CLER REPORT OF FINDINGS 2021:

SUBPROTOCOL FOR OPERATIVE AND PROCEDURAL AREAS

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 other clinical settings, for graciously hosting this set of Clinical Learning Environment Review Site Visits. We appreciate the effort that went into arranging the visits and ensuring open access to residents, fellows, faculty members, and other staff. It was a privilege to spend time in your organizations, and we recognize your dedication to continually improving graduate medical education and patient care.

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CLER IN THE TIME OF THE COVID-19 PANDEMIC

The novel coronavirus (COVID-19) brought a shock to international health care systems throughout the world. Among those affected were the US health care systems that serve as clinical learning environments (CLEs) for Sponsoring Institutions accredited by the Accreditation Council for Graduate Medical Education (ACGME) and their residency and fellowship programs. Of note, the Clinical Learning Environment Review (CLER) Program site visits that form the basis of this report were conducted between March 2018 and October 2019—before the pandemic.

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

FOREWORD

Jeffrey P. Gold, MD

With its first national report in 2016, the CLER Program began to provide the GME community, the ACGME Board of Directors, and the public with new insights into the nation's hospitals, medical centers, and other clinical settings that support resident and fellow ACGME-accredited GME. CLER site visits have always sought to explore all aspects of the clinical learning environment. Yet, due to the distinct logistical steps needed to visit the operative and procedural units, the CLER Program to date has acquired little information about these complex and important clinical care areas that are so essential to patient care.

This special report provides the first national look at how operative and procedural clinical care environments are shaping the day to day learning experiences of the nation's resident and fellow physicians. The results from this initial sample of sites confirm that there are many similarities with the CLER findings across other non-procedural clinical areas. For example, there are gaps in how the operative and procedural learning environments engage residents and fellows in efforts to optimize patient safety and health care quality.

Importantly, the construct and process of this subprotocol–with its extensive time devoted to observing in operative and procedural areas–facilitated a unique perspective that provided a number of new insights into how operating and procedural rooms function as learning environments. Some of the findings are reassuring and some reveal important challenges and significant opportunities for improvement.

I anticipate that the ACGME Board, the graduate medical education community, and the executive leadership of the CLE, including the leadership of the operative and procedural areas that host resident and fellow physician education will be both highly engaged and highly excited about this new information as it raises new possibilities for both enhancing the learning experience and improving the safety and quality of patient care.

INTRODUCTION

Thomas J. Nasca, MD, MACP

The operative and procedural areas within the hospitals, medical centers, and ambulatory care sites of ACGME-accredited Sponsoring Institutions are essential learning environments that shape the educational experiences of resident and fellow physicians, especially in the procedural disciplines. The CLER Program provides insights into the resident and fellow experience through this special report of findings from a subprotocol specifically designed to provide access to and observation time within these patient care areas.

The findings in this report present several insights to how operative and procedural areas serve as clinical learning environments. Some of the findings are reassuring and emphasize the high quality of learning experiences that are being shaped in these clinical units. For example, the report notes that, in general, operating room nurses expressed the belief that residents and fellows were receiving adequate supervision in the operating room. Other findings reveal that the operative and procedural areas share challenges in common with other clinical care units. For example, residents and fellows in the operative and procedural areas infrequently participated in patient safety event investigations—a finding that has been more broadly noted in the CLER National Reports of the full protocol.

This report also presents findings that are unique and interesting in that they reveal unexpected attributes of the learning environment that may spur new thinking about opportunities to improve the operative and procedural experiences for residents and fellows. For example, the report includes new insights about:

- enhancing the quality of key components of patient safety, such as the resident role in the time-out at the start of a procedure and the debrief at the end of the procedure;
- enhancing the role of residents and fellows in transitioning patient care into and out of the operative and procedural rooms;
- identifying what information might be important for other members of the interprofessional team to know with regard to the educational goals for the residents and fellows and their expected roles in the case at hand; and,
- identifying issues related to equity of care in the operative and procedural areas to better understand how patients with special circumstances, such as language barriers, are supported throughout the peri-operative experience.

The ACGME would like to recognize the many individuals who helped shape the protocol and our understanding of the findings presented in this report. Specifically, we express our appreciation to a group of exceedingly well-accomplished surgeons, anesthesiologists, and nursing leaders who comprised a specially convened national advisory group to assist the CLER Program and the CLER Evaluation Committee in developing and reviewing this subprotocol. The ACGME thanks the Sponsoring Institutions that participated in this subprotocol, and the dedicated members of the CLER team who conducted, synthesized, and now report this important work.

As with all of the publications of the CLER Program, the ACGME hopes this report will add to the national conversation focused on improving the clinical learning environment with the goal of optimizing the quality of learning experiences for residents and fellows while simultaneously optimizing patient safety and improving the quality of patient care.

OVERVIEW OF THE CLER PROGRAM

INTRODUCTION

The ACGME established the CLER Program in 2012 (Weiss, Bagian, and Nasca 2013; Weiss, Wagner, and Nasca 2013). The CLER Program provides GME leaders and executive leaders of hospitals, medical centers, and other clinical settings with formative feedback aimed at improving patient care while optimizing the CLE in six CLER Focus Areas (Weiss, Bagian, and Wagner 2014):

- Patient Safety
- Health Care Quality (including health care disparities)
- Care Transitions
- Supervision
- Well-Being
- Professionalism

The CLER Program refers to CLEs as living, dynamic entities—the embodiment of all of the individuals within these settings that influence and imprint upon fellows and residents. The CLER Program recognizes that, although there are shared elements among CLEs, each CLE has a unique set of internal and external factors that influence its strategic goals for improving patient care.

In both the 2016 and 2018 *National Report of Findings*,(Koh et al. 2018; Wagner et al. 2016) the CLER Program reported findings from site visits to CLEs of larger Sponsoring Institutions (i.e., those with three or more core residency programs). These reports included observations in the pre-operative and post-acute care clinical areas of CLEs with residency and fellowship programs in the operative and procedural specialties. These observations were combined with findings from all of the other clinical areas explored and presented as aggregate results.

Due to timing and logistics, CLER Field Representatives do not routinely explore operative and procedural areas with restricted access. To remedy the missing information from these key areas of the learning environment, the CLER Program designed and implemented a subprotocol to a sample of the larger Sponsoring Institutions with ACGME-accredited programs in the surgical and anesthesia specialties, conducted concurrent with the regular visit in the third cycle of CLER site visits. For these visits, the CLER Program expanded the CLER team to include an additional two to four CLER Field Representatives with backgrounds and expertise in surgery or anesthesiology. These additional CLER Field Representatives joined the other members of the CLER site visit team for the initial and exit meetings with executive leadership. In between these meetings, the operative and procedural subprotocol site visit team separated from the other members of the team, donned surgical scrubs arranged in advance, and administered a protocol that explored the six CLER Focus Areas through the unique perspective of the operative and procedural areas.

AN IMPORTANT NOTE FOR THIS REPORT

The CLER Field Representatives administering the subprotocol conferred with the other members of the CLER site visit team to inform the CLE's individual site visit report. The individual reports do not contain information that

identifies specific programs or clinical areas. The CLER Program routinely excludes specialty-specific information in the individual reports to help maintain anonymity when information is highly sensitive. This report contains aggregate, de-identified data not included in the CLER Program's verbal and written reports to the individual clinical sites. As a result, individual site visit reports may have been more neutral or positive in tone than what appears in the aggregate findings of this report. Therefore, even if the challenges identified in this report were not highlighted in the institution's individual site visit report, the challenges may apply to their CLE.

METHODOLOGY

INTRODUCTION

This report details findings of the first set of CLER site visits to the operative and procedural areas[a] within the hospitals and medical centers of ACGME-accredited Sponsoring Institutions. The CLER Program conducted these from March 13, 2018 to October 22, 2019.

The findings in the six CLER Focus Areas are based on site visits to the major participating clinical sites (i.e., hospitals and medical centers) for 25 ACGME-accredited Sponsoring Institutions with three or more core residency programs. These clinical sites serve as CLEs for the Sponsoring Institutions.

SELECTION OF CLINICAL LEARNING ENVIRONMENTS

The CLER Program administered the operative and procedural subprotocol to a sample of larger Sponsoring Institutions with ACGME-accredited surgical and anesthesiology specialty programs. The subprotocol visit was conducted in parallel with the regular CLER site visit.

The CLER Program utilized a stratified sampling approach to obtain a sample representative of the larger Sponsoring Institution population—with a proportion of each stratum in the sample the same as in the population. For the purpose of this subprotocol, the sample was determined by three strata: geographic region; number of ACGME-accredited programs; and number of residents and fellows in ACGME-accredited programs.

Collectively, the 25 Sponsoring Institutions oversee 1,719 ACGME-accredited residency and fellowship programs, with a median of 64 programs per Sponsoring Institution.[b] The number of residents and fellows in ACGME-accredited programs range from 375 to 2,095 residents and/or fellows per Sponsoring Institution (median=727). The majority (64.0 percent) of the Sponsoring Institutions were medical schools or health science centers, 32.0 percent were general teaching hospitals, and 4.0 percent were educational consortiums.

Thirty-two percent of the CLEs were located in the South, 28.0 percent in the Northeast, 20.0 percent in the Midwest, and 20.0 percent in the West. The sites ranged in size from 287 to 1424 acute care beds (median=693). More than half (52.0 percent) were non-government, not-for-profit organizations; 44.0 percent were government, non-federal; and 4.0 percent were investor-owned, for-profit.

CLER OPERATIVE AND PROCEDURAL SUBPROTOCOL

To conduct the CLER operative and procedural subprotocol, two to four CLER Field Representatives—salaried employees of the ACGME with expertise in surgery or anesthesiology—joined the main CLER site visit team. All visits lasted three days.

[a] In the context of this report, the term "operative" or "procedural" is inclusive of surgical and anesthesia care.

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

The operative and procedural subprotocol included a structured schedule of events for each visit that included meetings with the following groups in the same order:

- Designated institutional official (DIO) and staff (*with main CLER site visit team*)
- Executive leadership (*with main CLER site visit team*)
- Patient safety and quality leadership (*with main CLER site visit team*)
- Operating room nursing leadership
- Operating room physician leadership
- Operating room nurses

The CLER Program designed the operative and procedural subprotocol to begin the visit with initial meetings with the DIO, executive leadership, and patient safety and quality leadership as part of the regular CLER site visit. The purpose of these initial meetings was to allow the CLER site visit team to become familiar with the basic language and culture of the CLE's current activities in the six CLER Focus Areas. This information helped inform subsequent interviews and observations during the visit, including the operative and procedural subprotocol portion. Detailed descriptions of the methodology of the CLER Program, including the regular CLER site visit process, are available in the full *CLER National Report of Findings 2018* (Koh, Wagner, and Weiss 2018).

After meeting with the DIO, executive leadership, and patient safety and quality leadership, the operative and procedural subprotocol site visit team separated from the main CLER site visit team to continue with group interviews with nurse and physician leadership in the operative services—representing both surgery and anesthesiology (e.g., surgical or department chairs, director of perioperative services)—and operating room nurses. The operative and procedural subprotocol site visit team conducted all group interviews in a quiet location without interruption and ensured that each interview did not exceed 30 minutes.

To conduct the group interviews, the operative and procedural subprotocol site visit team used a structured questionnaire with open-ended questions developed under the guidance of experts in GME, surgery or anesthesiology, and/or the six CLER Focus Areas. After the questionnaires were initially content validated by expert review, the CLER Program staff field tested the instruments on four CLER site visits. At the conclusion of each of these visits, the items were refined as part of an iterative design process; with each iteration, the staff reviewed and revised the items as necessary based on feedback from interviewees and interviewers. In the end, the three questionnaires—one each for operating room nurse leadership, operating room physician leadership, and operating room nurses—consisted of 16, 16, and eight open-ended questions, respectively. The operative and procedural subprotocol site visit team documented all responses qualitatively.

Walking rounds in the pre-operative, operative, and post-anesthesia care units comprised a significant portion of the visit and were interspersed between the group interviews. Each member of the operative and procedural subprotocol site visit team conducted five sets of walking rounds per clinical site, with each walking round lasting 90 to 120 minutes. One resident or fellow from a mix of ACGME-accredited surgery and anesthesia residency programs and fellowships escorted each member of the operative and procedural site visit team for each walking round. Individual residents and fellows served as escorts for the walking rounds only once during the visit and did

not participate in the regular CLER site visit. During these rounds of observations, the operative and procedural subprotocol site visit team also conducted brief, random interviews with residents, fellows, faculty members, circulating and scrub nurses, pre-anesthesia nurses, post-anesthesia care unit nurses, and other clinical staff members in the operative and procedural areas within the CLEs.

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

Throughout each visit, the operative and procedural subprotocol site visit team conducted huddles to discuss the information gathered. Later during the visit, the team held a meeting to synthesize the findings, reach consensus, and document their observations to eventually inform the findings in this report. The operative and procedural subprotocol site visit team also discussed selected observations with the main CLER site visit team to inform both the oral report and the written narrative report. At the end of the visit, the operative and procedural subprotocol site visit team rejoined the main CLER site visit team for the exit meeting with executive leadership.

OTHER SOURCES OF DATA

Several other sources of data were used to augment the site visit data, including the ACGME annual data reports[c] and the 2018 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 and number of residents and fellows matriculated, and university affiliation. The AHA data offered CLE information, including type of ownership (e.g., non-government, not-for-profit versus investor-owned, for-profit) and size, as measured by the number of staffed acute care beds.

DEVELOPMENT OF FINDINGS IN THE CLER FOCUS AREAS

The findings by the CLER Focus Areas were determined in three stages. First, the CLER Program staff asked each CLER Field Representative who had administered the operative and procedural subprotocol to identify the key findings in each of the CLER Focus Areas based on their summative experiences and observations through a key informant survey. The CLER Program staff systematically analyzed the content of all responses to discern common themes and note salient concepts. The approach to analysis was inductive in that the themes emerged from the content of the responses.

Next, the operative and procedural subprotocol site visitors reviewed and commented on the results and offered additional findings by consensus. Based on feedback from the operative and procedural subprotocol site visitors, the CLER Program staff revised the summary of results and presented them to the CLER Evaluation Committee[e] and the CLER Operative and Procedural Subprotocol National Advisory Group[f]. Lastly, both groups reviewed

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

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

[e] The CLER Evaluation Committee is the oversight body for the CLER Program and provides guidance on all aspects of program development.

[f] The CLER Operative and Procedural Subprotocol National Advisory Group was specially convened to provide specific guidance on the development of the operative and procedural subprotocol and is composed of members with expertise in surgery or anesthesiology.

the results and developed a set of commentaries on the importance of the findings and their impact on patient care and physician training. The work of the committee and advisory group was achieved by consensus.

USE OF TERMS TO SUMMARIZE QUALITATIVE RESULTS

For the purposes of this report, a specific set of descriptive terms is used to summarize qualitative data (i.e., responses to open-ended questions during group interviews and conversations on walking rounds) based on the operative and procedural subprotocol site visitors' assessment of the relative magnitude of responses: uncommon or limited; occasionally; many; and generally.

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. Although the goal was to achieve a broad degree of representativeness, the sample may or may not reflect the entire population. Given that the CLER Program is a 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 goes on to consider them in the future.

CHALLENGES AND OPPORTUNITIES IN THE SIX CLER FOCUS AREAS

PATIENT SAFETY

Patient Safety Finding 1

Resident and fellow reporting of patient safety events related to the operative and procedural areas using the clinical learning environment's patient safety event reporting system was uncommon. With the exception of major events reviewed in morbidity and mortality conferences, reporting was usually delegated to other operating room personnel.

Patient Safety Finding 2

Operating room leadership, faculty members, residents, and fellows reported that residents and fellows infrequently participated in patient safety event investigations of events that occurred in the operative and procedural areas.

Discussion

Patient safety event reporting

In the hospitals, medical centers, and other clinical settings that serve as CLEs, each patient safety event report provides CLE leadership with insight as to how to attain higher reliability. If events in the operative and procedural areas are under-reported, the CLE's leadership is missing opportunities to improve patient care, reduce costs associated with events, and improve the well-being of the clinical care team.

Residents and fellows may not report patient safety events in the operative and procedural areas for a number of reasons, including lack of understanding of the importance of reporting, lack of knowledge or awareness of the range of events that need to be reported, lack of clarity as to their role and responsibility as a member of the care team to report events, or lack of understanding about how to report patient safety events into the CLE's reporting system. They may also refrain from reporting because they perceive it will not lead to sustained improvement, or they perceive an environment where reporting is not psychologically safe—with a tendency to blame individuals.

The findings may also signal an underlying culture of under-reporting of patient safety events. Junior residents and fellows intensively observe and model the behavior of their senior fellows and attending physicians. Therefore, when senior physicians in the operative and procedural areas do not engage in reporting patient safety events, junior residents may infer this is acceptable professional behavior.

Absent reporting and subsequent analysis of patient safety events, there is an historical tendency to either ignore the underlying problem that triggered the event, or create alternative workflows (workarounds) that may or may not address the issue or root cause and therefore place other patients at risk for the same or similar events in the future.

Patient safety event analysis

Regularly engaging residents and fellows in analyses of close calls and adverse events in the operative and procedural areas will help them believe in the value of understanding and solving for systems-based challenges to providing optimal patient care. Involving residents and fellows in analyses of patient safety events that occur in the operating and procedural service areas creates the expectation that this is an integral component of continuing professional development and emphasizes the importance of their role in optimizing patient safety. Importantly, residents and fellows bring unique experience, insights, and innovation to the analysis of events and creation and implementation of action plans.

The findings identify the need for the GME community to improve partnerships with the CLE's leaders overseeing the operating and procedural service areas to ensure that residents and fellows are included in interprofessional investigations that span all aspects of patient safety. It is important that the GME and CLE leadership ensure that these experiences are positive for all involved, and result in feedback that communicates how the solutions identified during event analysis were subsequently implemented and evaluated. There is a growing body of evidence indicating that the greatest way to incentivize residents and fellows to engage in patient safety event analysis is to ensure they receive feedback on how these activities directly translate to improved patient care and outcomes (Birnbach et al. 2017; Passiment, Wagner, and Weiss 2020. Therefore, it is essential that GME leaders in the operative and procedural environments identify opportunities for their residents and fellows to engage in patient safety event analysis and support their ability to fully participate in these critical learning experiences–both for the benefit of the learner and the benefit of improving patient care.

Patient Safety Finding 3

In general, residents and fellows appeared to be knowledgeable about time-out procedures, including the role of residents and fellows, expectations of the team, and criteria for satisfactory communication and completion of the process.

Patient Safety Finding 4

When time-outs were observed, residents and fellows did not appear to have a defined role in the process; they seldom spoke up, and on occasion appeared to be engaged in other activities.

Patient Safety Finding 5

Across and within clinical learning environments, complete and consistent time-outs, as defined by the clinical site, were not modeled in the operative and procedural areas.

Discussion

The time-out process has been demonstrated to be an essential element of high quality and safe clinical care. This is especially important as it relates to time-outs in the operative and procedural areas of CLEs. The findings from this subprotocol suggest there is a substantial opportunity to enhance the engagement of residents and fellows in the time-out process.

The findings suggest CLE leadership needs to ensure that each of their operative and procedural areas has a standardized approach to the time-out process that is consistently performed for every patient procedure and models professionalism for residents and fellows. Some of the most important elements to consistent and

reliable time-outs is that they are conducted at a time when all participants that need to be in the room are physically in the room, and that there is only one conversation happening—the conversation about the patient and the patient's procedure.

The findings in this report noted that, across and within CLEs, the resident's/fellow's role in the time-out process varied and was often undefined. CLEs need to ensure residents have a clearly defined role in the time-out process as part of learning about the culture and expectations of the operative and procedural areas. It is important for residents and fellows to learn how to both participate in the time-out process as a member of the team and eventually lead the process—as leading time-outs likely will be expected of them once they enter independent practice. In CLEs where the operative and procedural time-outs are led by clinical staff other than physicians, it is essential that these staff members be given a formal role in mentoring residents and fellows through the time-out process.

At minimum, at the start of the operation or procedure, residents/fellows need to be introduced to the operative or procedural team in their role as learners. While there are many situations in which the team may already know the residents/fellows, the high degree to which staff members and residents/fellows rotate through teams (due to shifts, vacations, new employees) makes it important to introduce residents/fellows as a deliberate and consistent step in the time-out process. According to the literature, these introductions are often skipped (*Patients at this Hospital* 2016). This may lead the resident or fellow to believe that they do not have a specific role in time-outs.

In many operations and invasive procedures, staff members will turn over during the procedure (e.g., shift changes and meal breaks). In instances where it may be impractical to stop and conduct a time-out similar to the one at the start of the procedure, the CLE needs to ensure an alternate standardized process for all members of the team to recognize when essential members enter or exit the procedure. In doing so, residents and fellows learn the value of standardized transfers of care and the CLE benefits from improved patient care.

While the expectations for engaging residents and fellows in time-outs is a shared CLE and GME responsibility, the responsibility for modeling the role of the physician/surgeon in this process rests with the GME faculty members. Although the findings above note residents and fellows lack a well-defined role in the time-out process, there is very little information in the published literature that outlines criteria for optimal resident and fellow engagement. This is an important area for future study and improvement.

Ultimately, it is the CLE leadership's responsibility to optimize patient safety by implementing consistent and robust time-out processes and ensuring residents and fellows learn these essential skills. The findings present an opportunity for CLE and GME to enhance their partnership in addressing this important issue. Purposefully teaching residents and fellows the value and skills of conducting time-outs will prepare them for long-term professional success.

Patient Safety Finding 6

Residents, fellows, and faculty members occasionally indicated that residents and fellows were not informed about their participation in elective surgical procedures with enough time to allow them to meet the patient, educate themselves on the nature of the patient's condition and proposed procedure, and their role in the procedure.

Patient Safety Finding 7

Based on interviews and observations, expectations for resident and fellow involvement in the consent process varied within clinical learning environments. Similarly, informing the patient about the residents' and fellows' role in the procedure also varied within clinical learning environments.

Discussion

Establishing solid relationships between the patient and the physicians who care for them during their procedures is central to delivering safe, high quality care. When residents and fellows are not involved in the pre-operative period of decision-making and trust building, they miss out on learning how those critical steps relate to the intra- and post-operative care of the patient. This in turn limits their opportunities to develop a comprehensive approach to clinical decision making. Involving the residents and fellows in obtaining consent and discussing the procedure with the patient helps them gain experience in how to approach important discussions of risks, benefits, and potential complications–skills that will benefit them throughout their career.

Optimally, the CLE has systems in place to ensure patients know the role that each caregiver has in their clinical care. This is especially important in the operative and procedural areas where the patient commonly receives anesthesia and is unable to jointly participate in decision making for critical aspects of their care. CLE leadership needs to set the expectation that the operative team will ensure patients are fully aware of the physicians who will be participating in their care while in the operating room, including informing patients that a resident or fellow will be in the room, letting them know why the resident or fellow will be present and the plan for the resident's or fellow's role in the procedure. CLE leaders also need to anticipate there will be special situations, due to timing or other circumstances, when the operative team members are unable to fully inform the patient of a resident's or fellow's presence in advance of the procedure. To address these situations, CLEs need to implement processes and systems to ensure the patients are fully informed afterward.

Many patients are unclear about the role residents and fellows play in their procedures. For some patients this lack of clarity may be an important source of stress contributing to their health care experience and may lead to confusion as to who represents the trusted agent in various diagnostic and therapeutic decisions. Therefore, it is essential for each CLE to have well defined expectations for how it expects residents and fellows to engage with patients prior to and throughout the peri-operative period. Additionally, the CLE–in partnership with GME–needs to be accountable to patients to ensure that resident and fellow engagement throughout the peri-operative experience meets the standards set by the CLE.

HEALTH CARE QUALITY (INCLUDING HEALTH CARE DISPARITIES)

Health Care Quality Finding 1

Surgical resident and fellow engagement in interprofessional quality improvement initiatives in the operative and procedural area of their own specialty and other procedural specialties was uncommon. Anesthesia residents and fellows appeared to be more engaged in quality improvement projects and initiatives in the operative and procedural areas.

Discussion

Operative and procedural areas have unique patient care issues that benefit from specialized focus on improving health care quality. While CLER visits indicate all CLEs have active quality improvement (QI) efforts in the operative and procedural areas, the findings of this subprotocol suggest residents and fellows have a limited role in these efforts.

In many CLEs the operating rooms and procedural service areas function in silos due to their special characteristics and the focus on maintaining efficiency—especially with regard to elective surgeries and procedures. Factors influencing efficiency (such as adherence to schedules, throughput, and transitions of care) are extremely complicated and require constant monitoring and reassessment.

Improving efficiency requires interprofessional efforts that span the patient's care experience from pre- through post-operative care. The finding above noting that residents and fellows have little participation in interprofessional QI efforts in the operative and procedural areas presents a major opportunity for CLE and GME leaders to work together to improve both learning and patient care. By purposefully and directly engaging residents and fellows in the design and implementation of interprofessional QI efforts, the residents and fellows gain by experiencing firsthand the benefits of systems-based approaches to improving care and the CLE gains from the unique perspectives and input from those on the frontline of care.

For residents and fellows in operative and procedural specialties, what they enjoy most is spending time in the operating room doing surgery and procedures. Additionally, they are more likely to be motivated to engage in QI efforts if they feel those efforts can make a real difference. Ideally, CLE and GME leaders could capitalize on both of these motivating factors to design longitudinal learning experiences that include QI efforts specific to the operative and procedural areas, balanced with QI efforts that extend to the peri-operative areas (i.e., pre- and post-operative care).

As with all aspects of patient safety and health care quality, the residents and fellows in the operative and procedural areas closely observe their faculty members as role models. Therefore, it is essential for the CLE to ensure the physician faculty members in these areas are themselves engaged in QI efforts that are both interprofessional and span the peri-operative patient care experience.

Health Care Quality Finding 2

Across clinical learning environments, residents, fellows, and other staff members varied in their awareness of specific patient populations (e.g., hearing-impaired, morbidly obese, non-English speaking minority patients) that are at higher risk for health care disparities in operative and procedural areas.

Health Care Quality Finding 3

In general, resident, fellow, and nurse recognition of the impact of health care disparities on patient safety in operative and procedural areas was uncommon.

Discussion

The findings in this report highlight some major opportunities to improve awareness of health and health care disparities as they relate to the operative and procedural care of patients.

Central in raising resident and fellow awareness of health care disparities is instilling in them the notion that providing the same care (equal care) to all patients is not the same as providing equitable care. Equitable care adjusts care as needed (providing potentially different levels of care or augmented services) for populations with different social and environmental risk factors to ensure the same quality of clinical outcomes as those who do not have these risk factors. For example, patients with language or hearing difficulties may need augmented translation services, and patients with physical challenges/disabilities may require different workflow, equipment, and post-operative disposition in order to achieve the same clinical outcomes.

Issues related to health care disparities range from serious patient safety risks to the need for broad-based QI efforts. CLEs are responsible for designing and implementing a robust set of activities to address these needs and ensure that these activities reach the operative and procedural areas. The findings in this report present opportunities for CLE and GME leaders to partner in efforts to engage residents and fellows in identifying patient populations at risk for disparities, and include them in QI teams to address bias (both explicit and implicit) and design and implement better models of care to ensure optimal clinical outcomes for all patients.

Health Care Quality Finding 4

Availability and use of qualified interpreter services in the peri-operative areas was limited.

Discussion

The CLER visits into the operative and procedural service areas revealed a high degree of variability in the availability and use of qualified interpreter services for patient care throughout the peri-operative areas (of note, this subprotocol did not examine the quality patient experience with regard to health care literacy). In certain environments, expectations for surgical/procedural throughput (production pressures) may limit the use of qualified interpreter services.

Providing patients with easily accessible practical tools and methods to optimize communication is an essential function of patient care. CLEs need to ensure residents and fellows are learning to successfully manage issues of communication in all but the rarest of patient care experiences. The degree to which qualified interpreter services are available and employed may vary throughout the patient's experience, including pre-procedure (the

consent process), while in the operating/procedure room (prior to sedation), and post-procedure (recovery). This variability represents a great opportunity to improve patient care. It is also a chance for CLE and GME leadership to engage residents and fellows as part of the CLE's efforts to improve use of qualified interpreter services toward the goal of reducing patient safety risk and optimizing the patient experience.

CARE TRANSITIONS

Care Transitions Finding 1

Across clinical learning environment surgical services, resident and fellow participation varied in the care transition process (e.g., accompanying the patient, verbal hand-off) from operative and procedural areas to a variety of locations. Anesthesia residents were more consistently involved in the care transition process.

Care Transitions Finding 2

Across and within clinical learning environments, the use of standardized elements for hand-off communication during transitions within the peri-operative suite between residents/fellows and nurses was uncommon.

Discussion

The transition from the operative/procedural room to the post-operative/procedural care environment is a critical period of heightened vulnerabilities for patient safety. For this reason, these care transitions need to involve the persons who performed the procedure. These care transitions are not the responsibility of a single discipline, rather they are a team responsibility. Therefore, good solutions for optimizing these transfers will be will be team-based, not discipline-specific.

The findings in this report strongly suggest the need for CLE leaders to more closely engage all members of the care team to design and implement highly reliable safe care transitions from the operative and procedural areas to post-procedural care (e.g., transition to recovery room, transition to floor or ICU). The design of these processes needs to be interdisciplinary, interprofessional, and include residents and fellows who are at the front line of care. It is also important for GME faculty members to be engaged in these efforts both for their insights to the care process, and as role models for the residents and fellows.

A robust and reliable transfer process does not necessarily have to be burdensome or time intensive. The CLE can streamline its processes. However, it takes input from the entire team responsible for care, including residents and fellows, to design an optimal streamlined process. It is also important for CLEs to approach the design and implementation of these processes not as single activities, rather as part of continuous performance improvement within the service units, recognizing that daily, weekly, and annual patterns may emerge that require evaluation and potential need for process revisions.

Improving these transitions requires systems-based approaches. It is important to involve the various members of the clinical care team to achieve agreement on standardized processes and changes in workflow that work for everyone. For the physician members of the team, is important to arrive at processes that allow them to seamlessly

move with the patient from the operative/procedure room to post-procedure care while managing their other responsibilities. The literature provides examples of solutions for standardizing care transitions (e.g., ticket to ride). Lack of standardization makes it more likely that there will be gaps in the information that is shared among the members of the clinical care team.

For GME leaders, it is important to help residents and fellows view care transitions from a systems-based perspective helping them to recognize the different systems-based challenges to patient safety that arise in differing clinical sites. At each CLE, residents and fellows need to be involved in improving transitions through CLE-led QI initiatives that involve the various members of the patient care team.

Standardizing transitions of care is not only important for ensuring communication among the interprofessional members of the clinical care team, it is also essential for ensuring communication across the physician specialties, especially in complex procedural cases. For example, in the context of a transfer of a patient who has had a complex surgical procedure (e.g., cardiothoracic surgery to ICU), the individuals in the two units may not be aligned on what they consider essential transfer information. A standardized process would ensure the information exchanged addresses everyone's perspectives on the patient's needs. Multi-surgeon cases often involve managing transfer of information within the same discipline yet across different service lines (e.g., synchronous carotid endarterectomy and coronary artery bypass graft surgery). In these situations, it is important to consider how the relay of information translates to care on the inpatient unit as the patient may have a number of different needs that result in competing interests. It is important that the CLE develop processes to manage these situations.

Efforts to improve the standardization of transfers will require the endorsement and support of the senior leadership within the operative and procedural environment; achieving success in standardization will require involving the entire clinical team, including residents and fellows, in the design, implementation, and monitoring of efforts to improve in this area.

Care Transitions Finding 3

Across clinical learning environments, hand-offs within anesthesia and surgical teams during the surgical procedure were rarely standardized.

Care Transitions Finding 4

Across clinical learning environments, hand-offs between anesthesia and surgical attending physicians during the surgical procedure rarely occurred.

Discussion

The findings noted above highlight the need for enhanced attention to hand-offs that occur both within the anesthesia team and among the members of the surgical team during the course of a patient's procedure. It may be seldom necessary to stop a surgery to conduct a multidisciplinary hand-off for minor changes in the clinical care team or if the procedure is proceeding according to plan. However, when there are important changes to the clinical care team, such as key persons entering or leaving the room, or important changes in the procedure during the case, it is important to take an appropriate pause to inform entire team about the change in persons or plan. This is particularly important if there are residents or fellows present as they are looking to the team to model how to best manage patient risk during surgery.

As with other hand-off processes, it is important for the CLE and its procedural teams (including residents and fellows) to design intra-operative hand-offs with some degree of standardization, as standardization will decrease the risk that key information is missed. Once designed and implemented, it is important for the CLE to monitor these processes to ensure they achieve the intended goals.

Care Transitions Finding 5

Across and within clinical learning environments, faculty members did not appear to have an active role in monitoring residents' and fellows' performance during transitions of care to and from operative and procedural areas.

Discussion

When it comes to patient transport to and from operative and procedural areas, it is often left to the most junior physician member of the surgical/procedural team to accompany the patient and give the report as part of the transfer process. While junior physicians are capable of this task, it is a task that involves mitigating risk and therefore needs to be actively supervised by a more senior physician within the care team. The CLE's leadership, in consultation with GME leadership, needs to agree on the type of supervision expected and ensure faculty members are prepared to model and monitor the junior physicians as they learn this skill. Lack of faculty member involvement in this transition of care may signal to the junior physician that this activity is a less important part of the peri-operative care process.

Importantly, engaging faculty members in this aspect of care is key to building and maintaining trust with their patients, as their patients see pre-, intra-, and post-operative activities as one process, and trust everyone to be functioning as a well monitored, high-performing team.

SUPERVISION

Supervision Finding 1

Across clinical learning environments, residents and fellows reported being aware of contingencies for supervision during unanticipated emergencies when the supervising faculty physician was engaged in multiple simultaneous procedures.

Supervision Finding 2

In general, operating room nurses expressed the belief that residents and fellows were receiving adequate supervision in the operating room.

Discussion

It is reassuring that the findings noted above reflect a general sense that residents and fellows are aware of contingencies for their supervision in the event of unanticipated emergencies when their supervising physicians are involved in simultaneous procedures. It is critically important for residents and fellows to have access to supervision in emergency situations as these circumstances may quickly lead to patient harm. To better prepare for these types of situations, CLE and GME leaders could jointly develop criteria that guide residents, fellows, and others in the operative and procedural areas on when to escalate and secure enhanced supervision. Once criteria are developed, it is important for the CLE leaders to follow-up to ensure the criteria are disseminated to all members of the clinical care team, are familiar to all, and are well utilized.

The findings indicated that, in general, nurses interviewed expressed the belief that residents and fellows were receiving adequate supervision in the operating rooms. Future assessments of these clinical areas might benefit from exploring the informal criteria nurses may be using that contribute to these perceptions.

Supervision Finding 3

Across and within clinical learning environments, it was observed that the anticipated responsibilities of surgical and anesthesia residents and fellows during the surgical procedure were seldom communicated to the operating room team.

Discussion

Historically, there is an expectation that at start of each procedure the senior surgeon and anesthesiologist have a well characterized common understanding of the plan of action and the anticipated role of their resident or fellow. The findings from the CLER visits noted that this information was seldom communicated to other members of the operative/procedural team. This raises several interesting and possibly important questions, such as: What level of information does the entire team need to know about the resident's or fellow's role in the procedure? How might knowledge of the anticipated resident's or fellow's role aid the team in improving patient safety or the quality of care during and after the procedure? Does the lack of knowledge of the resident's or fellow's role affect the quality of teamwork during or after the procedure? Would there be value in including information on the resident's or fellow's role in the initial time-out with the entire team? The finding above suggests the need to further explore these questions.

Supervision Finding 4

Across clinical learning environments, residents and fellows reported variable experiences regarding formal instruction on how to supervise others during the intra-operative period.

Discussion

Patient care within the operating and procedural service units is orchestrated by the lead surgeon or proceduralist, including communication about supervision expectations and roles. For many resident and fellows, these leadership skills need to be learned and purposely developed. Lack of formal education on how to supervise an operative or procedural team can lead to problems that affect the quality of patient care. Given the potential impact on patient care, any curricula developed in this area needs to be shared with the CLE's leadership in addition to being shared among GME leadership.

WELL-BEING

Well-Being Finding 1

In general, clinical learning environments did not have coordinated strategies to improve the well-being of the clinical care team members in the operating room. Conversations about well-being among surgeons were expressed in terms of operating room efficiency and throughput.

Well-Being Finding 2

Across clinical learning environments, monitoring the well-being (e.g., prolonged fatigue and burnout) of the clinical care team members in the operating room was uncommon. If efforts existed, they were generally limited to individual professions and did not address the well-being of all members of the clinical care team.

Well-Being Finding 3

Across clinical learning environments, few formal or structured interventions were in place in the operative or procedural areas to prevent or reduce surgical resident, fellow, and faculty member fatigue.

Discussion

While it is important that CLEs include the operative and procedural clinical areas in their overall strategy to address well-being, there are also many unique characteristics of these areas that require special attention. Within operative and procedural areas there are two distinct workflows. Most of the operating room/procedural staff members, including those in anesthesiology, work on rotational shifts, whereas surgeons' and proceduralists' workflows are based on episodes of care (the pre-operative through immediate post-operative period). In addition, the CLE's productivity expectations likely differ for the operative and procedural areas in relation to other patient care areas. In the operative and procedural areas, there is continual attention to the number of scheduled patients and room turnaround, which in turn contributes to ongoing pressure to improve workflow efficiency and maintain high volume. There is also a high level of work intensity in these areas given the invasive nature of procedures and operations and the often high levels of patient acuity. High quality team functioning is pivotal in maintaining the rapid pace and managing the high acuity on an ongoing basis.

In the wake of these pressures, some surgeons take an historical approach to provider well-being, primarily viewing it through the lens of successful surgical outcomes. They often hold to a traditional expectation of steadfast resilience regardless of long hours of patient care—at times, at the expense of adequately addressing personal needs.

Given these and other unique aspects of operative and procedural work, CLEs need to develop and maintain special robust strategies to address well-being in these areas. For optimal patient safety, these strategies need to address all members of the clinical care team—both across and within professions—being mindful that residents model their faculty members in their approach to well-being.

Fatigue is one of the more serious issues of well-being in the operative and procedural areas, potentially associated with broader issues of professionalism. It is important for residents and fellows to receive clear messaging from their faculty members that fatigue poses vulnerabilities to patient safety. This messaging needs

to be reinforced by having faculty members demonstrate and role model how to best manage fatigue to minimize risks to patient safety. Residents and fellows need to hear and see that, in many situations involving fatigue, the desirable and professional response is to request assistance and/or remove themselves in order to prevent situations of potentially unsafe care.

It is noteworthy that regarding fatigue, messaging alone is insufficient, particularly in a culture that is not diligent in managing operative and procedural production pressures. Often instances of resident and fellow fatigue are handled on an ad hoc basis, relying on the resident or fellow to determine when to make the call for help. This poses many vulnerabilities as resident and fellow decisions may be influenced by a number of factors, including the culture of the program, the culture of the CLE, their strong desire to take every opportunity to learn new skills, and their own perceptions of what constitutes weakness.

For patient safety to be paramount, the CLE leaders in concert with GME leaders need to put in place systems-based processes to anticipate and mitigate fatigue. These processes need to include actively searching for causes of fatigue (e.g., conducting exercises such as failure mode and effect analyses), ongoing surveillance to detect fatigue, and structured non-judgmental mechanisms for mitigating fatigue that are acceptable, appropriate, easy to use, and when activated provide residents and fellows with positive reinforcement. In the surgical and procedural service areas examples might include identifying psychologically safe ways for other members of the operative care team to alert individuals who appear fatigued (and their supervisors) and implementing continual monitoring to ensure fatigue is appropriately managed. The CLE may also benefit from ongoing assessment of surgical and procedural production pressures, and the identification and mitigation of conflicts arising from individual surgeons' and proceduralists' desires for high productivity versus their ability to perform at prolonged high volume without becoming fatigued.

High performing operative and procedural service areas address the systems-level issues that impact the well-being of their providers. They conduct continuous QI to ensure efficient workflow and equitable treatment that recognizes the needs of each member of the care team.

PROFESSIONALISM

Professionalism Finding 1

Operating room personnel reported that residents, fellows, faculty members, nurses, and scrub personnel occasionally engaged in unprofessional behavior in the operating room. Such occurrences were also observed.

Professionalism Finding 2

In instances of disruptive and disrespectful behavior in the operative and procedural areas, there were operating room personnel who noted that even when reported these behaviors were persistent or chronic in nature.

Discussion

The CLE's leadership is ultimately responsible for setting the expectations for professional behavior in patient care across their clinical site. These expectations include articulating and communicating: what defines appropriate behavior; what will be tolerated before an action is considered unprofessional and results in intervention; what actions are taken to maintain professionalism; how individuals are celebrated for modeling excellence in professionalism; how professionalism is monitored; and how accountability is achieved.

While issues of unprofessional behavior occur across all areas of the CLE, this report focuses on the operative and procedural areas. The findings above note that various members of operating room clinical teams occasionally experienced unprofessional behavior and that members of the CLER team actually observed unprofessional behavior during site visits. It is important for CLEs to address these issues.

The CLE and GME leadership are key in addressing issues of professionalism in the operative and procedural areas, both at the executive level of the CLE and at the departmental and service lines. For it is the leaders at these highest levels that set the expectations, tone, and culture for the clinical care team. That culture can either promote high quality care or pose vulnerabilities to patient safety.

For CLEs with professionalism issues in their operative and procedural areas, it is important to first acknowledge the challenges and then engage leadership across the operative team to design and implement change. Residents and fellows are particularly vulnerable to unprofessional behavior and, in areas where these behaviors are tolerated, can quickly adapt to a culture permissive of undesirable professional characteristics and actions.

While issues of unprofessional behavior can span specialties, they can also be limited to certain specialties, or to certain surgeons or proceduralists–thereby giving residents and fellows the message that unprofessional behavior is tolerated in certain circumstances and not in others.

One common challenge in managing unprofessional behavior in physicians is that in many CLEs, Human Resource policies and medical staff bylaws require confidentiality regarding the individual involved and the actions taken. While these policies prohibit transparency of individual actions, there are many ways in which the CLE's leadership can broadly share and address the overall issues of professionalism—framing them in the context of systems-based issues while deferring any individual accountability as required by their policies and procedures.

CLEs will benefit from continual attentiveness to identifying and managing unprofessional behavior through ongoing mechanisms, such as periodically surveying the clinical care team, conducting 360 evaluations, monitoring anonymous reporting of unprofessional events, and following up with root cause analyses and risk identification exercises such as failure mode and effect analyses.

Even small and random unprofessional events can have wide ranging and potentially long-lasting negative effects. Residents and fellows are at a critical time in their development, a time when they are forming the professional identity that will stay with them throughout their careers. For these reasons, addressing issues of professionalism in the operative and procedural areas needs to be one of the CLE's highest priorities as it affects all aspects of patient safety, quality of care, and workforce well-being.

LESSONS LEARNED AND FUTURE DIRECTIONS

Since its inception, the CLER Program has sought to identify and communicate opportunities for the hospitals, medical centers, and other clinical settings that host ACGME-accredited programs to both enhance the learning experience for residents and fellows and improve patient care. As part of the third cycle of visits, the CLER Program designed a subprotocol to more deeply explore the operative and procedural areas, as the operative and procedural rooms in particular were some of the few clinical spaces that, due to logistical challenges, had not been included in prior protocols.

The findings presented in this report reveal both strengths and opportunities for improvement, some that are common across many places and service lines within the CLE and others that are unique to the operative and procedural areas. As a result of the many hours the CLER Field Representatives spent in direct observation, this subprotocol provides the GME community with new knowledge that is not otherwise easily obtained.

It will be both interesting and important to explore how these new insights are received by the various interprofessional providers who comprise the operative and procedural care teams. This report highlights opportunities to convene new conversations to see how improving the communication about the learning objectives and expected roles of residents and fellows on any individual operative procedure (including expectations for peri-operative engagement) may improve team performance and perhaps enhance patient safety and outcomes.

Lastly, it is noteworthy that the experience from this operative and surgical subprotocol has provided the CLER Program with confidence that its next subprotocol (focused on the patient perspective of the clinical learning environment) will also provide new and useful knowledge as to how to best engage patients in helping CLEs achieve the dual goals of optimizing both learning and patient care.

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