Tips for Success: Developing a Video-based Multidisciplinary Review Rounds of Critical Events in the Operating Room

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Key Words: patient safety, operating room, surgery, anesthesia, teamwork

(*J Patient Saf* 2026;00:000–000)

BACKGROUND

The operating room is a high-stakes, high-performance environment where exceptional teamwork is required to ensure patients receive the safest care possible. Video review of key events is considered essential for improving performance and group coordination in high-level activities like professional sports. Getting a patient safely into, through, and out of the operating room (OR) requires equally complex integration of multiple hospital staff, including surgeons, anesthesiologists, nurses, and technicians.[1,2] A video-based review of critical events, applied as a learning-oriented, non-punitive approach focused on actionable improvements, can improve teamwork and performance in the OR.[3–5] Yet, the OR has traditionally been inaccessible to video due to concerns about patient identification, perceived medicolegal risk, and existing norms. However, recent technological advances in ambient monitoring have enabled de-identified video capture, mitigating issues with patient and staff identification and medicolegal risk, opening the OR to video-based review for individual and team performance improvement.[6–8] Despite these advances, there remains no standard process for performing video-based, multidisciplinary review of operative cases. To address this deficit at our institution, we created a standardized process for reviewing de-identified OR video in a multidisciplinary, learning-oriented forum to maximize individual, team and system performance improvement, with the central focus to improve patient safety. Here we provide our tips for developing and sustaining a video-based, multidisciplinary rounds (VB-MDR) of critical events in the OR.

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J.DF.: Unrestricted research funding from Varian and Pacira for an investigator-initiated trial, funding from Eclipse Regenysis for an industry-sponsored clinical trial; consultant, stock, and patents for Costa Surgical Inc. The remaining authors disclose no conflict of interest.

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DOI: 10.1097/PTS.0000000000001466

INTERVENTION

Technology

In September, 2022, OR Black Box (Surgical Safety Technology Inc., New York) was installed into 4 operating rooms at our quaternary, academic medical center and expanded to 14 rooms in May of 2023. This ambient technology platform enabled the capture of audio, video, and technological data streams and allowed for the comprehensive review of specific safety events in the OR. Deidentified audio-visual clips were processed by Surgical Safety Technology Inc. using proprietary technology to highlight relevant portions; these curated clips were then provided digitally to the interventional platform quality improvement team. The Black Box video, audio, and technical data provided the content for our VB-MDR meetings.

Multidisciplinary Video-based Review Working Group

We created a VB-MDR working group with 1 to 2 clinical and quality leaders representing surgery, anesthesiology and OR staff. Each member was selected for their insight into existing quality projects and issues within their domain, and their influence to be able to seek feedback preemptively from their domain constituents and reports. This group was responsible for agreeing upon the theme for each VB-MDR and selecting cases and clips for display, with subsequent approval by departmental leadership before clip presentation. This group was also responsible for moderating the VB-MDR meetings. The VB-MDR working group established the standardized VB-MDR format to facilitate discussion and ensure consistency from meeting to meeting (Table 1). Standard language about the intention of the VB-MDR was included at the beginning of each session (Fig. 1) and emphasized focusing on processes rather than individuals.

Case Selection for VB-MDR

Case(s) were chosen based on themes that aligned with institutional priorities. Themes were relevant to all user groups, including surgeons, anesthesiologists, and interventional platform staff. The VB-MDR working group collaboratively curated videos to focus on high-yield clips. To promote engagement, brief video clips that captured key teachable moments were prioritized (20 to 40 sec) and integrated into the case presentation section. Pre-review and editing by the VB-MDR working group was important to ensure individuals were not identifiable and each user

TABLE 1. Standard Video-based, Multidisciplinary Review Rounds Agenda

Time	Agenda Item	Lead
2 min	Welcome remarks, ground rules, learning objectives	IP/Anes/Surg champion
3-5 min	Updates and loop closure on prior VB-MDR rounds	IP/Anes/Surg champion
15-20 min	Case presentation	Working group facilitators
15 min	Facilitated discussion	All
12 min	Curated discussion with talking points and action items	Working group facilitators
2 min	Final thoughts/closure	IP/Anes/Surg champion

Anes indicates anesthesiology; IP, interventional platform; Surg, surgery.

group (i.e., surgery, anesthesiology, interventional platform) was aware of the content being presented. We placed a descriptive slide before each video in the slide deck to indicate the teachable point in the video to follow. Since attendees had varying familiarity with the type of procedure or event, we used clear, accessible language for case and intervention descriptions.

Curated Discussion Topics

The discussion topic(s) were chosen by the VB-MD working group and reflected quality improvement opportunities (Table 2). We found it helpful to use discussion time to highlight ongoing quality improvement projects and review established protocols and procedures relevant to the chosen theme. This provides attendees with insight into the multidisciplinary quality projects that were ongoing and provides a platform for group discussion about action items, timelines, and next steps. Each member of the VB-MDR working group reviewed slides before the VB-MDR to ensure the presentation would resonate with attendees within their domain. The total time for slide preparation for each VB-MDR was between 10 and 15 hours, collectively among team members. Examples of topics addressed included unanticipated massive transfusion, unfamiliarity with equipment and its availability, and communication challenges leading to incorrect counts. Each session led to performance improvement projects whose successes were enhanced by the broad exposure of the safety issue during the VB-MDR.

Attendees

All faculty and staff working on the interventional platform were encouraged to attend. This included surgeons, anesthesiologists, nursing staff, scrub technicians, anesthesiology technicians, transport staff, janitorial staff, sterile processing, laboratory staff, pathology staff and executive leadership. Participation in person was favored over Zoom, although a Zoom option was provided.

Caveats

We found it useful to have a plan for directing conversation away from provider-specific issues. Our working group prepared for each VB-MDR by discussing anticipated challenging questions and areas of potential conflict, enabling the development of talking points before the meeting. We found it particularly beneficial to spend

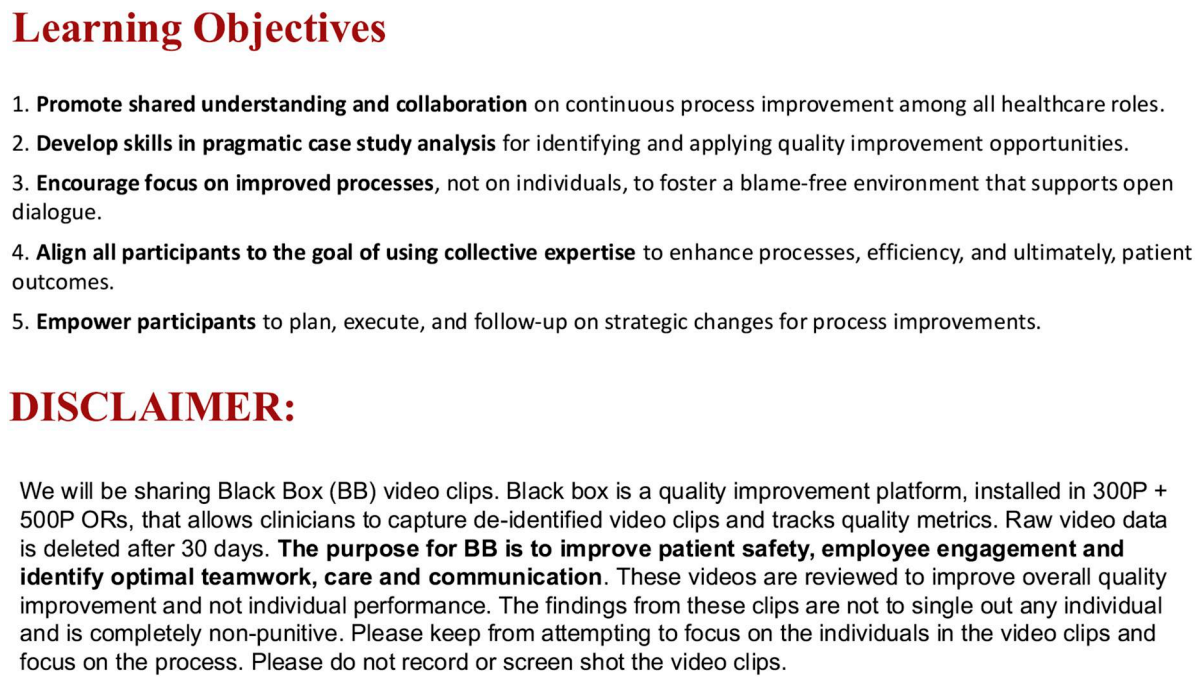

FIGURE 1. Inclusive language is used at the beginning of each VB-MDR to focus on the process rather than individuals.

TABLE 2. Key Takeaways From Prior Video-based, Multidisciplinary Review Rounds—September 2023 to July 2025

Date	Topic	Takeaways/Systemic Changes
September, 2023	Retained foreign objects (RFO)	Embed RFO protocol with 1-click in the electronic medical record
January, 2024	Communication during critical events	Modify the blood scanning process
June, 2024	Lost specimens/specimen handling	Introduce specimen allocation hard stops in debrief
August, 2024	Vascular bleeding emergencies	Develop *Code Hemorrhage*
January, 2025	Timeouts	Push Universal Protocol enterprise-wide
April, 2025	Wrong medication administered	Initiate closed-loop communication project

time ahead of the meeting preparing the slides for the curated discussion deck as a working group. This preparatory process enabled the entire team to anticipate action items for each of the user groups and to solicit buy-in from institutional and health system leadership before the meeting.

DISCUSSION

By applying the process described above, our institution established and sustained a robust VB-MDR process. Since September 2023, our team has led 6 multidisciplinary video-based review meetings, with meeting attendance increasing 10-fold over the same time, from ~40 to 400+ clinical staff. Through this VB-MDR process, our teams have collaboratively identified numerous systemic changes that have improved surgical reliability, resilience and promoted patient safety. We attributed our success to several components and attributes. First, previous surgical performance improvement interventions were limited in their objectivity regarding team performance; multi-disciplinary video-based review promoted objective review in a media format that resonated with participants. Second, the VB-MDR promoted learning across disciplines, in contrast to more traditional approaches like morbidity and mortality rounds, which historically were siloed into single disciplines. Third, the ground rules established for the VB-MDR created a safe space for review, and discussion promoted buy-in for using the technology, which in turn promoted a safe space. This design facilitated a positively reinforcing cycle aimed at promoting patient safety and reflective inquiry rather than a vicious cycle fueled by a punitive culture focused on blame. Ultimately, these VB-MDRs helped our institution build up our culture of safety using technology that facilitated engagement across disciplines.

CONCLUSION

A VB-MDR process using de-identified OR video can be successfully implemented and sustained, fostering system-wide learning and improving patient safety.

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