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Perioperative self-reflection among surgical residents

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ABSTRACT

Background: We studied prevalence and predictors of meaningful self-reflection among surgical residents and with prompting/structured interventions, sought to improve/sustain resident skills.
Methods: Residents from six programs recorded 1032 narrative self-reflective comments (120 residents), using a web-based platform. If residents identified something learned or to be improved, self-reflection was deemed meaningful. Independent variables PGY level, resident/surgeon gender, study site/Phase1: July2014-August2015 vs. Phase2: September2015-September2016) were analyzed.
Results: Meaningful self-reflection was documented in 40.6% (419/1032) of entries. PGY5's meaningfully self-reflected less than PGY1-4's, 26.1% vs. 49.6% ($p = 0.002$). In multivariate analysis, resident narratives during Phase 2 were 4.7 times more likely to engage in meaningful self-reflection compared to Phase1 entries ($p < 0.001$). Iterative changes during Phase2 showed a 236% increase in meaningful self-reflection, compared to Phase1.
Conclusions: Surgical residents uncommonly practice meaningful self-reflection, even when prompted, and PGY5/chief residents reflect less than more junior residents. Substantial/sustained improvements in resident self-reflection can occur with both training and interventions.

1. Introduction

Surgical educators have long described self-reflection as a powerful training tool, teaching residents to assess their own strengths and weaknesses, gain insight into their abilities, and guide personal improvement opportunities.[1] Self-reflection is described as a deliberate and rigorous activity that helps learners move from one experience to another, enriched by a better understanding of each experience as well as one's attitudes and emotions to affect future actions and thoughts.[2,3] Meaningful self-reflection can enhance patient outcomes by facilitating learning and can also contribute to the humanism essential to being a surgeon.[4–6] Conversely, poor self-reflection skills may have detrimental consequences in personal character development or patient outcomes and left unimpeded, may have lasting negative career effects. For these reasons, meaningful self-reflection should be

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taught, practiced, assessed and cultivated into a life-long skill.[2,7]

The Accreditation Council for Graduate Medical Education (ACGME) Milestones Project has emphasized the need for residents to develop meaningful self-reflection skills during surgical training where trainee education must focus more closely on the formation of professional values and skills (entrustable behaviors) necessary to become competent surgeons capable of life-long learning.[8–10] Unfortunately, it is not clear how frequently residents engage in meaningful self-reflection in today's surgical training environments, although it has been suggested that self-reflection may be an infrequently utilized or practiced skill.[11–13]

We initially sought to determine how prevalent meaningful self-reflection was among current surgical residents by using a prospective database generated by a multicenter surgical education consortium, entitled Michigan State University Guided Operative Assessment and Learning (MSU GOAL). Based on adoption across participating programs of a paradigm of structured perioperative educational briefings and debriefings,[14] residents were prompted to verbally reflect on their own performance with the attending surgeon, following operative procedures performed together. Residents then recorded their self-reflection on a secure web-based platform and members of the research team evaluated the content of the recorded narratives. Recognizing that meaningful self-reflection did not seem to occur frequently, we then sought to determine whether any variables available to us within this data base might help us to identify factors that might predict residents' self-reflection skills, for example, the post-graduate year (PGY) of the resident or gender of surgeon or resident. We hypothesized that differences in resident and attending factors and/or demographics might affect the practice of meaningful self-reflection. Finally, we hypothesized that a series of prompting and structured interventions to provide additional training to both residents and teaching surgeons about how and why to engage in meaningful self-reflection could improve residents' self-reflection skills in a sustained fashion.

2. Methods

The structured perioperative briefing and debriefing model has been described as a means to take advantage of the naturally occurring practice of an operating room to teach and learn self-reflection.[14] Applying this model, we assessed the content of residents' narrative self-reflection entries submitted after completion of operative procedures performed under the guidance of an attending surgeon. Prior to each case, residents were asked to select a preoperative learning objective to discuss with the attending surgeon and ensure the objective was training-level appropriate. Intraoperative instruction was then directed towards the agreed upon learning objective barring any untoward intraoperative event. Upon completion of the case, residents were asked to request a debriefing and verbally self-reflect on their identified learning objective in front of the surgeon. The attending surgeon was then asked to follow the self-reflection by offering oral feedback on their perspective of the resident performance related to the selected objective. If the resident did not request the debriefing, the surgeon was asked to initiate the conversation. Residents and attending surgeons then independently recorded respective components of the verbal exchange using a web-based platform via the Internet. Residents were asked to record narrative responses to the question “how did you perform on your learning objective or how could you improve next time?” We did not specify the number, frequency or type of cases to be included in the study, and participation of individuals at each site was voluntary.

The study was implemented in two phases. In Phase 1 (July 1, 2014 through August 31, 2015), we sought to collect baseline information to address the prevalence of documented meaningful self-reflection skills among residents. During this phase, neither the residents nor the attending surgeons were provided training or additional instruction on the definition of or distinction between meaningful and poor self-reflective responses. Participants were only asked to respond to the questions described above. Residents were instructed to initiate the verbal face-to-face debriefing and surgeons were instructed to prompt the resident to debrief if needed. We did not specify when or where the debriefing was to occur after completion of the case. Furthermore, during this phase, feedback was not given to the resident by the attending surgeon about the quality of the self-reflection or the content of the entry submitted by the resident.

During Phase 2 (September 1, 2015 through September 30, 2016), we continued the briefing and debriefing process described above, reported baseline findings to consortium members and solicited their input to address findings. Over 13 months, we implemented an iterative process using improvement methods (Plan, Do, Check, Act [PDCA]) to assist residents in discussing and recording meaningful and timely self-reflection and to assist surgeons in prompting, identifying and conducting a deliberate communication exchange focused on enhancing residents' skills to meaningfully self-reflect.

We collected demographic data on the date and type of procedure performed using the ACGME case log as well as the patient's age and gender. Data were only used for analysis if the resident entry was completed in $\leq$14 days. The 14 day exclusion was based on previous studies suggesting that assessments completed after 14 days following an observed performance tend to be less reliable.[15] The design for data entry was developed to enable residents and faculty surgeons to log on to a website protected by individual personal passwords to independently record respective elements of the structured preoperative briefings and postoperative debriefings. The web-based platform was developed for compatibility with multiple web browsers and was available across different operating systems and mobile phones, enabling data entry to occur from any device or location with Internet accessibility. Once an entry was completed and submitted, it was no longer accessible on the device, but sent to a central repository at MSU for analysis. The MSU Institutional Review Board (IRB) exempt status approval was received in early 2014. To market the study, a logo and acronym identified as MSU GOAL was adopted.

2.1. Study participants

Individual residents and faculty surgeons from the MSU Integrated Residency Program in General Surgery (inclusive of Sparrow and McLaren Hospital Systems) and five additional United States training programs (Thomas Jefferson University Hospital, Allegiance Health – an osteopathic training program, Emory University School of Medicine Department of Surgery, Santa Barbara Cottage Hospital Department of Surgery Education, and MSU/Sparrow Department of Obstetrics, Gynecology [OB/GYN] and Reproductive Biology) agreed to participate in the study following IRB approval from each site. Participation in the study was open to all faculty and residents at the respective sites and each individual determined whether to participate in the project and there was no recourse if an individual chose not to join the study. In order to achieve a diverse sample of training programs, we sought to include a variety of procedural teaching specialties, as described by the American College of Surgeons,[16] with the inclusion of the OB/GYN program. Thomas Jefferson and Allegiance joined the study in July 2014, Emory and MSU/Sparrow OB/GYN in December 2014, and Santa Barbara in November 2015. Consents were obtained from each participant with the understanding that only aggregate data would