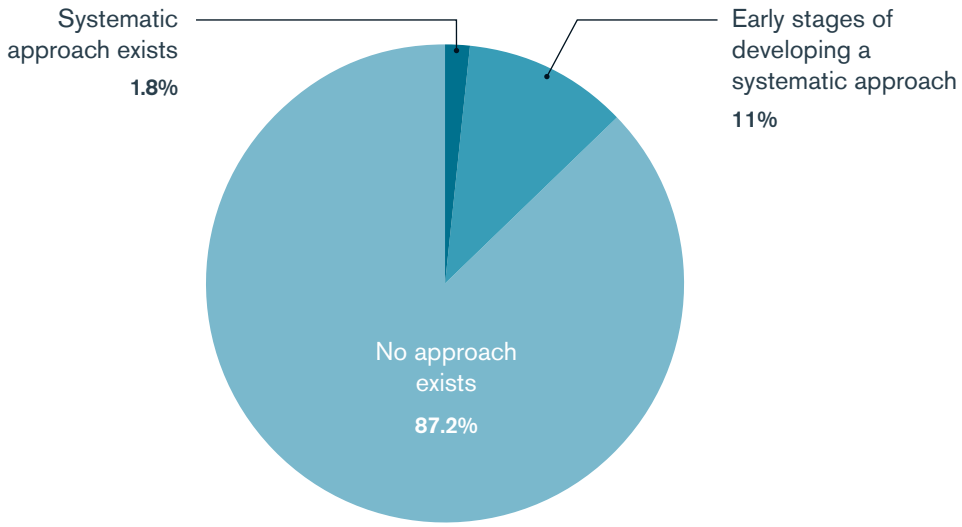


Figure 9. Percentage of Clinical Learning Environments with a Systematic Approach to Identifying, Addressing, and Assessing Variability in the Care Provided to or the Clinical Outcomes of Their Patient Populations at Risk for Health Care Disparities

TEAMING

Education on Teaming

Overall, 33.9% of residents and fellows in the group interviews reported they had participated in activities organized by the clinical site to develop their skills in teaming in non-emergent patient care; 28.9% were uncertain. Responses varied by level of training and specialty group. Across CLEs, the median (IQR) was 34.0% (22.7%-50.0%), with responses varying by region, CLE bed size, and type of ownership.

Teaming as Part of Patient Care Planning

Across CLEs, a median (IQR) of 57.5% (44.4%-71.5%) of residents and fellows reported there were changes in the way they interacted with other members of the clinical care team regarding diagnostic and treatment planning as a result of the COVID-19 pandemic that will likely be sustained for the next two years at their clinical site. This finding varied by type of ownership (*Figure 10*, see Appendix B9).

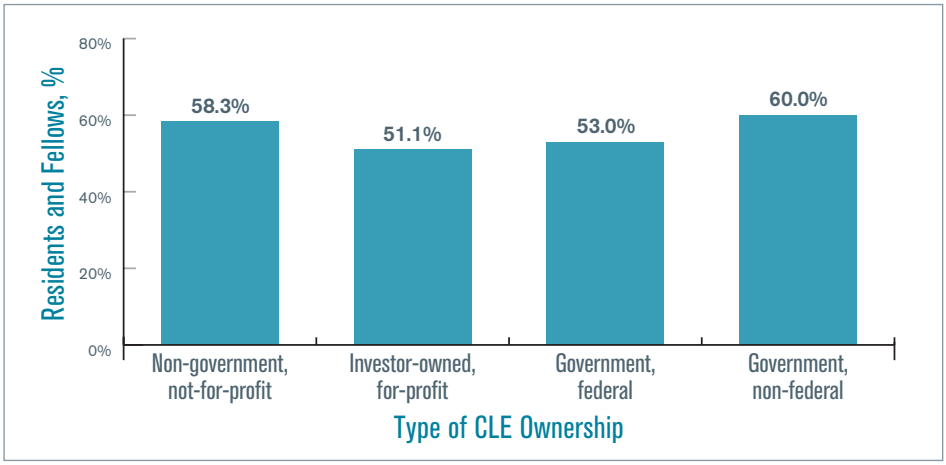


Figure 10. Percentage of Residents and Fellows Who Reported There Were Changes in the Way They Interacted with Other Members of the Clinical Care Team Regarding Diagnostic and Treatment Planning as a Result of the COVID-19 Pandemic That Will Likely Be Sustained for the Next Two Years at Their Clinical Site, by Type of Clinical Learning Environment (CLE) Ownership

When asked to describe the changes in the way they interacted with other members of the clinical care team in diagnostic and treatment planning as a result of the pandemic, residents and fellows often mentioned increased use of multiple modes of communication (e.g., videoconferencing, texting, electronic health records) with nursing staff members, decreased frequency of in-person interactions with consulting services and physicians in other specialties, and increased participation in unit-based huddles.

Across CLEs, residents and fellows further noted that due to staff turnover, new and temporary clinical staff members impacted their ability to effectively communicate and ensure continuity of patient care because new and temporary staff members were often less familiar with clinical units and larger organizational care policies and procedures (e.g., information systems, critical pathways).

Engaging Patients in Teaming[a]

In the group interviews, 59.7% of residents and fellows agreed or strongly agreed the COVID-19 experience at their clinical site has led to sustained improvements in how the clinical care team involves patients in decisions related to their care. Responses varied by gender and specialty grouping. Across CLEs, the median (IQR) finding was 66.7% (50.0%-83.3%), with responses varying by region, type of ownership, and CLE bed size (*Figure 11*). Appendix B10 provides detailed information on variability.

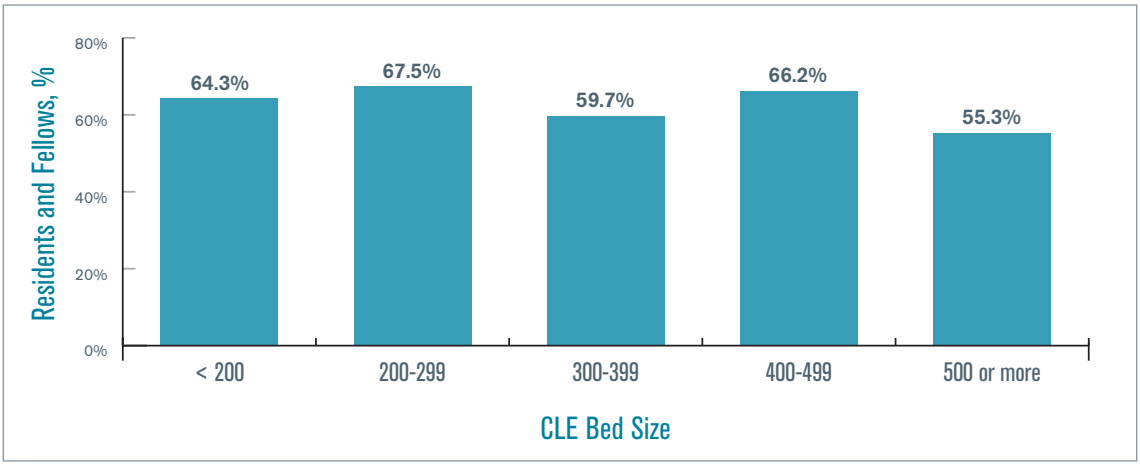


Figure 11. Percentage of Residents and Fellows Who Agreed or Strongly Agreed the COVID-19 Experience at Their Clinical Site Has Led to Sustained Improvements in How the Clinical Care Team Involves Patients in Decisions Related to Their Care, by Clinical Learning Environment (CLE) Bed Size

[a] "Patient" can include family members, caregivers, patient legal representatives, and others.

SUPERVISION

Perceptions of Supervision

In the group interviews, the CLER teams asked residents and fellows about their experiences when contacting attending physicians and consultants for assistance. Overall, 43.3% 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], 42.9% [28.6%-62.5%] across CLEs). This finding varied by level of training and gender (*Figure 12*). Of this group, 19.0% indicated the frequency of this experience had increased as a result of the COVID-19 pandemic (median [IQR], 12.5% [0.0%-28.0%] across CLEs). Appendices B11 and B12 provide detailed information on variability.

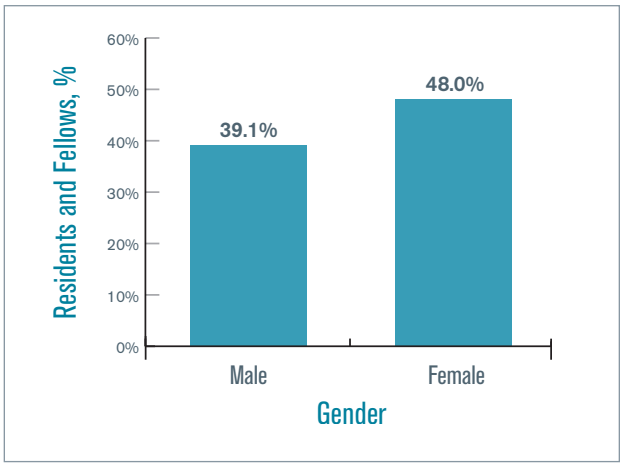


Figure 12. Percentage of Residents and Fellows Who Reported Encountering a Physician (Attending Physician or Consultant) Who Made Them Feel Occasionally or Frequently Uncomfortable When Requesting Assistance, by Gender

In a separate query, 13.4% of residents and fellows reported there were issues in the supervision of consults conducted by residents and fellows that were identified at the clinical site as a result of the COVID-19 pandemic (median [IQR], 8.3% [0.0%-18.8%] across CLEs; see Appendix B13 for information on variability). Of this group, 26.3% indicated the issues identified resulted in actions that will likely improve supervision at their clinical site over the next two years; 51.6% were uncertain.

Impact of COVID-19 on Resident and Fellow Supervision

In many CLEs, executive leaders did not express concerns or identify issues with resident or fellow supervision resulting from the pandemic that will likely persist for the next two years. Across CLEs, program directors occasionally identified challenges in resident and fellow supervision resulting from the pandemic; a limited number indicated they expect these challenges to persist for the next several years.

Patient Safety Events Related to Supervision

In 28.5% of CLEs, patient safety and quality leaders recalled patient safety event reports in the past year related to resident and fellow supervision (*Figure 13*). Executive leaders were often unaware of patient safety events attributed to supervision.

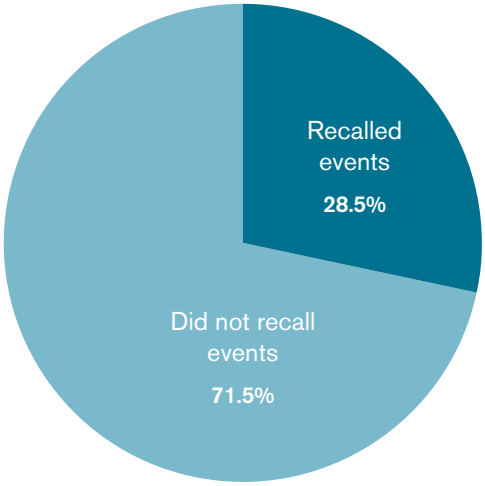


Figure 13. Percentage of Clinical Learning Environments in Which Patient Safety and Quality Leaders Recalled Patient Safety Event Reports Involving Issues of Resident or Fellow Supervision

Across CLEs, patient safety and quality leaders often indicated they addressed patient safety events related to supervision as a factor during retrospective review of reported patient safety events. It was uncommon for CLEs to proactively monitor for potential patient safety events related to supervision. In general, patient safety and quality leaders appeared to delegate issues of supervision to the GME community.

WELL-BEING

System-Level Factors Affecting the Well-Being of the Clinical Care Team

When asked what their CLE had identified as system-level factors negatively impacting the well-being of the clinical care team based on their experience with the COVID-19 pandemic, executive leaders often noted staffing shortages and high staff turnover, inefficient and ineffective workflows, and increased workload demands. They noted these challenges would likely persist for the next few years.

The CLER teams also asked residents and fellows to describe system-level factors likely to impact their well-being for the next few years as a result of COVID-19. Across many CLEs, residents and fellows often identified the same factors mentioned above and noted challenges with patient throughput, documentation burden, and increased volume of non-clinical demands associated with staffing shortages.

Although experiences varied across CLEs, many residents and fellows further described how the overall well-being of their clinical care team members diminished over time as the pandemic progressed, evolved, and disrupted working environments. They mentioned mental health challenges and lingering feelings of helplessness and anxiety as emerging consequences of the pandemic. They noted these challenges would likely persist for the next few years.

As well as the many system-level factors impacting the overall well-being of the clinical care team, residents and fellows expressed concern about the impact on their academic trajectories and the uncertainties regarding their readiness for independent practice as additional stressors that affected their well-being. In general, executive leaders did not appear to fully recognize the pandemic's unique impact on resident and fellow well-being.

Efforts to Address System-Level Factors Affecting the Well-Being of the Clinical Care Team

In many CLEs, efforts to address system-level factors focused on recruitment and retention of staff members. Few CLEs appeared to be addressing other system-level factors (e.g., workflow designs, continuity of care), including the development of a long-term strategy to proactively safeguard and ensure staff member well-being and safe patient care.

Across CLEs, well-being efforts were primarily focused on resilience and crisis intervention through provision of resources to address an individual's acute needs (e.g., counseling services, chaplaincy services).

Lasting Impact of COVID-19 on Faculty Member Workload

When asked to describe the impact of COVID-19 on faculty member workload that will likely persist for the next two years, executive leaders and program directors in many CLEs noted increased workload associated with:

- continuing increases in patient volume and acuity;
- meeting the needs of patients who deferred preventive care and chronic health management visits, resulting in presentation with more advanced, complex illness;
- caring for a larger volume of patients with sequalae from COVID-19;
- assuming care for patients of attending physicians who had retired early or left the profession;
- needing to provide more supervision and develop education and training for incoming residents and fellows whose clinical experiences were limited by the COVID-19 pandemic; and,
- assuming more administrative and nonphysician tasks because of shortages in medical, nursing, and support staff.

These challenges appeared to vary across specialties. There were also concerns related to reductions in clinical volume for faculty members in certain specialties.

Monitoring of Physician Workload

In the group interviews, 49.9% of residents and fellows reported their clinical site monitored the intensity of resident and fellow workload before the onset of COVID-19; 39.5% were uncertain.

The CLER teams also asked program directors if their clinical site monitored the intensity of faculty member workload before the onset of COVID-19. Approximately 31% of program directors reported such monitoring occurred, and 34.9% were uncertain.

Few CLEs (5.8%) appeared to have mechanisms to proactively assess risks to patient safety due to resident and fellow workload intensity (*Figure 14*). In the majority of CLEs, patient safety events were often addressed as they arose and through retrospective review of the events.

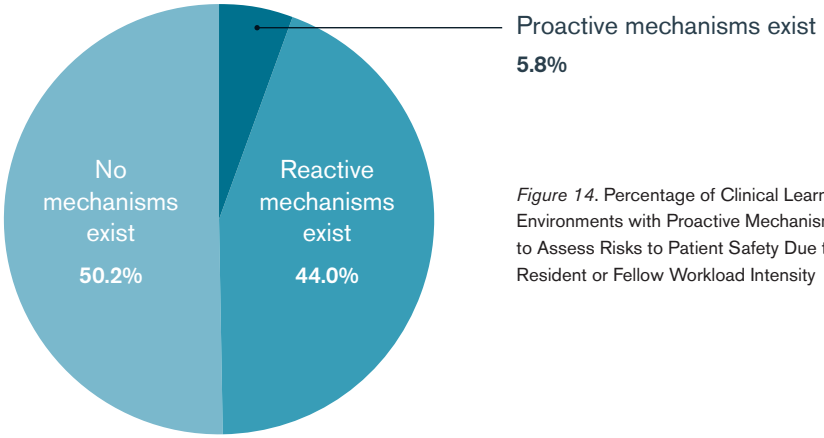


Figure 14. Percentage of Clinical Learning Environments with Proactive Mechanisms to Assess Risks to Patient Safety Due to Resident or Fellow Workload Intensity

Physician Resources to Manage Emotionally Difficult Patient Situations Resulting from COVID-19

In the group interviews, 79.4% of residents and fellows indicated their CLE had services and resources to help them manage emotionally stressful patient care situations resulting from the COVID-19 pandemic (median [IQR] of 82.3% [66.7%-100%] across CLEs). This finding varied by level of training, specialty grouping, and gender (*Figure 15*, also see Appendix B14). In describing the services and resources available to them, residents and fellows often mentioned counseling services, chaplain and spiritual care services, assistance from hospice and palliative care services, respite rooms, and the employee assistance program.

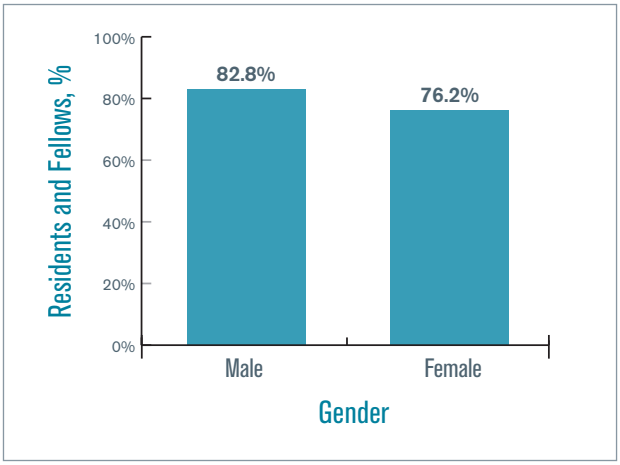


Figure 15. Percentage of Residents and Fellows Who Reported They Feel Their Clinical Site Has Services and Resources to Help Them Manage Emotionally Stressful Patient Care Situations Resulting from the COVID-19 Pandemic, by Gender

PROFESSIONALISM

Assessing the Culture of Professionalism

The CLER teams asked executive leadership how they assessed the culture of professionalism among all members of the clinical care team throughout the pandemic. Many CLEs appeared to focus on addressing individual behaviors rather than measuring or assessing the overall culture of professionalism. Generally, it was uncommon for CLEs to use and/or develop instruments to assess the culture of professionalism according to their purposes and target populations. In many CLEs, when assessments were employed, they were siloed activities that occurred among different professions and did not involve purposeful use of the information to improve the safety and quality of patient care at the clinical site for the next two years.

Reporting of COVID-19-Related Issues

Overall, 78.4% of residents and fellows in the group interviews reported their CLE provided a supportive, non-punitive environment for reporting COVID-19-related issues concerning unsafe conditions, including those affecting either patient or staff member physical and emotional safety. Responses varied by specialty grouping. Across CLEs, this was a median (IQR) finding of 81.3% (68.6%-96.0%) (*Figure 16*), with responses varying by region and type of ownership. Appendix B15 provides complete information on variability.

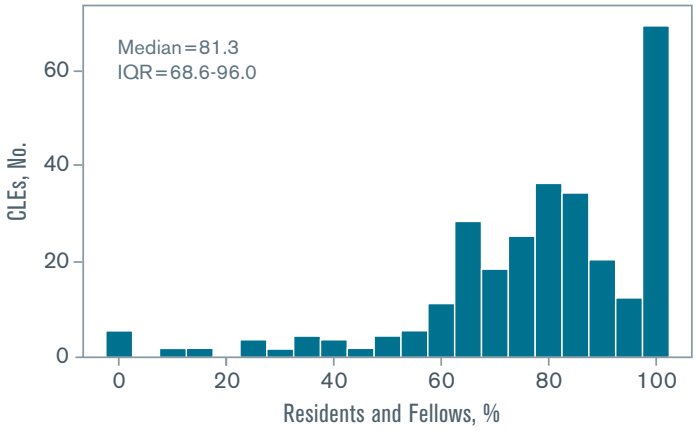


Figure 16. Percentage of Residents and Fellows Who Reported Their Clinical Site Provided a Supportive, Non-Punitive Environment for Reporting COVID-19-Related Issues Concerning Unsafe Conditions, Including Those Affecting Either Patient or Staff Member Physical and Emotional Safety, by Distribution Across Clinical Learning Environments (CLEs)

In the group interviews, 93.0% of program directors agreed or strongly agreed their clinical site had been responsive when members of the clinical care team raised issues about unsafe conditions related to COVID-19 (median [IQR], 100% [94.7%-100%] across CLEs).

REFERENCES

1. 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**.
2. 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**
3. American Hospital Association. 2019. "Fact Sheet: Telehealth." **https://www.aha.org/system/files/2019-02/fact-sheet-telehealth-2-4-19.pdf**.
4. Lurie, Nicole, and Brendan G. Carr. 2018. "The Role of Telehealth in the Medical Response to Disasters." *JAMA Internal Medicine* 178 (6): 745–46. **https://doi.org/10.1001/jamainternmed.2018.1314**.
5. Tuckson, Reed V., Margo Edmunds, and Michael L. Hodgkins. 2017. "Telehealth." *New England Journal of Medicine* 377 (16): 1585–92. **https://doi.org/10.1056/NEJMsr1503323**.
6. Bashshur, Rashid, Charles R. Doarn, Julio M. Frenk, Joseph C. Kvedar, and James O. Woolliscroft. 2020. "Telemedicine and the COVID-19 Pandemic, Lessons for the Future." *Telemedicine and E-Health* 26 (5): 571–73. **https://doi.org/10.1089/tmj.2020.29040.rb**.
7. Hollander, Judd E., and Brendan G. Carr. 2020. "Virtually Perfect? Telemedicine for Covid-19." *New England Journal of Medicine* 382 (18): 1679–81. **https://doi.org/10.1056/NEJMp2003539**.

CLER PROGRAM

Octavia Bailey; Mark R. Bixby, MD, FAAFP; Isabelle Bourgeois, MPA; Jennifer J. Buescher, MD, MSPH; Robert Casanova, MD, MHPE; Marian D. Damewood, MD, FACOG; Kevin C. Dellsperger, MD, PhD; Robin Dibner, MD; Brenda Moss Feinberg, ELS; Staci A. Fischer, MD, FACP, FIDSA; Patrick Guthrie; Paula Hensley, MPH; Kristen Ward Hirsch, MBA; John A. Hopper, MD; Sharhabeel Jwayyed, MD, MS; Nancy J. Koh, PhD; Kathryn E. McGoldrick, MD, MAH, FCAI (Hon); Clifton McReynolds, PhD; Joshua Mirôn, MA; Wardah Mohammad; Robin C. Newton, MD, FACP; Morgan Passiment, MS; Douglas E. Paull, MD, MS, FACS, FCCP, CHSE, CPPS; Kathy B. Porter, MD, MBA, FACOG; Dale Ray, MD, MMM; Ana L. Sainz; Melissa Schori, MD, FACP, MBA, CPPS; 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

APPENDIX A1.

GENERAL CHARACTERISTICS OF SPONSORING INSTITUTIONS

A1.1. Sponsoring Institution Distribution by Region and Type[a]

Characteristic	SIs with CLER Visits, %[a] (n = 287)	All SIs, % (N = 751)
Region		
Northeast	24.0	23.3
Midwest	23.3	22.0
South	31.0	32.1
West	20.6	21.0
Territory[b]	1.0	1.6
Type of Sponsoring Institution		
General/teaching hospital	53.0	45.4
Medical school or health science center	17.4	17.0
Educational consortium	7.0	7.1
Children's hospital	3.1	2.4
Other	19.5	28.1

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 = 287)	All SIs, % (N = 751)
Programs		
< 3	33.4	43.0
3–5	19.5	16.6
6–17	22.6	19.0
> 17	24.4	21.3
Number of Core Programs		
< 2	31.0	39.0
2–3	23.7	20.9
4–10	23.0	20.0
> 10	22.3	20.1
Number of Participating Sites		
< 6	25.1	26.1
6–14	26.5	28.4
15–32	24.0	21.0
> 32	24.4	24.5

[a] Percentages do not total 100 because of rounding.

[b] 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[a]

Specialty Group	SIs with CLER Visits, % (n = 47,102)	All SIs, % (N = 118,113)
Medical	44.0	44.3
Surgical	33.0	32.5
Hospital-based	23.0	23.2

A1.4. Number and Distribution of Residents and Fellows at Sponsoring Institutions by Gender, Level of Training, and Specialty Grouping[a]

Resident and Fellow Characteristic	SIs with CLER Visits, % (n = 60,560)	All SIs, % (N = 149,363)
Gender		
Male	52.6	52.5
Female	47.2	47.1
Unknown[b]	0.3	0.4
Level of Training		
PGY-1	25.3	25.5
PGY-2	23.2	23.2
PGY-3	22.1	22.2
PGY-4+	29.4	29.2
Specialty Group		
Medical	60.9	61.0
Surgical	20.7	20.2
Hospital-based	18.5	18.7

[a] Percentages do not total 100 because of rounding.

[b] Gender identification is based upon self-reported data to the ACGME. Some residents and fellows did not specify their gender.

Abbreviations: CLER, Clinical Learning Environment Review; PGY, post-graduate year; SI, Sponsoring Institution.

APPENDIX A2.

GENERAL CHARACTERISTICS OF CLINICAL LEARNING ENVIRONMENTS

A2.1. Clinical Learning Environment Distribution by Type of Ownership and Services[a,b]

Characteristic	SIs with CLER Visits, % (n = 265)[c]	Teaching Hospitals,[d] % (n = 281)	All Hospitals, % (N = 6,165)
Type of Ownership			
Non-government, not-for-profit	72.1	71.2	50.9
Investor-owned, for-profit	7.2	1.4	26.0
Government, federal	5.7	10.0	3.4
Government, non-federal	15.1	17.4	19.7
Service for Majority of Patients			
General medical and surgical	93.6	89.3	73.9
Other[e]	6.4	10.7	26.1

A2.2. Clinical Learning Environment Distribution by Beds and Staffing[a]

Characteristic	SIs with CLER Visits, Median (IQR)	Teaching Hospitals, Median (IQR)	All Hospitals, Median (IQR)
Total Licensed Beds	465 (318–694)[f]	640 (445–882)[g]	105 (39–262)[h]
Total Staffed Beds	378 (221–594)	567 (360–794)	80 (30–194)
Staff[i,j]			
Registered nurses	957 (538–1,637)	1,678 (1,026–2,710)	111 (50–372)
Clinical staff	593 (346–1,029)	1,004 (602–1,583)	101 (49–263)
All other personnel	1,371 (730–2,504)	2,465 (1,488–3,856)	209 (96–552)

[a] Based on the 2020 American Hospital Association Annual Survey.

[b] Percentages do not total 100 because of rounding.

[c] Missing data (< 8%) largely due to clinical sites that do not report data to the American Hospital Association. Percentages based on valid percent.

[d] Member of Council of Teaching Hospitals of the Association of American Medical Colleges.

[e] Includes psychiatric, rehabilitation, acute long-term care hospitals, children's general medical and surgical, and other types of services.

[f] Missing data < 21%.

[g] Missing data < 13%.

[h] Missing data < 35%.

[i] Physicians, residents, interns, and other trainees omitted from staff count.

[j] 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[a,b]	SIs with CLER Visits, % (N = 286)[c]
Number of Programs at Site	
< 4	28.7
4–10	23.8
11–28	23.8
> 28	23.8
Number of Core Programs at Site	
< 3	28.7
3–6	22.0
7–16	24.5
> 16	24.8

[a] Based on the 2020-2022 Accreditation Council for Graduate Medical Education data.

[b] Percentages do not total 100 because of rounding.

[c] Missing data limited to one Sponsoring Institution (SI).

Abbreviation: CLER, Clinical Learning Environment Review.

APPENDIX A4.

CLER VISITS: CHARACTERISTICS OF GROUPS INTERVIEWED

A4.1. Selected Characteristics of Residents and Fellows in the Group Interviews[a]

Characteristic	Residents and Fellows, % (N = 5,270)
Gender[b]	
Male	50.3
Female	49.4
Other	0.3
Level of Training[b]	
PGY-1	1.8
PGY-2	27.9
PGY-3	33.2
PGY-4+	37.1
Specialty Group[b]	
Medical	59.1
Surgical	22.6
Hospital-based	18.3

A4.2. Selected Characteristics of Program Directors in the Group Interviews[a,c]

Characteristic	Program Directors, % (N = 2,009)
Years at Hospital, Medical Center, or Ambulatory Care Site[b]	
≤ 2	5.9
3–5	15.1
6–10	28.0
> 10	51.0
Program[b]	
Core residency program	64.1
Fellowship program	31.0
Both	4.9
Specialty Group[b]	
Medical	57.5
Surgical	23.5
Hospital-based	19.0

[a] Based on audience response system data.

[b] Missing data (< 10%) have been omitted; percentages based on valid percent.

[c] Percentages do not total 100 because of rounding.

Abbreviations: CLER, Clinical Learning Environment Review; PGY, post-graduate year.

APPENDIX B.

SELECTED RESULTS FROM RESIDENT AND FELLOW GROUP INTERVIEWS

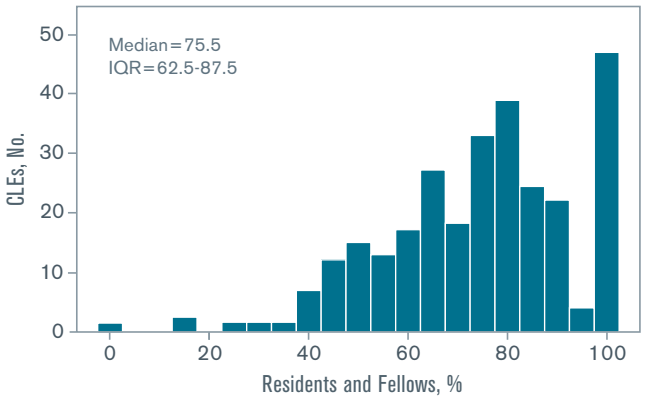
B1. Percentage of Residents and Fellows Who Reported Changes in Patient Care Processes at Their Clinical Site That Represent Sustained Improvements in Health Care as a Result of the COVID-19 Pandemic

PERCENT OF TOTAL SURVEYED[a] (n = 4,855) **72.6**

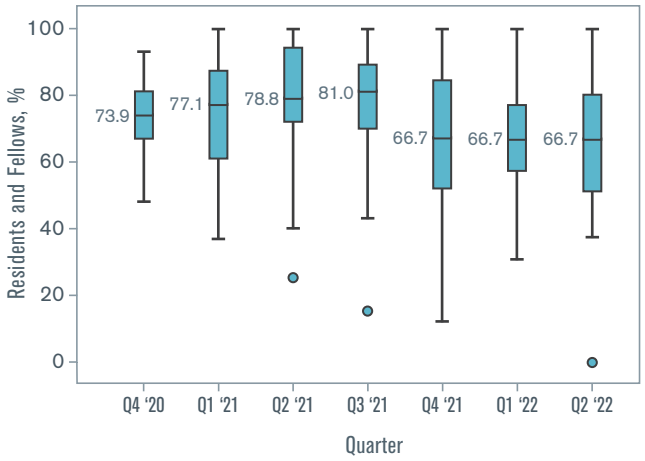
PERCENTAGE BY RESIDENT AND FELLOW AND CLE CHARACTERISTICS[a]

Resident and Fellow Characteristics	Residents and Fellows, % (n = 4,855)
Gender[b]	
Male	71.7
Female	73.7
Level of Training*	
PGY-1	67.5
PGY-2	70.3
PGY-3	73.8
PGY-4+	73.9
Specialty Group***	
Medical	76.6
Surgical	67.7
Hospital-based	65.7
CLE Characteristics	
Region[c]	
Northeast	72.1
Midwest	73.5
South	72.2
West	72.3
Bed Size*	
< 200	70.4
200–299	74.9
300–399	71.3
400–499	74.4
500 or more	72.5
Type of Ownership***	
Non-government, not-for-profit	73.1
Investor-owned, for-profit	67.2
Government, federal	63.8
Government, non-federal	74.1

DISTRIBUTION ACROSS CLEs[d] (n = 284)



MEDIAN PERCENTAGE BY QUARTER[e] (n = 284)**



[a] Missing data (< 12%) have been omitted; percentages based on valid percent.

[b] Results for those who reported "other" are omitted due to small sample size.

[c] Results from clinical learning environments (CLEs) in Puerto Rico (1%) omitted to ensure anonymity.

[d] Distribution includes 95% or more of the total number of CLEs (N = 287).

[e] 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, post-graduate year.

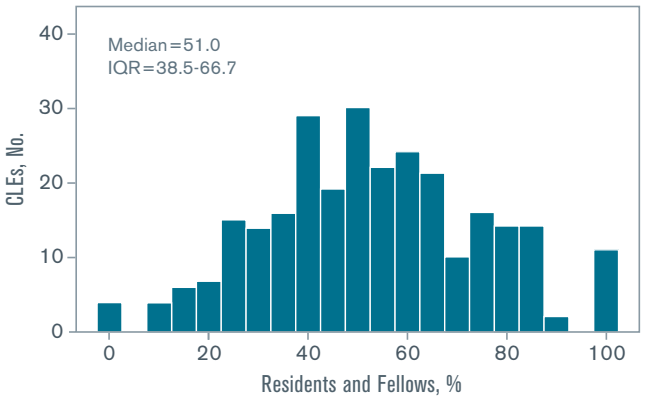
B2. Percentage of Residents and Fellows Who Reported Challenges in Patient Care Processes at Their Clinical Site That Will Persist for the Next Two Years as a Result of the COVID-19 Pandemic

PERCENT OF TOTAL SURVEYED[a] (n = 4,748) **52.9**

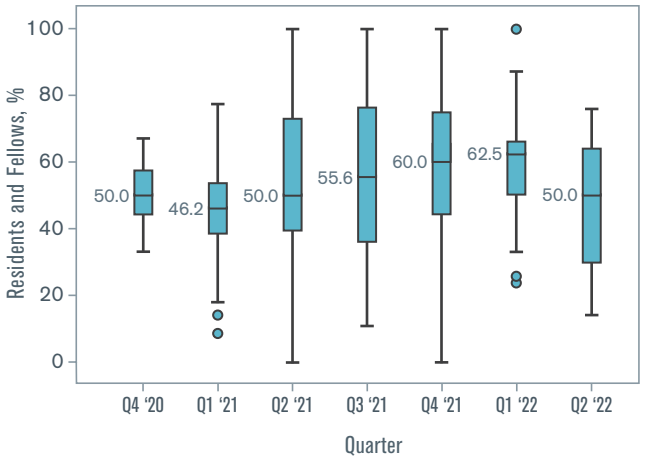
PERCENTAGE BY RESIDENT AND FELLOW AND CLE CHARACTERISTICS[a]

Resident and Fellow Characteristics	Residents and Fellows, % (n = 4,748)
Gender[b]*	
Male	50.6
Female	55.4
Level of Training*	
PGY-1	37.0
PGY-2	52.4
PGY-3	54.0
PGY-4+	53.7
Specialty Group***	
Medical	51.0
Surgical	58.6
Hospital-based	53.4
CLE Characteristics	
Region[c]***	
Northeast	55.6
Midwest	56.2
South	49.7
West	52.0
Bed Size***	
<200	57.4
200–299	51.5
300–399	44.5
400–499	57.9
500 or more	54.2
Type of Ownership	
Non-government, not-for-profit	53.4
Investor-owned, for-profit	53.2
Government, federal	57.3
Government, non-federal	50.8

DISTRIBUTION ACROSS CLEs[d] (n = 278)



MEDIAN PERCENTAGE BY QUARTER[e] (n = 278)*



[a] Missing data (< 15%) have been omitted; percentages based on valid percent.

[b] Results for those who reported "other" are omitted due to small sample size.

[c] Results from clinical learning environments (CLEs) in Puerto Rico (1%) omitted to ensure anonymity.

[d] Distribution includes 95% or more of the total number of CLEs (N = 287).

[e] 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, post-graduate year.

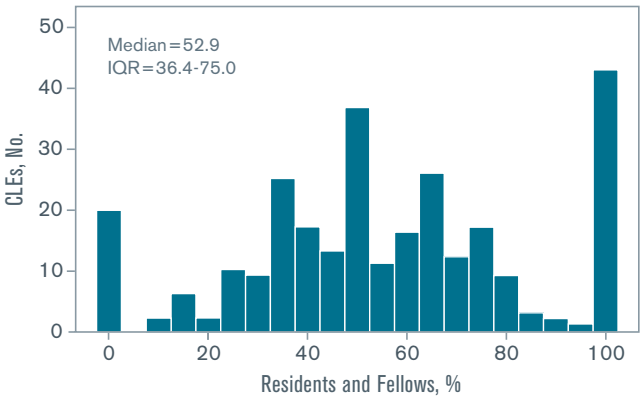
B3. Percentage of Residents and Fellows (PGY-3 and Above) Who Reported Participating in an Interprofessional (Physicians, Nurses, Administrators, Others) Investigation of a Patient Safety Event (e.g., Root Cause Analysis)

PERCENT OF TOTAL SURVEYED[a] (n = 3,216) **52.3**

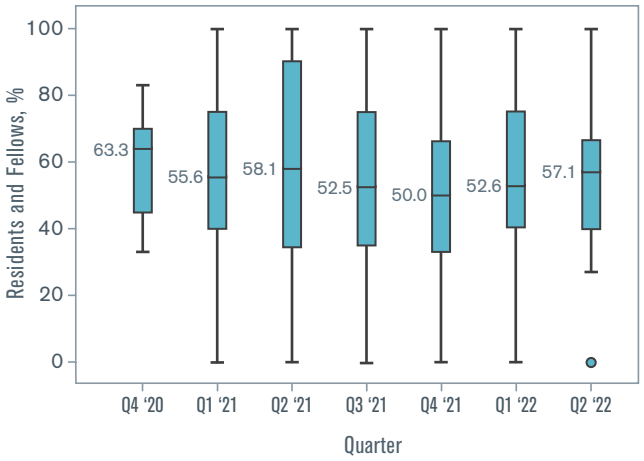
PERCENTAGE BY RESIDENT AND FELLOW AND CLE CHARACTERISTICS[a]

Resident and Fellow Characteristics	Residents and Fellows, % (n = 3,216)
Gender[b]	
Male	53.2
Female	51.2
Level of Training**	
PGY-3	49.9
PGY-4+	54.4
Specialty Group**	
Medical	53.7
Surgical	53.0
Hospital-based	46.5
CLE Characteristics	
Region[c]	
Northeast	50.7
Midwest	54.1
South	53.0
West	48.7
Bed Size*	
<200	56.0
200–299	52.4
300–399	49.0
400–499	44.2
500 or more	53.6
Type of Ownership	
Non-government, not-for-profit	51.8
Investor-owned, for-profit	55.9
Government, federal	55.7
Government, non-federal	51.1

DISTRIBUTION ACROSS CLEs[d] (n = 281)



MEDIAN PERCENTAGE BY QUARTER[e] (n = 281)



[a] Missing data (< 8%) have been omitted; percentages based on valid percent.

[b] Results for those who reported "other" are omitted due to small sample size.

[c] Results from clinical learning environments (CLEs) in Puerto Rico (1%) omitted to ensure anonymity.

[d] Distribution includes 95% or more of the total number of CLEs (N = 287).

[e] 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, post-graduate year.

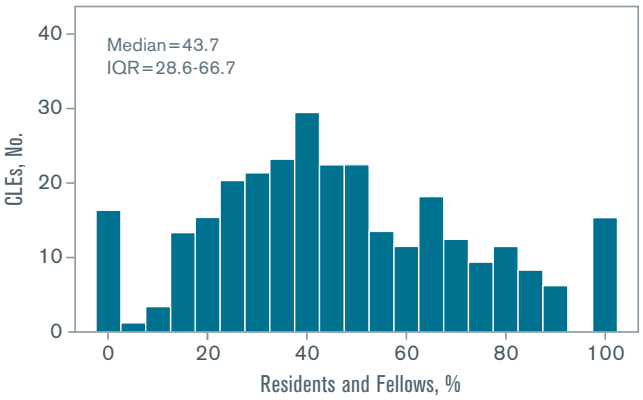
B4. Percentage of Residents and Fellows Who Reported They Were Aware of Results from Patient Safety Event Analyses at Their Clinical Site

PERCENT OF TOTAL SURVEYED[b] (n = 4,795)	45.1

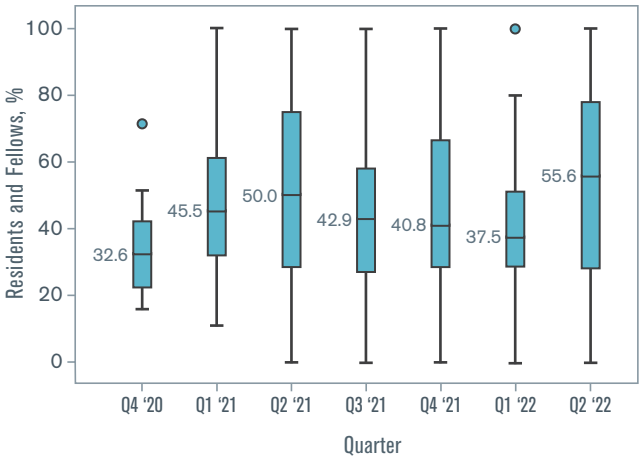
PERCENTAGE BY RESIDENT AND FELLOW AND CLE CHARACTERISTICS[b]

Resident and Fellow Characteristics	Residents and Fellows, % (n = 4,795)
Gender[b]**	
Male	47.1
Female	42.9
Level of Training	
PGY-1	46.1
PGY-2	42.4
PGY-3	45.6
PGY-4+	46.7
Specialty Group	
Medical	43.7
Surgical	47.6
Hospital-based	46.9
CLE Characteristics	
Region[c]***	
Northeast	40.9
Midwest	48.1
South	44.7
West	47.1
Bed Size	
<200	48.8
200–299	46.4
300–399	44.2
400–499	42.4
500 or more	44.9
Type of Ownership**	
Non-government, not-for-profit	45.9
Investor-owned, for-profit	45.0
Government, federal	51.9
Government, non-federal	40.6

DISTRIBUTION ACROSS CLEs[d] (n=286)



MEDIAN PERCENTAGE BY QUARTER[e] (n = 286)



[a] Missing data (< 16%) have been omitted; percentages based on valid percent.

[b] Results for those who reported "other" are omitted due to small sample size.

[c] Results from clinical learning environments (CLEs) in Puerto Rico (1%) omitted to ensure anonymity.

[d] Distribution includes 95% or more of the total number of CLEs (N = 287).

[e] 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, post-graduate year.

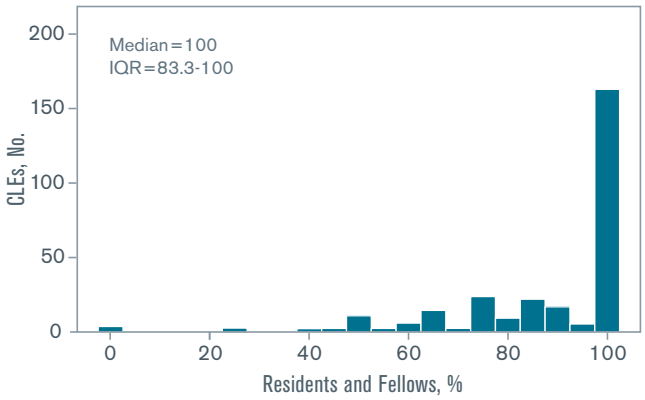
B5. Percentage of Residents and Fellows Who Reported They Were Aware of Results from Patient Safety Event Analyses at Their Clinical Site and Agreed or Strongly Agreed the Events Analyzed Consistently Resulted in Sustained Improvements in Patient Care

PERCENT OF TOTAL SURVEYED[a] (n = 2,026) **88.9**

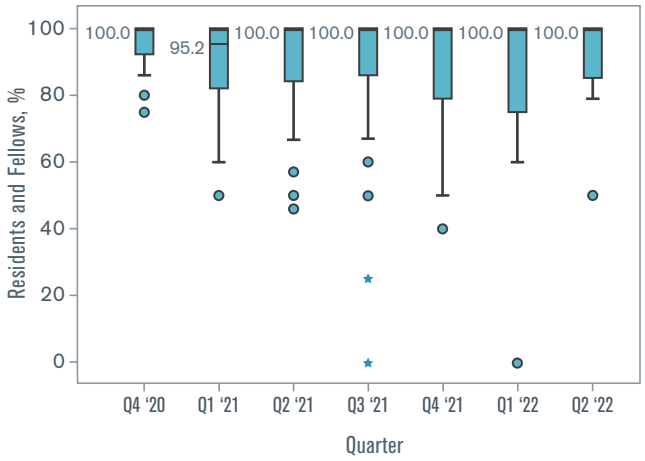
PERCENTAGE BY RESIDENT AND FELLOW AND CLE CHARACTERISTICS[a]

Resident and Fellow Characteristics	Residents and Fellows, % (n = 2,026)
Gender[b]	
Male	89.1
Female	88.6
Level of Training	
PGY-1	91.2
PGY-2	90.5
PGY-3	89.3
PGY-4+	87.0
Specialty Group	
Medical	89.3
Surgical	87.2
Hospital-based	89.1
CLE Characteristics	
Region[c]	
Northeast	87.6
Midwest	89.3
South	88.9
West	89.0
Bed Size	
<200	90.4
200–299	90.8
300–399	89.5
400–499	92.6
500 or more	87.2
Type of Ownership	
Non-government, not-for-profit	89.6
Investor-owned, for-profit	84.3
Government, federal	87.3
Government, non-federal	87.8

DISTRIBUTION ACROSS CLEs[d] (n=271)



MEDIAN PERCENTAGE BY QUARTER[e] (n = 271)



[a] Missing data (< 13%) have been omitted; percentages based on valid percent.

[b] Results for those who reported "other" are omitted due to small sample size.

[c] Results from clinical learning environments (CLEs) in Puerto Rico (1%) omitted to ensure anonymity.

[d] Distribution includes 94% or more of the total number of CLEs (N = 287).

[e] 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, post-graduate year.

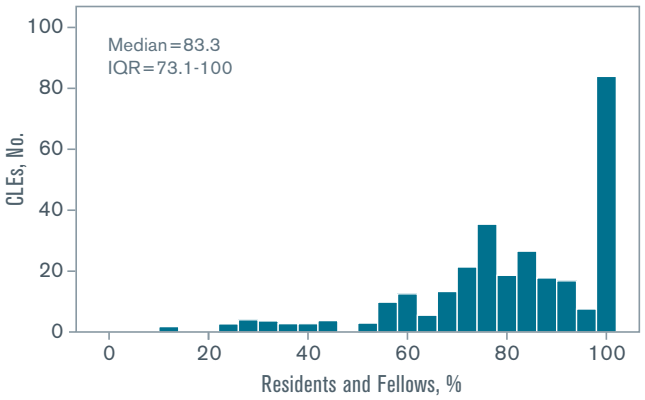
B6. Percentage of Residents and Fellows (PGY-2 and Above) Who Reported Participating in a Quality Improvement Project of Their Own Design or One Designed by Their Program or Department

PERCENT OF TOTAL SURVEYED[a] (n = 4,502) **78.8**

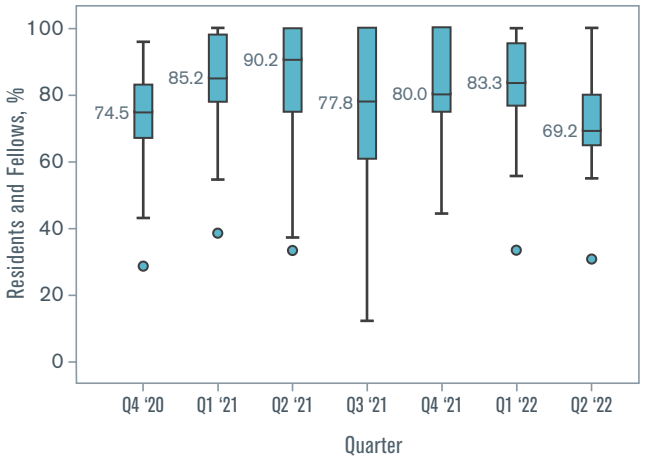
PERCENTAGE BY RESIDENT AND FELLOW AND CLE CHARACTERISTICS[a]

Resident and Fellow Characteristics	Residents and Fellows, % (n = 4,502)
Gender[b]	
Male	78.8
Female	78.7
Level of Training* **	
PGY-2	73.8
PGY-3	81.7
PGY-4+	80.0
Specialty Group* **	
Medical	82.0
Surgical	73.3
Hospital-based	74.7
CLE Characteristics	
Region[c] **	
Northeast	75.2
Midwest	78.5
South	79.7
West	83.2
Bed Size* **	
<200	82.3
200–299	76.1
300–399	83.8
400–499	81.6
500 or more	76.6
Type of Ownership	
Non-government, not-for-profit	77.8
Investor-owned, for-profit	82.7
Government, federal	82.3
Government, non-federal	79.9

DISTRIBUTION ACROSS CLEs[d] (n = 281)



MEDIAN PERCENTAGE BY QUARTER[e] (n = 281)*



[a] Missing data (< 9%) have been omitted; percentages based on valid percent.

[b] Results for those who reported "other" are omitted due to small sample size.

[c] Results from clinical learning environments (CLEs) in Puerto Rico (1%) omitted to ensure anonymity.

[d] Distribution includes 95% or more of the total number of CLEs (N = 287).

[e] 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, post-graduate year.

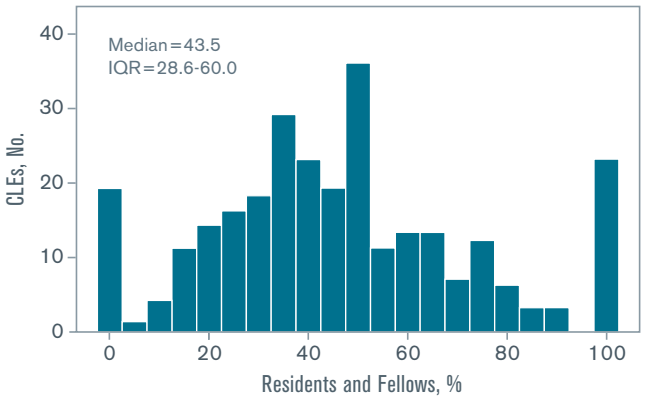
B7. Percentage of Residents and Fellows (PGY-2 and Above) Who Reported Participating in a Quality Improvement Project Linked to One or More of Their Clinical Site's Quality Improvement Goals

PERCENT OF TOTAL SURVEYED[a] (n = 3,368) **43.6**

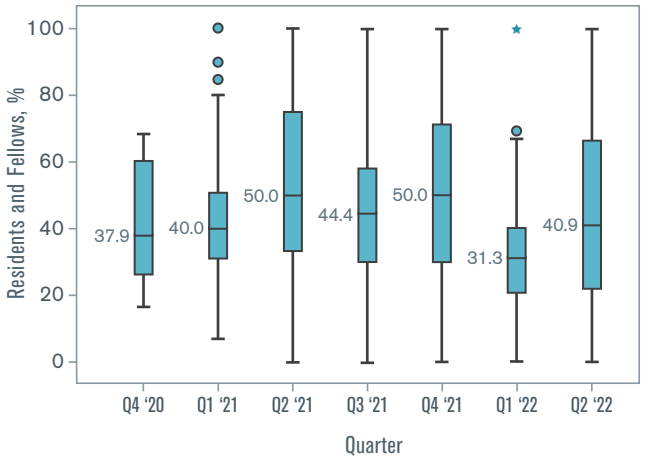
PERCENTAGE BY RESIDENT AND FELLOW AND CLE CHARACTERISTICS[a]

Resident and Fellow Characteristics	Residents and Fellows, % (n = 3,368)
Gender[b]	
Male	43.9
Female	43.3
Level of Training	
PGY-2	43.3
PGY-3	44.6
PGY-4+	42.9
Specialty Group**	
Medical	43.5
Surgical	43.7
Hospital-based	44.0
CLE Characteristics	
Region[c]**	
Northeast	43.5
Midwest	42.3
South	42.8
West	42.1
Bed Size***	
<200	50.0
200–299	51.6
300–399	43.5
400–499	46.9
500 or more	39.2
Type of Ownership	
Non-government, not-for-profit	42.8
Investor-owned, for-profit	40.5
Government, federal	46.3
Government, non-federal	43.9

DISTRIBUTION ACROSS CLEs[d] (n=281)



MEDIAN PERCENTAGE BY QUARTER[e] (n = 281)



[a] Missing data (< 9%) have been omitted; percentages based on valid percent.

[b] Results for those who reported "other" are omitted due to small sample size.

[c] Results from clinical learning environments (CLEs) in Puerto Rico (1%) omitted to ensure anonymity.

[d] Distribution includes 95% or more of the total number of CLEs (N = 287).

[e] 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, post-graduate year.

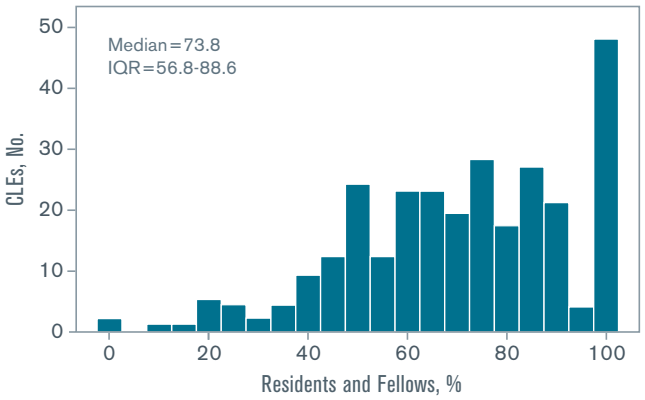
B8. Percentage of Residents and Fellows Who Agreed or Strongly Agreed That COVID-19-Related Quality Improvement Activities Were Well Communicated at Their Clinical Site

PERCENT OF TOTAL SURVEYED[a] (n = 4,828) **66.8**

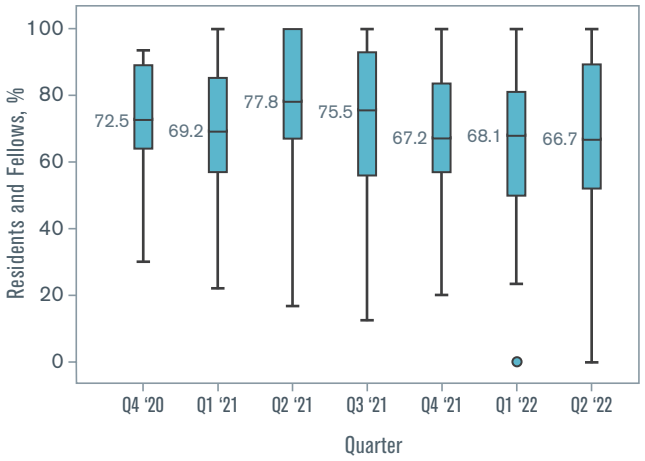
PERCENTAGE BY RESIDENT AND FELLOW AND CLE CHARACTERISTICS[a]

Resident and Fellow Characteristics	Residents and Fellows, % (n = 4,828)
Gender[b]* **	
Male	69.4
Female	63.8
Level of Training**	
PGY-1	79.0
PGY-2	69.4
PGY-3	64.9
PGY-4+	65.3
Specialty Group*	
Medical	65.0
Surgical	67.1
Hospital-based	70.3
CLE Characteristics	
Region[c]**	
Northeast	66.0
Midwest	68.1
South	66.5
West	63.5
Bed Size**	
<200	68.6
200–299	72.4
300–399	65.8
400–499	69.2
500 or more	64.5
Type of Ownership***	
Non-government, not-for-profit	68.1
Investor-owned, for-profit	63.9
Government, federal	53.9
Government, non-federal	64.3

DISTRIBUTION ACROSS CLEs[d] (n = 286)



MEDIAN PERCENTAGE BY QUARTER[e] (n = 286)



[a] Missing data (< 15%) have been omitted; percentages based on valid percent.

[b] Results for those who reported "other" are omitted due to small sample size.

[c] Results from clinical learning environments (CLEs) in Puerto Rico (1%) omitted to ensure anonymity.

[d] Distribution includes 95% or more of the total number of CLEs (N = 287).

[e] 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, post-graduate year.

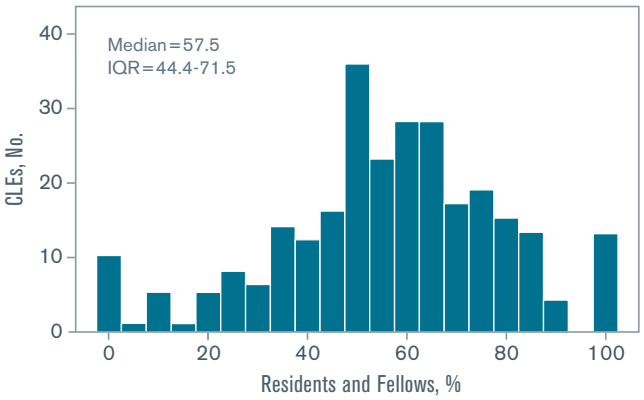
B9. Percentage of Residents and Fellows Who Reported There Were Changes in the Way They Interacted with Other Members of the Clinical Care Team Regarding Diagnostic and Treatment Planning as a Result of the COVID-19 Pandemic That Will Likely Be Sustained for the Next Two Years at Their Clinical Site

PERCENT OF TOTAL SURVEYED[a] (n = 4,383) **57.7**

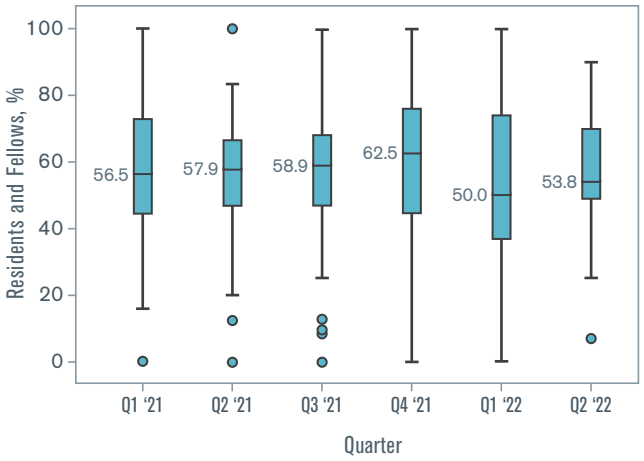
PERCENTAGE BY RESIDENT AND FELLOW AND CLE CHARACTERISTICS[a]

Resident and Fellow Characteristics	Residents and Fellows, % (n = 4,383)
Gender[b]*	
Male	55.8
Female	59.7
Level of Training	
PGY-1	49.3
PGY-2	56.7
PGY-3	57.2
PGY-4+	59.6
Specialty Group**	
Medical	59.3
Surgical	53.1
Hospital-based	59.2
CLE Characteristics	
Region[c]	
Northeast	56.9
Midwest	58.6
South	56.2
West	61.7
Bed Size	
<200	57.3
200–299	57.4
300–399	55.3
400–499	63.3
500 or more	57.9
Type of Ownership*	
Non-government, not-for-profit	58.3
Investor-owned, for-profit	51.1
Government, federal	53.0
Government, non-federal	60.0

DISTRIBUTION ACROSS CLEs[d] (n = 274)



MEDIAN PERCENTAGE BY QUARTER[e] (n = 274)



[a] Missing data (< 22%) have been omitted; percentages based on valid percent.

[b] Results for those who reported "other" are omitted due to small sample size.

[c] Results from clinical learning environments (CLEs) in Puerto Rico (1%) omitted to ensure anonymity.

[d] Distribution includes 95% or more of the total number of CLEs (N = 287).

[e] 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, post-graduate year.

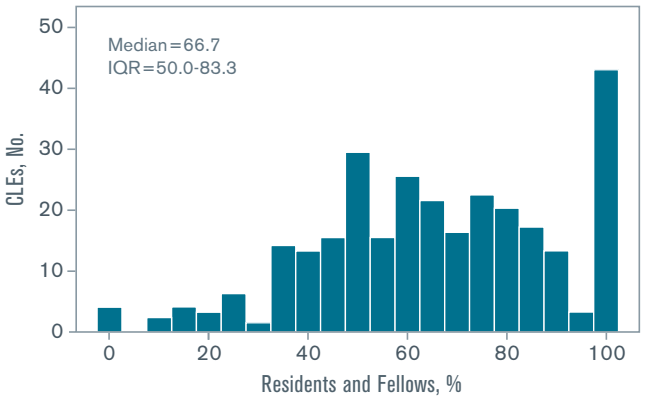
B10. Percentage of Residents and Fellows Who Agreed or Strongly Agreed the COVID-19 Experience at Their Clinical Site Has Led to Sustained Improvements in How the Clinical Care Team Involves Patients in Decisions Related to Their Care

PERCENT OF TOTAL SURVEYED[a] (n = 4,704) **59.7**

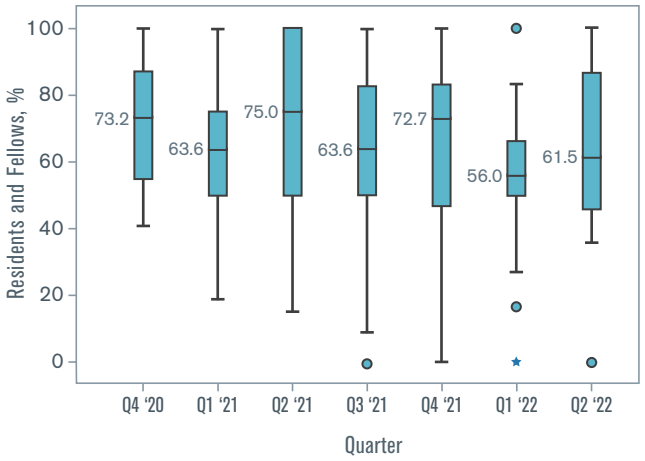
PERCENTAGE BY RESIDENT AND FELLOW AND CLE CHARACTERISTICS[a]

Resident and Fellow Characteristics	Residents and Fellows, % (n = 4,704)
Gender[b]*	
Male	61.7
Female	57.5
Level of Training	
PGY-1	66.7
PGY-2	60.8
PGY-3	59.4
PGY-4+	58.5
Specialty Group***	
Medical	61.8
Surgical	52.0
Hospital-based	60.6
CLE Characteristics	
Region[c]*	
Northeast	60.3
Midwest	58.3
South	59.5
West	57.9
Bed Size***	
<200	64.3
200–299	67.5
300–399	59.7
400–499	66.2
500 or more	55.3
Type of Ownership***	
Non-government, not-for-profit	59.8
Investor-owned, for-profit	65.6
Government, federal	46.2
Government, non-federal	59.3

DISTRIBUTION ACROSS CLEs[d] (n = 286)



MEDIAN PERCENTAGE BY QUARTER[e] (n = 286)



[a] Missing data (< 18%) have been omitted; percentages based on valid percent.

[b] Results for those who reported "other" are omitted due to small sample size.

[c] Results from clinical learning environments (CLEs) in Puerto Rico (1%) omitted to ensure anonymity.

[d] Distribution includes 95% or more of the total number of CLEs (N = 287).

[e] 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, post-graduate year.

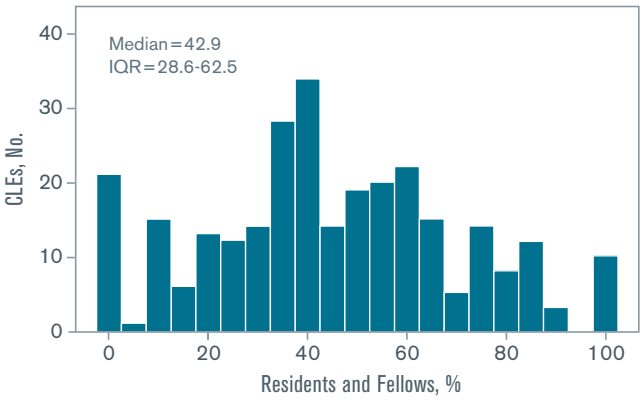
B11. Percentage of Residents and Fellows Who Reported They Had Encountered a Physician (Attending Physician or Consultant) Who Made Them Feel Uncomfortable When Requesting Assistance at Their Clinical Site

PERCENT OF TOTAL SURVEYED[a] (n = 4,810) **43.3**

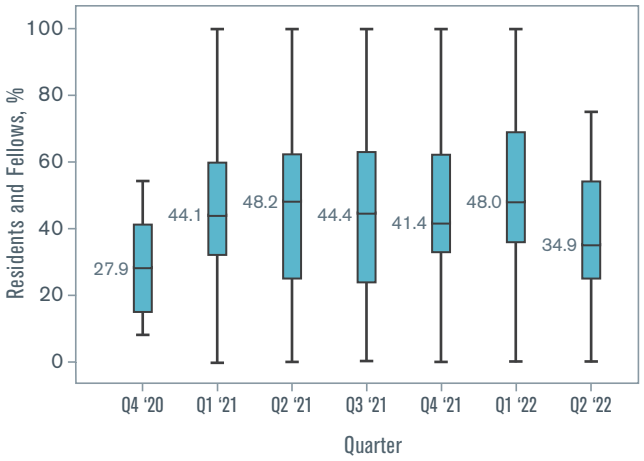
PERCENTAGE BY RESIDENT AND FELLOW AND CLE CHARACTERISTICS[a]

Resident and Fellow Characteristics	Residents and Fellows, % (n = 4,810)
Gender[b]* **	
Male	39.1
Female	48.0
Level of Training* **	
PGY-1	49.4
PGY-2	50.2
PGY-3	50.7
PGY-4+	32.2
Specialty Group	
Medical	45.1
Surgical	40.0
Hospital-based	43.8
CLE Characteristics	
Region[c]* **	
Northeast	43.6
Midwest	45.0
South	42.1
West	47.0
Bed Size	
<200	48.1
200–299	38.3
300–399	42.7
400–499	41.4
500 or more	44.9
Type of Ownership	
Non-government, not-for-profit	44.5
Investor-owned, for-profit	44.9
Government, federal	45.7
Government, non-federal	40.3

DISTRIBUTION ACROSS CLEs[d] (n = 286)



MEDIAN PERCENTAGE BY QUARTER[e] (n = 286)



[a] Missing data (< 16%) have been omitted; percentages based on valid percent.

[b] Results for those who reported "other" are omitted due to small sample size.

[c] Results from clinical learning environments (CLEs) in Puerto Rico (1%) omitted to ensure anonymity.

[d] Distribution includes 95% or more of the total number of CLEs (N = 287).

[e] 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, post-graduate year.

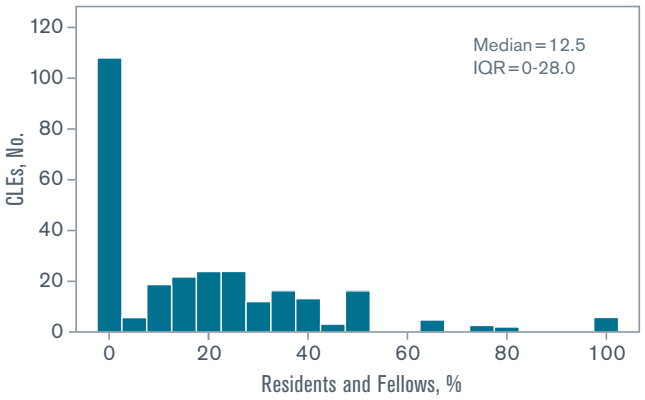
B12. Percentage of Residents and Fellows Who Reported They Had Encountered a Physician (Attending Physician or Consultant) Who Made Them Feel Uncomfortable When Requesting Assistance at Their Clinical Site and the Frequency of This Experience Had Increased as a Result of the COVID-19 Pandemic

PERCENT OF TOTAL SURVEYED[a] (n = 1,933) **19.0**

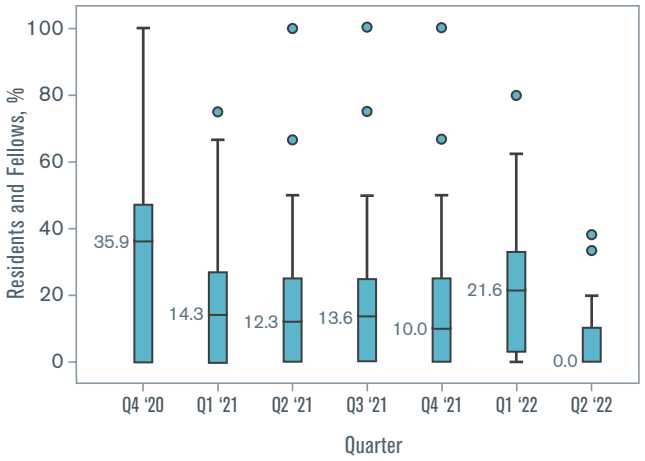
PERCENTAGE BY RESIDENT AND FELLOW AND CLE CHARACTERISTICS[a]

Resident and Fellow Characteristics	Residents and Fellows, % (n = 1,933)
Gender[b]	
Male	17.3
Female	20.3
Level of Training	
PGY-1	8.3
PGY-2	18.3
PGY-3	20.3
PGY-4+	18.7
Specialty Group	
Medical	18.9
Surgical	16.3
Hospital-based	22.8
CLE Characteristics	
Region[c]	
Northeast	16.2
Midwest	23.3
South	19.3
West	18.5
Bed Size	
<200	20.1
200–299	17.8
300–399	17.5
400–499	21.2
500 or more	19.5
Type of Ownership*	
Non-government, not-for-profit	20.0
Investor-owned, for-profit	8.2
Government, federal	20.6
Government, non-federal	19.3

DISTRIBUTION ACROSS CLEs[d] (n = 265)



MEDIAN PERCENTAGE BY QUARTER[e] (n = 265)



[a] Missing data (< 13%) have been omitted; percentages based on valid percent.

[b] Results for those who reported "other" are omitted due to small sample size.

[c] Results from clinical learning environments (CLEs) in Puerto Rico (1%) omitted to ensure anonymity.

[d] Distribution includes 92% or more of the total number of CLEs (N = 287).

[e] 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, post-graduate year.

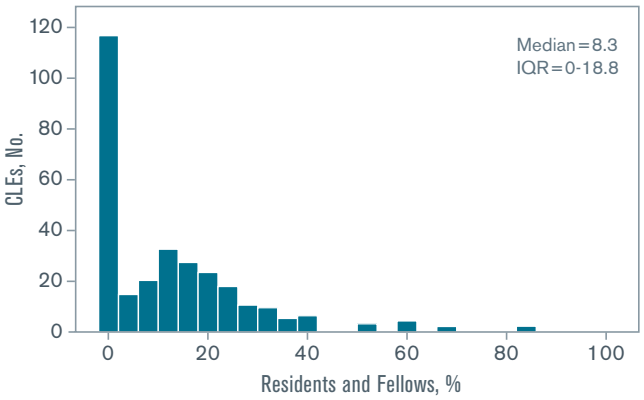
B13. Percentage of Residents and Fellows Who Reported There Were Issues in the Supervision of Consults Conducted by Residents and Fellows as a Result of the COVID-19 Pandemic That Were Identified at the Clinical Site

PERCENT OF TOTAL SURVEYED[a] (n = 4,541) **13.4**

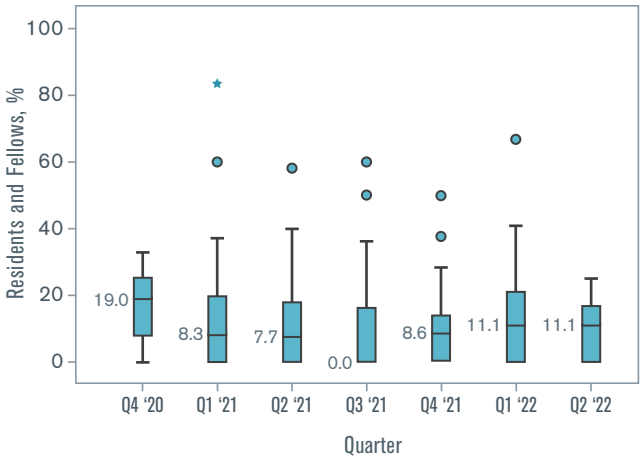
PERCENTAGE BY RESIDENT AND FELLOW AND CLE CHARACTERISTICS[a]

Resident and Fellow Characteristics	Residents and Fellows, % (n = 4,541)
Gender[b]* **	
Male	11.0
Female	15.8
Level of Training	
PGY-1	8.1
PGY-2	12.0
PGY-3	13.5
PGY-4+	13.8
Specialty Group	
Medical	14.2
Surgical	12.4
Hospital-based	11.9
CLE Characteristics	
Region[c]	
Northeast	14.7
Midwest	13.1
South	13.7
West	13.0
Bed Size* **	
<200	9.7
200–299	8.6
300–399	14.2
400–499	15.0
500 or more	15.1
Type of Ownership* **	
Non-government, not-for-profit	13.7
Investor-owned, for-profit	18.3
Government, federal	3.4
Government, non-federal	14.9

DISTRIBUTION ACROSS CLEs[d] (n = 285)



MEDIAN PERCENTAGE BY QUARTER[e] (n = 285)



[a] Missing data (< 20%) have been omitted; percentages based on valid percent.

[b] Results for those who reported "other" are omitted due to small sample size.

[c] Results from clinical learning environments (CLEs) in Puerto Rico (1%) omitted to ensure anonymity.

[d] Distribution includes 95% or more of the total number of CLEs (N = 287).

[e] 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, post-graduate year.

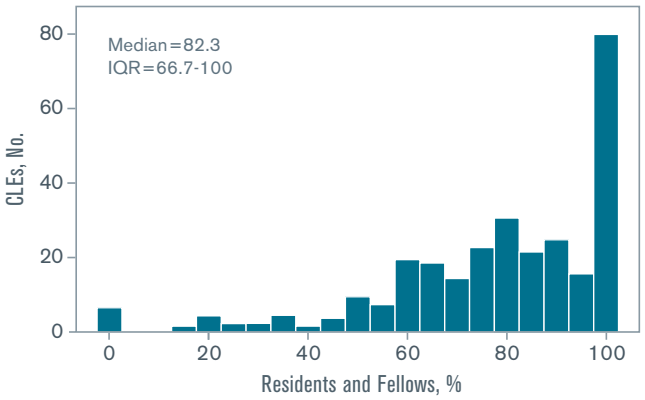
B14. Percentage of Residents and Fellows Who Reported They Feel Their Clinical Site Has Services and Resources to Help Them Manage Emotionally Stressful Patient Care Situations Resulting from the COVID-19 Pandemic

PERCENT OF TOTAL SURVEYED[a] (n = 4,532) **79.4**

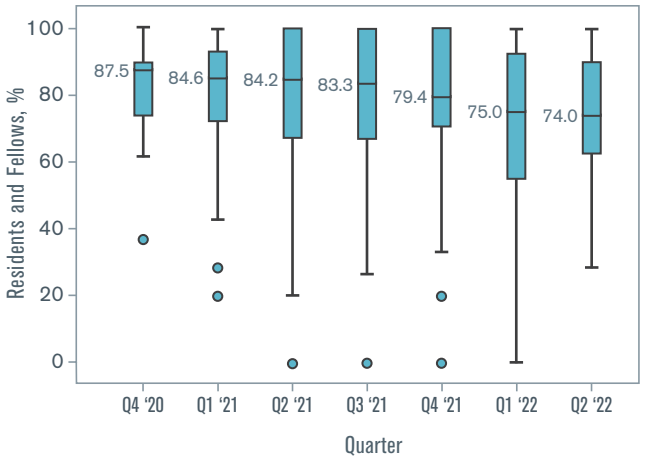
PERCENTAGE BY RESIDENT AND FELLOW AND CLE CHARACTERISTICS[a]

Resident and Fellow Characteristics	Residents and Fellows, % (n = 4,532)
Gender[b]* **	
Male	82.8
Female	76.2
Level of Training**	
PGY-1	83.3
PGY-2	76.8
PGY-3	79.4
PGY-4+	82.0
Specialty Group*	
Medical	78.1
Surgical	80.5
Hospital-based	82.0
CLE Characteristics	
Region[c]	
Northeast	78.4
Midwest	80.2
South	79.2
West	78.5
Bed Size**	
<200	73.0
200–299	78.8
300–399	76.6
400–499	80.6
500 or more	80.8
Type of Ownership*	
Non-government, not-for-profit	79.8
Investor-owned, for-profit	71.5
Government, federal	82.2
Government, non-federal	78.1

DISTRIBUTION ACROSS CLEs[d] (n = 282)



MEDIAN PERCENTAGE BY QUARTER[e] (n = 282)



[a] Missing data (< 21%) have been omitted; percentages based on valid percent.

[b] Results for those who reported "other" are omitted due to small sample size.

[c] Results from clinical learning environments (CLEs) in Puerto Rico (1%) omitted to ensure anonymity.

[d] Distribution includes 95% or more of the total number of CLEs (N = 287).

[e] 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, post-graduate year.

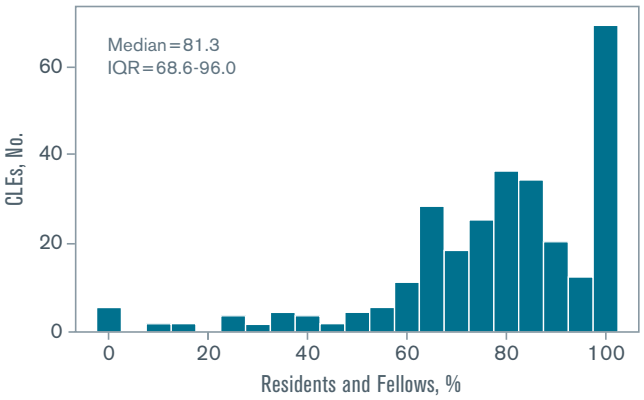
B15. Percentage of Residents and Fellows Who Reported Their Clinical Site Provided a Supportive, Non-Punitive Environment for Reporting COVID-19-Related Issues Concerning Unsafe Conditions, Including Those Affecting Either Patient or Staff Member Physical and Emotional Safety

PERCENT OF TOTAL SURVEYED[a] (n = 4,658) **78.4**

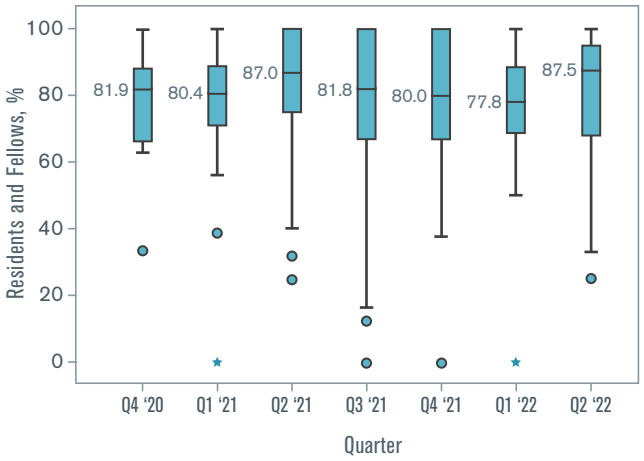
PERCENTAGE BY RESIDENT AND FELLOW AND CLE CHARACTERISTICS[a]

Resident and Fellow Characteristics	Residents and Fellows, % (n = 4,658)
Gender[b]	
Male	79.5
Female	77.2
Level of Training	
PGY-1	85.2
PGY-2	77.7
PGY-3	77.4
PGY-4+	79.7
Specialty Group*	
Medical	78.1
Surgical	81.7
Hospital-based	74.9
CLE Characteristics	
Region[c]*	
Northeast	77.7
Midwest	81.0
South	76.5
West	78.1
Bed Size	
<200	76.4
200–299	83.4
300–399	77.2
400–499	79.0
500 or more	77.8
Type of Ownership***	
Non-government, not-for-profit	79.4
Investor-owned, for-profit	72.2
Government, federal	86.6
Government, non-federal	74.2

DISTRIBUTION ACROSS CLEs[d] (n = 281)



MEDIAN PERCENTAGE BY QUARTER[e] (n = 281)



[a] Missing data (< 19%) have been omitted; percentages based on valid percent.

[b] Results for those who reported "other" are omitted due to small sample size.

[c] Results from clinical learning environments (CLEs) in Puerto Rico (1%) omitted to ensure anonymity.

[d] Distribution includes 95% or more of the total number of CLEs (N = 287).

[e] 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, post-graduate year.

ACGME

Accreditation Council for
Graduate Medical Education

CLER

Clinical Learning
Environment Review

Access the full *CLER National Report of Findings 2022* at
https://doi.org/10.35425/ACGME.0009

ISBN Digital: 978-1-945365-43-0