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Weekly Review of an Academic Checklist to Operationalize Improvements to a Surgical Residency Program

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INNOVATION HIGHLIGHT

Weekly Review of an Academic Checklist to Operationalize Improvements to a Surgical Residency Program

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Introduction: We report on the use of a weekly academic checklist to monitor proposed improvements to a surgical residency program.

Methods: A single-center, retrospective analysis of residency improvements with an academic checklist of quality initiatives reviewed weekly at morbidity and mortality conferences. The positive response rate for each of the 11 items were reviewed. Trends of positive responses during the year were reviewed. The effectiveness of the checklist was also assessed with 2 internal surveys completed by faculty and residents.

Results: Over 15 months, the checklist was reviewed 46 times. The rate of a positive response for items varied from 0.40 to 0.80. Positive rates did not differ between the first and second halves of the study period. Among respondents, 82% of residents and 67% of faculty were either very satisfied or somewhat satisfied with the checklist showing adherence to changes/expectations for verbal feedback.

Discussion: Based on internal surveys, the use of an academic checklist was successful with operationalizing improvements to a surgical residency program over 15 months. Individual items of the checklist were completed 40% to 80% of the time, and this percentage did not change when comparing the first and second halves of the study periods. Much of the success is likely due to the weekly reminder to help change behaviors.

Conclusions: Weekly review of an academic checklist successfully operationalized educational improvements to a surgical residency program.

Keywords: residency, checklist, surgery, feedback

Changing behaviors within residency is difficult for both faculty and residents. The use of checklists has been described in medical settings, including procedural technical skills¹ and assessing resident communication skills.² In surgical education, checklist use has been described intraoperatively with the concept of a “teaching time-out”³ and a teacher-learner contract between shadowing medical students and their attendings.⁴ We report the use of a checklist in a different

context—to hold the department accountable with weekly reviews of quality initiatives.

After reviewing internal and external (Accreditation Council for Graduate Medical Education) surveys, our residents and faculty identified several opportunities for improvement within our surgical residency. Most notably, our residents wanted better verbal feedback from attendings after each operative case. The expectation for faculty and residents was that at the end of each case, the verbal operative feedback would involve a discrete discussion about what went well and what the resident should work on for the next case. Faculty and residents agreed they would share the responsibility of ensuring

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these requirements were completed. Several other areas to improve were also identified and added to the checklist.

To operationalize these improvements and monitor progress, our department began to review an academic checklist weekly after morbidity and mortality (M&M) conferences. Specifically for the department of surgery, the M&M conference is protected academic time in which all residents and 80% of faculty are expected to attend.

There have been no studies published that report weekly checklist review to operationalize changes within an academic department. We hypothesized that, over time, the weekly review of checklists would improve behaviors and result in greater positive response rates to checklist items.

METHODS

An institutional review board exemption was obtained for this study.

Two of the authors (JW and JS) designed a checklist with 11 items to review weekly (Figure 1). We had visiting professors and faculty development sessions related to improving feedback. Also, at the end of each week, residents requested face-to-face verbal feedback on rotations in which attendings rotate weekly, including trauma, emergency general surgery (EGS), and the surgical intensive care unit. Some of these items were relevant for weekly assessment, and others for monthly assessment. The study period ran from July 2019 through October 2020. We compared positive response rates on the checklist between the first half (July 2019 to February 2020) and second half (March 2020 to October 2020) of the study period.

The 11th item on the checklist, the EGS educational topic, was added in May 2020. At the end of our M&M conference, we spent about 3 to 5 minutes with the program director or an associate program director, during which we asked the appropriate resident about each of the checklist items. Responses were prospectively maintained in a Google spreadsheet. Chi-squared tests and *P* values were calculated using Stata (Version 14, College Station, TX).

Two surveys were sent to assess the checklist. First, halfway through the study period, faculty and residents completed a survey to assess overall opportunities for improvement within the residency.

One of the survey questions asked respondents to

rate on a 1 to 5 scale: "How satisfied are you that the academic checklist shows adherence to changes/expectations for verbal feedback." Second, after the study period in November 2020, faculty and residents completed a follow-up survey with 4 questions to evaluate the checklist (Figure 2).

RESULTS

Over 15 months, the checklist was reviewed 46 times. The rate of a positive response for items varied from 0.40 to 0.80 (Table 1). The items that were most consistently positive were the specialty attending present at the Thursday conference, with a positivity rate of 0.80. The item that most commonly was not achieved was discussion of the goals and objectives of the rotation, with a positivity rate of 0.40.

There was no difference between positivity rates between the first and second halves of the study period (all *P* > .05; Table 1).

The first survey response rate was 20/21 for residents and 23/37 for faculty. Among respondents, 82% of residents and 67% of faculty were either very satisfied or somewhat satisfied with the checklist showing adherence to changes/expectations for verbal feedback. The second survey was completed after the study period, to which 10/21 residents and 14/37 faculty responded. Overall, 83% of respondents felt the checklist length was appropriate with 11 items, and 88% felt weekly review of the checklist was best.

The success of the checklist in improving the different quality initiatives was also assessed in the second survey (Table 2). Faculty and residents perceived the checklist was most effective in improving feedback after weekly rotations, with a weighted average of 4.04. The checklist was least effective as a reminder for monthly reporting of issues with duty hours, with a weighted average of 3.26.

DISCUSSION

In our experience, the academic checklist of quality initiatives was easy to review weekly after M&M conferences. Contrary to our hypothesis, we did not find a greater number of positive responses to checklist items in the first versus second half of the study. The positive response rate was lowest for goals and objectives discussed before rotation, suggesting this area could be improved in the future.

Checklist Item	Assessment
Feedback given in the ICU	Weekly
Feedback given after the operative case [‡]	Weekly
Feedback given trauma	Weekly
Complication attendings present for M&M	Weekly
Issues with duty hours	Monthly
Specialty attendings present at the Thursday conference	Weekly
Goals and objectives were discussed for rotation	Monthly
General surgery performance improvement/patient safety conference	Monthly
More than 1 attending was present at the EGS morning sign-out	Weekly
EGS academic topics lecture	Weekly

Abbreviations: EGS, emergency general surgery

[‡]Random resident selected.

^{||}Late addition to the checklist.

Figure 1. Academic Checklist Items and Assessment Interval. All instances of feedback refer to verbal feedback at the end of weekly rotations, including intensive care unit (ICU), trauma, and emergency general surgery (EGS). Any single issue with duty hours reported by residents would be a positive response. One attending present for Thursday morning conference was considered a positive response. Goals and objectives discussed was assessed by asking a random resident selected at the moderator’s discretion. The general surgery performance improvement/patient safety conference assessed whether this conference was held. Similarly, the EGS academic topic was added to the checklist for the second half of the study period. A positive response meant that the conference was held at any 1 time during the week.

<p>1. Do you think the length of the current survey is appropriate (11-12 questions)?</p> <ul style="list-style-type: none"> a. Appropriate length b. Should be shorter c. Should be longer
<p>2. Do you think the frequency (weekly) is appropriate?</p> <ul style="list-style-type: none"> a. Weekly is best b. Move to every other week c. Change to monthly d. Other
<p>3. Do you think the checklist has been successful in the following areas: rate 1-5 not successful to extremely successful?</p> <ul style="list-style-type: none"> a. Improving feedback after weekly rotations (ICU, trauma, ACS) b. Improving feedback after every operative case (moderator asks about a random case) c. Improving faculty attendance at M&M and Thursday conference d. Having more than one attending at EGS sign out e. EGS PIPS/academic topics f. Goals and objectives discussed g. Duty hours issues (assessed monthly)
<p>4. Any other comments related to the weekly checklist effectiveness or opportunities for improvement? (free-text box)</p>

Figure 2. Survey Questions Used to Assess the Academic Checklist. Note that question 1 refers to the checklist. The actual survey had the 1 to 5 scale with responses appropriately labeled.

Abbreviations. ACS, acute care surgery; EGS, emergency general surgery; ICU, intensive care unit; M&M, morbidity and mortality.

Table 1. Positive Response Results and Comparison of Study Periods

Checklist item	Positive response rate			P value
	Overall	First half*	Second half†	
Feedback given in the ICU	0.78	0.78	0.78	>.99
Feedback given after the operative case‡	0.65	0.70	0.61	.54
Feedback given in trauma	0.67	0.78	0.57	.11
Feedback given in emergency general surgery	0.74	0.70	0.78	.50
Complication attendings present for M&M	0.80	0.78	0.83	.71
Issues with duty hours§	0.72	0.80	0.67	.62
Specialty attendings present at the Thursday conference	0.82	0.83	0.82	.94
Goals and objectives were discussed for the rotation§	0.40	0.50	0.33	.52
General surgery performance improvement/patient safety conference§	0.58	0.66	0.53	.52
More than 1 attending was present at the EGS morning sign out	0.74	0.76	0.73	.79
EGS academic topics lecture	0.64	NA	NA	NA

Abbreviations: EGS, emergency general surgery; NA, not applicable.

*July 2019 to February 2020.

†March 2020 to October 2020.

‡Random resident selected.

§Assessed monthly.

||Late addition to the checklist.

Our survey results also suggest that the checklist was successful for topics reviewed weekly, and that about 10 items on the weekly checklist review seemed best.

Measuring the success of the checklist was challenging. Despite positive response rates of less than 80% and not improving with time, we feel the checklist successfully changed behaviors based on our first internal survey of faculty and residents. Our primary goal in creating the checklist was to improve verbal feedback for residents, and the checklist seemed to accomplish this goal for 82% of residents and 67% of faculty. One reason positive response rates may not have improved over time is that we became stricter about giving credit for checklist items during the study period. Initially, we gave credit if any feedback was given. Later in the study period, we asked more details about

the feedback given. And if the feedback was not adequate, no credit was given on the checklist.

We feel success was best reflected by survey data in which most faculty and residents were satisfied with the checklist showing adherence to desired changes in feedback. This sentiment was reflected in several comments we received in the first survey:

- “I like this means of keeping tabs on ourselves as a community.” (Resident 1)
- “I think the weekly reminder regardless of whether or not checkboxes are clicked helps keep feedback in the forefront of people’s minds, and may encourage residents to ask for it and attendings to volunteer it.” (Resident 2)
- “It’s a good process to assess compliance, variables being followed can be changed as needed.” (Faculty 1)

Over the years, we tried to influence behaviors in other ways with less success. We found the checklist easy to modify for changing academic needs of the department, such as our later addition of discussing EGS academic topics. We have since made other changes to the checklist and continue to use it weekly. We feel much of the success of the checklist has been due to the frequent reminders to help change behaviors.

The need for improved quality and quantity of feedback in surgical education has been identified.¹ Specifically, verbal face-to-face feedback was extremely important or very important to trainees.^{5,6} Weekly checklist review may be a way to operationalize improvements to feedback and other areas across a residency program.

Our study has several limitations. We reviewed the checklist 74% of the weeks during the study. Most instances of missing the checklist were due to not having an M&M conference and having other uses of the academic time, including resident evaluation sessions, visiting speakers, mock oral exams, or holidays. There were 3 instances in which the checklist was not completed during M&M. Also, the quality of feedback was not assessed. In reviewing the checklist, there was lack of baseline data and variability with the definition of positive response, which potentially affected positive response rates over time. Our survey data is limited by selection bias and a small sample size, and the study is underpowered to detect a difference between the first and second halves of the study.

We feel an academic checklist would be easy to use across specialties and institutions, ranging from residents in graduate medical education to medical students to advance practice professionals. Minimal additional time or expense is needed. Each program can tailor their checklist for unique opportunities to

improve or monitor progress. Further studies could include other institutions' experience with checklist review to change behaviors and what elements are best to include on the checklist.

CONCLUSIONS

The use of an academic checklist successfully operationalized improvements to a surgical residency program during the first 15 months of implementation. Residents and faculty perceived the survey as successful, event with 40% to 80% rates of completion of individual items. Much of the success is likely due to the weekly reminder to help change behaviors.

Conflicts of Interest: None

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