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ORIGINAL ARTICLE

Leading from within: shaping a resident-driven leadership curriculum for surgical trainees using a qualitative needs assessment

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Abstract

Purpose Although leadership competency is a requirement of the Accreditation Council for Graduate Medical Education, few surgical residency programs have successfully implemented structured leadership training founded on trainees' learning needs and experiences. We modeled a qualitative needs assessment to explore surgical trainee attitudes and perceptions regarding leadership and dedicated leadership training within surgical residency to inform development of a future leadership curriculum for trainees.

Methods Fifteen general surgery residents voluntarily participated in focus groups divided into two sessions of mixed trainee level to explore leadership definitions, leadership experiences and challenges, and curriculum preferences. Transcripts were inductively coded and categorized through consensus discussions from which representative themes were drawn.

Results Six major themes were identified through thematic analysis and organized within the following framing questions: how do residents define surgeon leadership, why is dedicated leadership training important to residents, and how should we approach leadership training for residents? Six themes emerged including (1) contextualization of surgeon leadership; (2) characteristics, skills, and styles of surgeon leaders; (3) impact on team dynamics and outcomes; (4) relevance within surgical hierarchy; (5) learner-centered strategies and implementation; and (6) need for feedback and evaluation.

Conclusions Surgery residents defined the need for dedicated leadership training to promote career advancement within academic surgery as well as to impact clinical team dynamics and outcomes. Skills and styles required of surgeon leaders are varied and best promoted through self-reflection, peer discussion, and feedback strategies at all trainee levels. These results will be used to guide leadership curriculum development, and the approach can serve as a model for other programs.

Keywords Leadership · Leadership curriculum · Surgeon leadership · Resident leadership · Needs assessment · Graduate medical education

Introduction

Academic general surgery training programs often highlight their missions to train the next "leaders" in academic surgery. The Accreditation Council for Graduate Medical Education (ACGME) also now outlines the ability to effectively lead a health care team as a core competency for surgeons to enter autonomous practice [1]. Despite these professed and written missions, few programs have been able to successfully implement sustained, structured leadership training during the residency period. Nationally, the need for development of physician-leaders within surgery [2–4] sparked creation of initial leadership programs tailored to faculty or practicing surgeons only [5, 6]. It has been suggested that surgical trainees would also benefit from formalized leadership training [7, 8], particularly as many of them will enter leadership roles during their training and early professional careers. Though early leadership interventions for surgery residents focused primarily on chief or senior residents [9, 10], there is growing recognition that elements

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of leadership training may be applicable to all surgery residents, particularly those universal domains such as communication skills, teamwork, and feedback delivery [8].

Though some of these domains are emphasized in leadership programs in other industries, surgery as a medical discipline affords its own unique situations and challenges to which leadership training may need to be tailored. Unfortunately, most prior leadership curricula in general surgery residencies have been developed without formal problem identification or grounding in established curriculum development frameworks [8]. These elements are critical to ensure that content is aligned with learners' needs instead of simply driven by curriculum developers. More recently, needs assessments from plastic surgery and obstetrics and gynecology residencies have suggested that the content of leadership training in surgical fields should be matched to its distinct environment to prepare residents to lead in unique, high acuity operative settings [11, 12]. Initial assessment within general surgery has also demonstrated that leadership competencies most relevant to surgical trainees change across levels of training as they face different leadership roles and challenges [13]. However, there remains an opportunity for richer, experiential description of these needs for general surgery residents to best shape future leadership development efforts.

In this context, the purpose of this study was to perform a focused needs assessment using qualitative methods prior to the implementation of a formalized, resident-driven leadership curriculum at our institution. We aimed to explore surgical trainee attitudes and perceptions regarding leadership and dedicated leadership training within surgical residency.

Methods

Participants

Convenience sampling was used to recruit general surgery residents from all post-graduate years (PGY) of training at Washington University in St. Louis through email to participate in focus groups. Purposeful sampling through additional directed emails was also used to recruit individuals who were seen as key program informants due to their involvement as administrative chiefs or members of the resident advisory committee. The residency is a 5-year university-based clinical training program at a large academic institution where most residents additionally participate in two years of research between PGY2 and PGY3. The program typically has 14 PGY1 residents, 12 PGY2 residents, and 9 residents in each PGY3–PGY5 classes, as well as two cohorts of research residents. On average over the past 3 years, the program has been comprised of 55% female and 45% male residents. From a current total program population of 69 residents (including those in their research years), 20 residents initially responded to recruitment inquiries. Due to several clinical conflicts, 15 general surgery residents ultimately participated in one of two focus groups with mixed trainee PGY level. Trainee participation was fully voluntary, and participants received a meal from the Office of Surgical Education for their efforts. Prior to the start of each focus group, the research purpose was stated, and all participants verbally consented to participate and be audio recorded for future transcript analysis. This study was approved by the Washington University Institutional Review Board.

Data collection

Prior to data collection, a standard focus group script was developed by JMC—a general surgery research resident—and MMA—a general surgery residency Associate Program Director with formal education training (MHPE)—to conduct semi-structured focus groups with participants (Appendix 1). Step 2 of Kern's framework (targeted needs assessment) was used to formulate question prompts aimed to elicit key content about targeted learners [14]. The script was organized into three main sections with questions to address trainees' leadership definitions, their experiences and challenges with leadership, and potential curricular training preferences. Prior to its use, the script was piloted by JMC on study team members to ensure clarity of question prompts, alignment between question prompts and research purpose, and appropriate timing for the focus group. Focus groups were then conducted and audio-recorded by JMC—a female surgical education research resident—with consent from participants in October of 2021. One focus group was held in person in a conference room setting in the surgery house staff office; the other was held over Zoom (Zoom Video Communication, Inc.) to accommodate those participants most comfortable in a virtual setting given ongoing COVID pandemic concerns. No other individuals were present besides the participants and facilitator. Each focus group was approximately 60 min long. Audio recordings were electronically transcribed and subsequently reviewed for transcript accuracy by JMC.

Data analysis

Transcripts were redacted of any identifying participant or other names before being distributed to a coding team comprised of JMC, RWM, and JC. These authors have formal education training (MHPE candidate, EdD, MHPE, respectively) and previous instruction in qualitative research methods. Further, they each work in distinct medical disciplines of surgery, anesthesiology, and internal medicine, respectively. A conventional content analysis method [15] was used whereby transcripts were first manually coded

with inductive approach in Microsoft Word by each team member independently. This was followed by creation of a shared codebook that was revised in an iterative process with re-review of the transcripts and subsequent consensus discussions. Codes were then condensed into patterns and categories from which initial themes were drawn. We invited one key informant from each resident level to participate in member-checking to determine if themes were representative of focus group discussions across multiple trainee levels. Five out of six invited residents individually reviewed themes and confirmed accuracy of their representation, increasing trustworthiness of the qualitative approach.

Results

The cohort of 15 general surgery residents was comprised of 5 (33%) PGY1 residents, 1 (7%) PGY2 resident, 4 (27%) research residents (between PGY2 and PGY3 years), 3 (20%) PGY3 residents, 1 (7%) PGY4 resident, and 1 (7%) PGY5 resident. This sample represented 22% of the program. Of these participants, 11 (73%) identified as female.

Six major themes were identified through analysis and application of the following framing questions: how do residents define surgeon leadership, why is dedicated leadership training important to residents, and how should we approach leadership training for residents? These framing questions with associated six themes and exemplary quotes are organized in Table 1.

Definition of surgeon leadership

Theme 1: contextualization of surgeon leadership

Most residents associated the term "surgeon leader" with both the historical "triple threat" of academic faculty, as well as with clinical team leadership that they experience at the trainee level. When asked to define "surgeon leader", many residents first identified faculty who have demonstrated explicit leadership in "triple threat" domains of research, education, and clinical care in addition to actively seeking out leadership positions and opportunities for academic advancement. There was collective sentiment that this type of academic success is encouraged at the department level, and that the institution "does a pretty good job of promoting the triple threat kind of leader" (PGY2). A subset of residents even described these attributes as a leadership *expectation* for those in the academic environment or "one of those check boxes you have to deal with if you're going to be this big academic surgery program…" (Research).

An interesting dichotomy emerged, however, as residents also specifically identified with the clinical surgery team leader which was described through numerous examples of resident leadership over clinical teams for the provision of surgical patient care. One resident stated, "…your true job as a PGY4 or 5 is to take responsibility for the service and those patients on that service" (Research). This type of "surgeon leader" was defined within multiple contexts or different clinical environments in which a surgical resident may need to exhibit leadership such as the operating room, the trauma bay, surgery clinic, etc. Residents emphasized that "being dynamic is a key part of [being a surgery team leader]" (PGY3). They described dynamic leadership as the ability of residents to adapt to these different clinical environments, recognizing that team goals and needs may not be the same across them.

Theme 2: characteristics, skills, and styles of surgeon leaders

Through their many descriptions of experiences with team leadership, residents identified clear characteristics and skills expected of and displayed by these types of leaders at both faculty and trainee levels. Residents described that surgeon leaders should be dynamic or able to adapt in multiple clinical contexts while remaining team-centered, responsible, and receptive. In terms of leadership skills, they heavily identified interpersonal skills such as communication and conflict resolution. They also emphasized the ability to delegate, set expectations, promote collaboration, and support their teams by generating "a sense of what everyone else should be doing in addition to what [the team leader is] doing… As opposed to [saying] 'okay, I've accomplished my task for the day, I'm done, I'm leaving'" (PGY1). Overall, there was emphasis that while some of these skills may be more natural or innate for residents than other skills, in general these abilities are learnable and can be honed over time with "practice just like any other skill" (PGY3).

Residents also defined a multiplicity of leadership styles in surgery and underscored the importance of self-awareness regarding these styles. One resident emphasized that "people who can really understand their own behavioral and thought patterns can then be much more able to interpret other people's behavior and thought patterns" and that "self-work on understanding personality types could go a long way towards leadership…" (PGY5). Residents noted that the goal of this "self work" is not to direct surgical trainees to "one archetype that everyone needs to be trained towards" (PGY5). Instead, the ideal aim is to encourage self-reflection on individual behaviors so that residents can identify scenarios when different styles may be useful, an objective that could be incorporated into leadership training.

Importance of leadership training

Theme 3: impact on team dynamic and outcomes

Residents described that leadership ability has a profound impact on clinical team dynamics and outcomes. Many residents identified experiences with leaders who either

Table 1 Framing questions with associated major themes and exemplary participant quotes

Framing question	Themes	Exemplary quotes
How do residents **define** surgeon leadership?	Contextualization of surgeon leadership	"It's like the triple threat that [they] always talk about: that's the leader in academia putting out research, education, and then productivity in terms of numbers and high volume. And then also finding the time to be a leader in an organization…" (PGY3) "I think there are multiple places where we're expected to lead. And I think part of leadership is being dynamic—we're called to lead in the OR, out of the OR, in the clinic, just on rounds with our teams with just you and the intern." (PGY3)
	Characteristics, skills and styles of surgeon leaders	"…mainly it's interpersonal skills: how to manage their resident teams, how to make sure everyone is getting something out of the rotation, how to effectively deal with disagreements… and also being able to set a good example." (PGY3) "There's highly variable styles of leadership… I don't necessarily know that one is better than the other globally. There's certainly some that work better in certain scenarios…" (PGY5)
Why is dedicated leadership training **important** to residents?	Impact on team dynamics and outcomes	"…ineffective leaders are ones who allow patient care to happen, but in a way in which people are unhappy, people aren't meeting their goals, and you don't really feel like you're part of the team or happy about the team." (PGY2)
	Relevance within surgical hierarchy	"It's almost built into our training with a natural progression…You come in as the intern, you're not really considered the leader of the team, but by the time you're a PGY7 chief resident, you really are looked at as a leader." (Research)
How should we **approach** leadership training for residents?	Learner-centered strategies and implementation	"[A chief resident] wouldn't want to sit in a session with interns as to 'how do you effectively lead a team'. You know? It's just different. The stuff that [a chief resident] has to do is very different from what an intern does." (PGY1) "…structure this as a curriculum of smaller groups of people who perhaps have different strengths kind of discussing or going through exercises that allow all of them to learn from each other…" (PGY1)
	Need for feedback and evaluation	"In the same way that we assess surgical skills for incoming interns, you also assess someone's leadership and management skills at the beginning. And then that's something that we work on throughout residency." (PGY4)

promoted or undermined the establishment of team unity, enjoyable work experiences, and positive team interactions. One resident remarked that when "someone who's supposed to be a leader throws their more junior team member under the bus… it certainly does not engender good will among the team… the team [can] have a lot of difficulty working together and trusting one another in the future" (PGY4). Further, several residents discussed how leaders influence their peers' or juniors' experience of integration and work satisfaction within a team. Failure of team leaders to recognize the individual needs and goals of their team members generates team dissatisfaction and potential for burnout or lack of meaning associated with individuals' work.

Similarly, residents described that leaders may either promote or undermine team efficiency, coordination of care, and responsibility to patients. One resident summarized this

sentiment: "I measure how effective a leader is… by how the process of patient care happens…the most ineffective leaders that I worked with are the ones who really just drop the ball on patient care… they're just not able to organize" (PGY2). Several residents expanded on this by emphasizing instances in which lack of effective leadership display led to team breakdown and negative effect on patient outcomes. Discussion acknowledged that patients have unfortunately been harmed in cases of poor team communication and management as well as ineffective delegation of tasks.

Theme 4: relevance within surgical hierarchy

Residents emphasized that the hierarchical nature of surgery training invokes the assumption of leadership roles at many levels within the training paradigm, often without choice and deliberate preparation for such roles. While this advancement into positions of team leadership is largely embedded into surgical residency, dedicated training and support to serve in these roles remain absent despite recognition of leadership weaknesses in certain trainees. One resident highlighted a critical limitation of this, particularly in programs without current, dedicated leadership training: "You pose as a leader because you're the most senior person there… but you may not actually necessarily have the skills of a leader" (PGY1).

There was also recognition amongst residents, however, that leadership roles and opportunities exist at many levels within the training ladder not just as chiefs, but also often as the leading of peers, junior residents, and even medical students. One resident suggested that for some leadership responsibilities "maybe the most qualified person on the team is lower in the hierarchy…" (PGY1). Many residents used examples of this to highlight why leadership training is relevant for multiple levels of trainees beyond chief residents to cultivate stronger leaders for medical students and peers across the training spectrum.

Approach to leadership training

Theme 5: learner-centered strategies and implementation

Residents described the need for a longitudinal curriculum that incorporates both universal and differentiated content based on trainee level and individual strengths and weaknesses. One resident emphasized that "it's not just a snapshot, it's not just a single moment that you can give people this training" (PGY3). There was consensus shared on the need for a curriculum that incorporates some foundation of universal leadership content including elements such as mentoring and communication, for example. On the other hand, residents also heavily discussed the importance of including curriculum elements that would allow for differentiation based on trainee level, suggesting versions of a "hub and spoke model" (PGY3) for delivery of relevant level-specific content in addition to core leadership fundamentals. Preferred educational methods included baseline self-assessments, experiential reflection on individual strengths and weakness, and opportunities for peer group discussion to allow residents to learn from each others' leadership experiences. There were also strong comments supporting a learner-centered curriculum with space for autonomy in leadership development to allow residents to "keep the uniqueness of who they are" (PGY1). This type of curriculum would maintain focus on the needs and interests of residents.

Most residents emphasized the importance of a mandated leadership curriculum. As one resident stated: "if it's not mandatory, then it's just going to self-select for people who are interested in it and probably need it less than those who don't attend" (PGY3). On the contrary, there was a minority opinion acknowledged in the group in support of optional participation. Overall, however, consensus was generated around implementation of a new curriculum into existing educational structures and protected time to avoid increased burden on residents. As one resident illustrated: "Everyone's tired. Everyone has limited hours. We already are hitting on the barriers of what we're going to encounter when we try to do something like this" (Research). Overall residents agreed on the importance of leadership content, but also recognized the realistic demand that already exists on their time and energy.

Theme 6: need for feedback and evaluation

Finally, residents emphasized the need for both formative and summative feedback and evaluation of leadership skill from both their peers and faculty. They stressed a collective desire to receive feedback on their leadership development, an element currently lacking from their training. One resident commented, "I feel like the only leadership feedback you get is on your feedback forms. There's one line about on a scale from one to five, how good are you in teams as a leader?… That's the feedback that you get… nobody sits down with you and says, you know, this is what I thought you did. This is what you need to work on" (PGY3). Several existing systems are already used to provide performance feedback on rotations and simulation labs. Many residents suggested utilizing these existing structures to incorporate a more robust leadership feedback component and avoid further survey or evaluation fatigue.

Residents felt that delivery of leadership feedback and completion of leadership evaluations should be longitudinal across trainee levels to promote growth and development in these domains. The need for both baseline and sequential assessment was underscored to help identify areas that residents may need to work on as well as gauge progress toward leadership development goals. There was also emphasis on the importance of timely feedback to help residents become aware of their potential leadership "blind spots" and make behavioral changes to affect their teams in real time. Often

resident leaders are "not even aware [of potential issues] until some poor soul speaks up at the very end of rotations" (PGY1). Residents recognized that mechanisms to facilitate this type of formative or just-in-time feedback would help to promote the first stages of individual leadership change.

Discussion

In this study, we identified that general surgery residents ultimately desire dedicated leadership training not only to advance skills needed for academic career development but also to impact how their clinical teams function day-to-day. Through many personal examples, they highlighted the detrimental consequences of poor leadership such as increased resident frustration and dissatisfaction as well as breakdown in the coordination of patient care and completion of team tasks. They also emphasized the importance of a leadership curriculum involving all trainee levels but individualized to those levels given the natural progression within surgical training such that all residents will eventually serve in leadership roles.

In addition, we were able to define the scope of leadership domains that are most relevant to our trainees, including communication and interpersonal skills, teamwork and team management, and conflict resolution. Many of these are in keeping with previously published studies employing quantitative approach needs assessments within surgical fields [11–13] as well as those examining graduate medical education as a whole [16, 17], suggesting a degree of transferability in this aspect of our findings. Though participants did not explicitly use such terms, their descriptions of characteristics and skills displayed by surgeon leaders suggested elements of both traditional and "new" leadership models. For example, residents highlighted illustrations of clear leader–follower exchanges in terms of goal and expectation setting as well as the provision of direction and reinforcing behaviors by the clinical team leader, all features of more traditional or transactional leadership models [18]. On the other hand, they also described instances of motivating and morale-boosting behavior, emphasis on the collective mission, and consideration of individual team members' needs and abilities, features more consistent with a transformational leadership model [18, 19].

Interestingly, residents easily described anecdotal evidence of the detrimental effects that poor leadership and communication can have on both team dynamics as well as patient outcomes. This qualitative theme is consistent with previous reports examining sentinel events in surgery as well as intra-operative behaviors. For example, in 2021 the Joint Commission reported two surgery specific sentinel event types—wrong site surgery and unintended retention of foreign objects—in the top ten most frequently reviewed sentinel events for that calendar year [20]. Issues in leadership and communication were most frequently identified as the root cause of these sentinel events following human related factors [21]. Examination of intra-operative performance has also shown that display of maladaptive leadership behaviors by surgeons predicts lower collective clinical team efficacy and poor psychological safety of team members [22]. A similar study using the Non-Technical Skills for Surgeons (NOTSS) rating tool to assess leadership, communication, and teamwork found that ineffective surgeon behaviors in these domains lead to miscommunications, delays in patient care, and poor delegation of team tasks [23]. This body of existing literature combined with a demonstrated resident desire for dedicated leadership training suggests a need for such curricula to impact not only surgical trainees, but also their teams and patients.

Overall, there was consensus amongst residents that the goal of a leadership curriculum should not be to train all surgery residents toward one chosen leadership model or style given recognition that a variety of leadership styles may be required in surgical training. This finding is consistent with one from a previous study by Torres-Landa et al recognizing the application of mixed leadership behaviors in surgery [24]. Instead, our residents emphasized encouraging self-reflection and developing self-awareness of individual leadership qualities—including those that are effective as well as those that may impair team function—to promote leadership growth and development. This focus on greater self-awareness and self-regulated positive behaviors is prominent in authentic leadership theory [18, 25]. Residents suggested incorporating baseline self-assessment, peer discussions, as well as formative feedback to support development of this self-awareness through the identification of leadership blind spots.

Importantly, resident participants also requested longitudinal, integrated instruction with the incorporation of routine feedback and evaluation. Previous review of leadership curricula in graduate medical education suggests that a longitudinal approach is more likely to be successful than isolated training experiences or lessons [17]. The recognition of a lack of current leadership feedback also builds on a previous study by Vu et al concluding that surgical residents do not currently receive effective leadership feedback despite a strong desire for such feedback to promote skill development [26]. This finding adds to the growing body of work suggesting the need for more structured performance feedback for surgical trainees at many programs in both technical [27–29] and non-technical skill domains [30–32]. Our residents did realistically identify barriers to the provision of feedback and implementation of a leadership curriculum as a whole including time requirements, complexity of resident scheduling, program and resident buy-in, as well as current survey and evaluation fatigue. Most proposed incorporating core

curricular sessions into existing protected time and revamping current evaluation systems to include more explicit assessment of leadership by both co-residents and faculty to overcome these obstacles.

Ultimately, the results of this study are being used to build a formalized leadership curriculum in the general surgery residency program at our institution. In this process, we have sought collaboration from other programs with established curricula to share resources and create some degree of standardization—which is currently lacking between leadership curricula involving general surgery residents at different institutions [8]—while still recognizing the targeted needs of our residents which we have elicited. Further, we hope that dissemination of this qualitative needs assessment methodology may provide a model for other institutions to do the same. While we recognize that our findings are representative of a single academic general surgery training program and therefore may not be applicable to all programs, we have described our approach to promote dependability such that other educators with interest in trainee leadership development could perform similar needs assessment for their respective programs. It is critical to define surgeon leadership and establish the importance of leadership training for residents in an educational framework before proceeding with implementation.

This study has several important limitations. Despite utilizing a combination of convenience and purposeful sampling, we were only able to recruit 22% of the residents in our program for participation in focus groups. Similarly, the majority of participants (73%) were female residents. However, our current program demographic breakdown is approximately 55% female and 45% male residents. Further, though we did ultimately have at least one representative from all trainee levels, there were few senior residents in the groups. Those who did participate, however, are considered key informants in our program due to their involvement in formal leadership capacities. Also, the timeline for implementation of a leadership curriculum at our program is such that the current chief class will have graduated before being able to participate in it. Another limitation is the use of mixed level trainee focus groups. Though we observed that many junior trainees shared candidly in the sessions, it is possible that some important opinions were not represented given concerns of psychological unsafety in the group. Finally, it is important to recognize potential selection bias for those residents who participated. They overall emphasized the need for leadership training, but this may not be the same for non-participants whose perspectives could have been missed. Though not reported in this study, we did additionally distribute a brief quantitative needs assessment component to all residents as well as recent program alumni which provided further evidence corroborating the conclusions drawn in our qualitative approach.

As in all qualitative studies, the position of researchers involved must also be noted. Focus groups were conducted by JMC, a female surgical resident who has interacted with participants regularly outside of the study. This relationship helped to establish rapport and honesty from participants in the data collection period. However, to mitigate the potential investigator bias, additional researchers from other medical disciplines [RWM and JC] participated in data coding and analysis phases. Further, emerging themes were distributed to a subset of focus group participants to verify their accuracy. Ultimately, they determined that the interpretations were representative of what had been discussed in focus groups.

Conclusions

In conclusion, surgery residents defined the need for dedicated leadership training to promote career advancement within academic surgery as well as to impact clinical team dynamics and outcomes. The characteristics, skills, and styles required of surgeon leaders are multiple and best promoted by utilizing self-reflection, peer discussion, and feedback strategies for all trainee levels. These results will be used to build a formalized leadership curriculum at our institution. Further, dissemination of this qualitative needs assessment approach may provide a model for other institutions in development of similar leadership curricula.

Supplementary Information The online version contains supplementary material available at https://doi.org/10.1007/s44186-022-00042-z.

Data availability The dataset generated and analyzed during the current study is not publicly available due to the potentially sensitive nature of focus group transcripts but is available from the corresponding author on reasonable request.

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