




Changes in multidisciplinary perceptions of trauma video review following implementation of a novel program: let us go to the tape

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Previously presented at the Upstate New York American College of Surgeons Committee on Trauma Resident Paper Competition held on February 2, 2022 in Buffalo, New York, USA.

Received 3 September 2024
Accepted 21 December 2024

ABSTRACT

Background Trauma video review (TVR) is an evolving technology that can be used to measure technical and non-technical aspects of trauma care leading to meaningful improvements. Only 30% of centers currently use TVR, with non-users citing medicolegal concerns, staff discomfort with recording, and resource constraints as barriers to implementation. Multiple studies have shown established TVR programs are well-perceived by staff. Little is known about perceptions prior to, and after implementation of a new program.

Objective This study evaluated changes in TVR perceptions following implementation of a new program.

Methods A 15-question survey was distributed to emergency department and trauma surgery providers at a level I trauma center prior to, and 1 year after, implementation of TVR. A 5-point Likert scale was used to evaluate perceptions of the value of TVR, measures of team dynamics, and staff discomfort with recording.

Results A total of 106 pre-implementation and 82 post-implementation responses were recorded. Perceptions in several domains improved post-implementation including team leader effectiveness (3 (3–4) to 4 (3–4); $p=0.002$), communication (3 (3–4) to 4 (3–4); $p<0.001$), and self confidence in role (4 (3–4) to 4 (4–5); $p=0.001$). Staff discomfort with recording decreased post-implementation (3 (2–4) to 2 (2–3); $p=0.002$).

Conclusion Our study shows that perceptions of TVR changed favorably after implementation, particularly perceptions of team dynamics and provider discomfort with recording. These results can be used to mitigate staff concerns about TVR and encourage the development of new programs.

Level of evidence IV.

BACKGROUND

Trauma video review (TVR) is a powerful tool for performance improvement in trauma resuscitation, trainee and staff education, and research. It has been used successfully to reduce time to definitive care for trauma patients,¹ improve compliance with advanced trauma life support protocols,² evaluate success rates of vascular access techniques,^{3 4} and establish procedural norms.⁵ TVR uses strategically placed overhead cameras ([figure 1](#)) to capture high-definition audiovisual recordings of trauma resuscitations that are securely and temporarily stored for future review. Software allows users to pause, rewind, fast-forward, zoom, and accurately time stamp events

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Staff discomfort is a common barrier to implementing new trauma video review programs and previous work has shown trauma video review is well regarded at centers with established programs.

WHAT THIS STUDY ADDS

⇒ Less is known about perceptions of new trauma video review programs or how perceptions change after implementation.
⇒ Favorable changes in perceptions of team dynamics and decreased staff discomfort with recording was observed after implementation.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ The results of this study can encourage and support trauma programs who do not currently use trauma video review to develop and implement their own programs.

during resuscitations, and also for auto-deletion at a predetermined interval. TVR has repeatedly been shown to outperform retrospective chart review and in-person data collection with respect to accuracy and completeness of data.^{6 7} Additionally, TVR can provide robust information in both the technical^{4 6 8} and non-technical aspects of trauma care including team communication^{9–11} and trauma team leader effectiveness.¹² These aspects of a resuscitation are otherwise difficult, if not impossible to capture prospectively or retroactively from the medical record.

Despite these well-established benefits, the most recent reports on the topic indicate that only 20%–30% of US trauma centers currently use TVR.^{13–15} The most consistently cited barriers to implementing and maintaining a successful TVR program are medicolegal issues, staff concerns related to active recording of job performance, and time/resource constraints.^{13 15 16} Previous work has consistently demonstrated that TVR is favorably perceived by staff at centers with mature programs^{13 17 18} and in those planning to start new programs.¹⁹ Significantly less is known about how staff perceptions change with implementation of a new TVR program.

OBJECTIVE

The purpose of the current study was to evaluate staff perceptions of TVR prior to, and after

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To cite: Murray M, Rogers E, Dellonte K, et al. *Trauma Surg Acute Care Open* 2025;**10**:e001621.

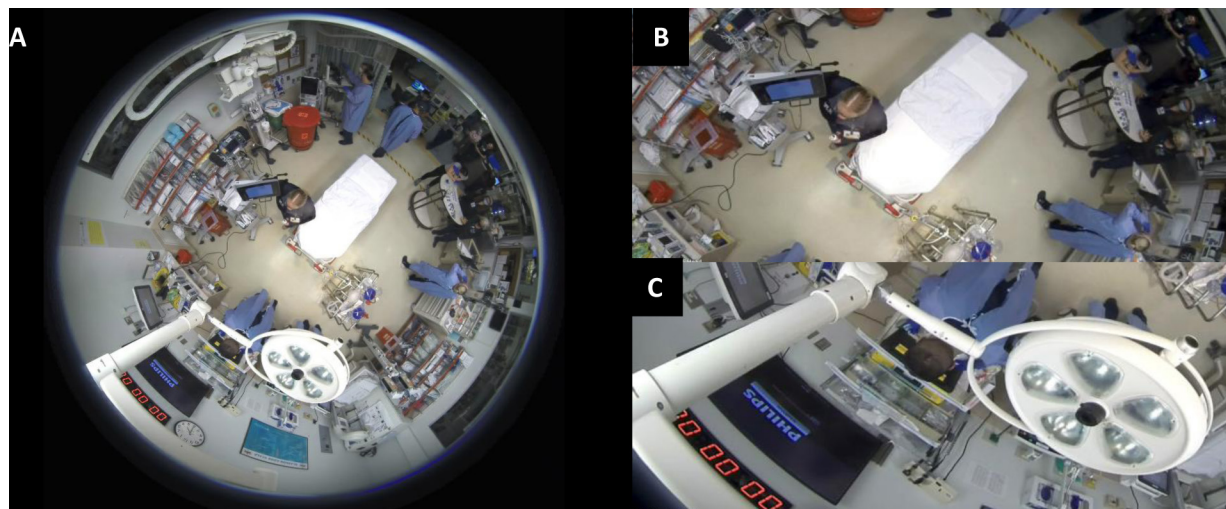


Figure 1 Representative views from an overhead trauma bay camera. (A) Representation of the view from the head of the bed camera in a trauma bay at our institution. (B–C) Demonstration of the zoom function within the video review software.

successful implementation of a new TVR program. We hypothesized that video review would be well perceived, and that any concerns related to the use of TVR would improve following program implementation.

METHODS

Program implementation and background

In August 2021, we implemented a new TVR program at our urban, level I trauma center where one had never previously existed.²⁰ In brief, multiple formal and informal discussions took place among stakeholders (emergency department and surgical nurses, residents, faculty, staff, and administrators) over the preceding 5-year period in order to identify and mitigate any concerns related to the TVR process. These conversations consisted of town-halls, individual and multidisciplinary meetings, and email threads.

Audiovisual recording at our institution is switch-activated, and videos are stored on a secure server available to only a small number of trauma and emergency medicine program staff. Recordings are autodeleted without exception at 30 days; videos do not become part of the patient's electronic medical record nor are they used for formal job review for staff. Videos are regularly reviewed in our multidisciplinary TVR conference, which includes nursing staff from emergency medicine, trauma, and beyond (anyone involved in the care of trauma patients employed by our health system). Since inception, we have had >10 multidisciplinary conferences, six of which occurred during the study period. Videos are also reviewed individually with providers for educational purposes and at trauma morbidity and mortality conference.

Survey questionnaire

A survey questionnaire was developed to assess staff perceptions of TVR before and after implementation of the program. The survey consisted of 15 items assessing basic, non-identifiable demographic information, career experience, previous knowledge/involvement with TVR, perceptions of the value of a TVR program, comfort level with being recorded, and perceptions of trauma team dynamics, each evaluated on a 5-point Likert scale (figure 2). The survey was created through Research Electronic Data Capture (Vanderbilt University, Nashville, Tennessee, USA) and responses were collected anonymously. This study

necessitated the creation of a novel survey as no validated survey currently exists to evaluate changes in TVR perceptions following implementation of a new program. The survey used in the current study was also designed to evaluate institutional-specific metrics that we felt were important for us to measure.

Study population and design

Prior to program implementation in August 2021, the survey was emailed to all trauma surgery faculty, residents, and advanced practitioners, as well as emergency medicine faculty, residents, nurses, and patient care technicians between November 2020 and July 2021 using various email distribution lists maintained by the departments of surgery and emergency medicine. One year after program implementation, in August 2022, an identical survey was distributed to the same participant groups using the same email distribution lists. All surveys in the post-implementation time period were completed by October 2022. The shorter response window for the post-implementation survey was chosen based on analysis of response time from the pre-implementation survey, during which the vast majority of responses were submitted within 2 months. Respondents were instructed to complete the post-implementation survey only if they had completed the pre-implementation survey; however, the anonymous nature of both surveys makes it impossible to know if respondents to the post-implementation survey completed the pre-implementation survey.

A total of 106 responses were collected during the pre-implementation period and 82 responses were collected from the post-implementation period. The number of individual email addresses within these lists during the pre-implementation and post-implementation time periods is unknown and therefore an accurate response rate could not be calculated.

Notably, the pre-implementation time period occurred during the COVID-19 pandemic, while the post-implementation time period occurred after. However, no significant changes to the trauma program, specifically the manner in which trauma resuscitations or trauma education were conducted, occurred because of the pandemic.

Statistical analysis

Descriptive statistics were used to describe baseline characteristics. Pre-implementation and post-implementation surveys were

Trauma Video Review (TVR) Survey

Record ID	
Position	<input type="radio"/> Emergency medicine faculty <input type="radio"/> Emergency medicine resident <input type="radio"/> Acute care surgery faculty <input type="radio"/> Acute care surgery resident <input type="radio"/> Advanced Practice Provider <input type="radio"/> Emergency department nurse <input type="radio"/> Emergency department technician <input type="radio"/> Other
Please specify other	
PGY (Post-graduate year)	<input type="radio"/> Junior (PGY 1-3) <input type="radio"/> Senior (PGY 4-5)
Number of years in practice post education/training	<input type="radio"/> < 1 year <input type="radio"/> 1-5 years <input type="radio"/> 6-10 years <input type="radio"/> 11-15 years <input type="radio"/> >15 years
I have been involved in a real-time recording of a trauma resuscitation	<input type="radio"/> True <input type="radio"/> False
I am familiar with the concept of trauma video review/recording of trauma resuscitations for performance/quality improvement and education	<input type="radio"/> 1 (Strongly disagree) <input type="radio"/> 2 (Disagree) <input type="radio"/> 3 (Neither agree nor disagree) <input type="radio"/> 4 (Agree) <input type="radio"/> 5 (Strongly agree)
The use of trauma video review/recording of trauma resuscitations is valuable for patient care	<input type="radio"/> 1 (Strongly disagree) <input type="radio"/> 2 (Disagree) <input type="radio"/> 3 (Neither agree nor disagree) <input type="radio"/> 4 (Agree) <input type="radio"/> 5 (Strongly agree)
The use of trauma video review/recording of trauma resuscitations is valuable for quality/performance improvement	<input type="radio"/> 1 (Strongly disagree) <input type="radio"/> 2 (Disagree) <input type="radio"/> 3 (Neither agree nor disagree) <input type="radio"/> 4 (Agree) <input type="radio"/> 5 (Strongly agree)
The use of trauma video review/recording of trauma resuscitations is valuable for my education/clinical practice	<input type="radio"/> 1 (Strongly disagree) <input type="radio"/> 2 (Disagree) <input type="radio"/> 3 (Neither agree nor disagree) <input type="radio"/> 4 (Agree) <input type="radio"/> 5 (Strongly agree)
The use of trauma video review/recording of trauma resuscitations is valuable for research purposes	<input type="radio"/> 1 (Strongly disagree) <input type="radio"/> 2 (Disagree) <input type="radio"/> 3 (Neither agree nor disagree) <input type="radio"/> 4 (Agree) <input type="radio"/> 5 (Strongly agree)

I am confident of my role during trauma resuscitations	<input type="radio"/> 1 (Strongly disagree) <input type="radio"/> 2 (Disagree) <input type="radio"/> 3 (Neither agree nor disagree) <input type="radio"/> 4 (Agree) <input type="radio"/> 5 (Strongly agree)
The team communicates effectively during resuscitations	<input type="radio"/> 1 (Strongly disagree) <input type="radio"/> 2 (Disagree) <input type="radio"/> 3 (Neither agree nor disagree) <input type="radio"/> 4 (Agree) <input type="radio"/> 5 (Strongly agree)
The team leader is effective during trauma resuscitations	<input type="radio"/> 1 (Strongly disagree) <input type="radio"/> 2 (Disagree) <input type="radio"/> 3 (Neither agree nor disagree) <input type="radio"/> 4 (Agree) <input type="radio"/> 5 (Strongly agree)
The possibility of being videotaped during a trauma resuscitation makes me uncomfortable	<input type="radio"/> 1 (Strongly disagree) <input type="radio"/> 2 (Disagree) <input type="radio"/> 3 (Neither agree nor disagree) <input type="radio"/> 4 (Agree) <input type="radio"/> 5 (Strongly agree)
Trauma video review adds value to education and ongoing improvement at this institution	<input type="radio"/> 1 (Strongly disagree) <input type="radio"/> 2 (Disagree) <input type="radio"/> 3 (Neither agree nor disagree) <input type="radio"/> 4 (Agree) <input type="radio"/> 5 (Strongly agree)

Figure 2 Trauma video review survey. PGY, postgraduate year.

compared using Mann-Whitney U test, χ^2 test, and Fisher's exact test where appropriate. Analyses using data from the Likert scale are reported as median (IQR). Changes in perceptions were first analyzed across all respondents. A planned subgroup analysis was then performed to examine the changes in perceptions among the two largest subgroups: residents and faculty. GraphPad Prism (GraphPad Software, San Diego, California, USA) was used for all statistical analysis. A two-sided alpha of <0.05 was considered statistically significant.

RESULTS

A total of 106 responses were recorded during the pre-implementation survey, comprising 28% faculty, 52% residents, 10% advanced practitioners, 3% nurses, and 7% unspecified other. Varying years of career experience were reported, with 80% of residents in postgraduate year (PGY) 1–3 and most other respondents having between 1 and 5 years of experience (43%). The post-implementation survey received 82 responses, comprising 38% faculty, 35% residents, 4% advanced practitioners, 17% nurses, and 6% patient care technicians. Similar to the pre-implementation survey, most resident respondents were in their first 3 years of training (66%). Most other respondents to the post-implementation survey had either 1–5 years (27%) or >15 years (27%) of career experience. Of the respondents with >15 years of career experience, 79% were faculty and 21% were nurses. Residents and attending faculty comprised the largest proportions of responses for both the pre-implementation and post-implementation surveys. There were significantly more residents in the pre-implementation survey ($p=0.027$) and significantly more nurses ($p=0.001$) and patient care techs ($p=0.017$) in the post-implementation survey. There were no significant differences in the reported amount of career experience between

the groups. The demographics of the pre-implementation and post-implementation surveys are summarized in [table 1](#).

Prior to implementation of TVR, 32% of respondents reported being involved in a video recorded resuscitation compared with

Table 1 Overview of respondent characteristics

	Pre-implementation (n=106)	Post-implementation (n=82)	P value
Role n (%)			
Faculty	30 (28%)	31 (38%)	0.209
Resident	55 (52%)	29 (35%)	0.027
Advanced practitioner	11 (10%)	3 (4%)	0.153
Nurse	3 (3%)	14 (17%)	0.001
Patient care tech	0	5 (6%)	–
Other	7 (7%)	0	–
Career experience			
<1 year	3	6	0.501
1–5 years	19	14	0.131
6–10 years	6	11	0.425
11–15 years	6	7	1
>15 years	10	14	0.813
PGY 1–3	44	19	0.187
PGY 4–5	11	10	
Unspecified	7*	1†	–

*Respondents who chose 'other' did not specify their amount of career experience in the pre-implementation survey.
 †One nurse respondent did not specify their career experience in the post-implementation survey.
 PGY, postgraduate year.

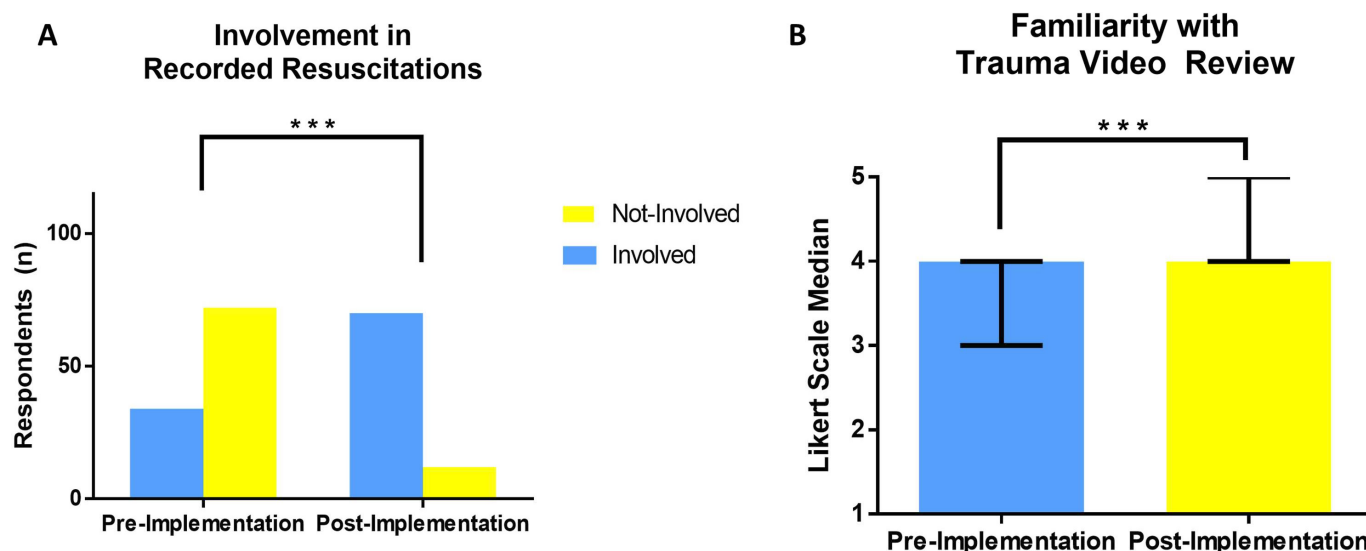


Figure 3 Comparisons of respondent involvement and familiarity with TVR. (A) Increased involvement in a recorded resuscitation after implementing TVR; y-axis represents the number of respondents. (B) Changes in familiarity with TVR; y-axis represents the 5-point Likert scale with columns representing the median and two-way bars representing the IQR. *** $P < 0.001$.

85% post-implementation ($p < 0.001$; [figure 3A](#)). Familiarity with TVR also predictably increased after implementation (4 (3–4) vs 4 (4–5); $p < 0.001$; [figure 3B](#)). Notably, there was a decrease in discomfort with being recorded among all respondents (3 (2–4) to 2 (2–3); $p = 0.002$; [table 2](#)) after implementation. This was also reflected in the resident (3 (2–4) to 2 (1.5–3); $p = 0.001$) subgroup but did not achieve significance in the faculty subgroup (3 (1.75–4) to 2 (2–3); $p = 0.053$; [table 2](#)).

There were favorable increases in the perception of trauma team dynamics among all respondents in multiple domains including team leader effectiveness (3 (3–4) to 4 (3–4); $p = 0.002$), team communication (3 (3–4) to 4 (3–4); $p < 0.001$), and confidence in individual roles (4 (3–4) to 4 (4–5); $p = 0.001$) after program implementation. These changes were largely mirrored in the resident subgroup who reported more favorable perceptions of team leader effectiveness (4 (3–4) to 4 (4–4); $p < 0.001$), team communication (3 (3–4) to 4 (4–4); $p < 0.001$), and confidence in individual roles (4 (3–4) to 4 (4–4); $p = 0.006$) after implementation. Faculty reported more favorable perceptions of the trauma team leader (3 (3–3) to 4 (3–4); $p < 0.001$) and team communication (3 (2–3) to 4 (3–4); $p = 0.006$) after implementation; however, confidence in their role during trauma resuscitations was unchanged by TVR (4 (4–5) to 4 (4–5); $p = 0.941$). The

changes in perceptions of team dynamics measures are summarized in [table 3](#).

With regard to measures of TVR value, respondents' perceptions of the value that TVR adds to the institution's trauma program increased after implementation (4 (4–5) to 5 (4–5); $p = 0.02$), which was consistent across all subgroups ([table 4](#)). Perceptions of TVR's value to education was more favorably perceived among residents (5 (4–5) to 5 (4–5); $p = 0.04$) and faculty (4 (3–5) to 4 (4–5); $p = 0.025$) but was not significant among all respondents. Similarly, perceptions of value to patient care also improved among residents (4 (4–5) to 4 (4–5); $p = 0.006$) and faculty (4 (3–5) to 4 (4–5); $p = 0.001$) after implementation but was not significant among all respondents. While perceptions of TVR's value to quality improvement did not change among all respondents or the faculty subgroup, residents did report more favorable perceptions of TVR value in quality improvement after implementation (5 (4–5) to 5 (5–5); $p = 0.01$). Among all respondents and analyzed subgroups, there was no change in perception of the value of TVR in research after implementation. The changes in perceptions of TVR value are summarized in [table 4](#).

DISCUSSION

Perceptions of TVR improved favorably after implementation of a new program, particularly related to the comfort level of being recorded, trauma team dynamics, and overall value of a TVR program to the institution. This is the first study to our knowledge to evaluate changes in perception after new program development and it has implications for those interested in starting a TVR program.

Staff or personnel concerns are commonly cited as real or perceived barriers to TVR implementation.^{13–15} In a 1999 survey of US level I and II trauma centers, 40% of those with active TVR programs reported 'personnel' concerns as a problem area, compared with 24% and 14% of previous users and non-users, respectively.¹⁴ Rogers *et al* found that 19% of adult and pediatric trauma centers cited 'personnel concerns' as their most significant TVR program problem in 2010.¹⁵ In the most recent study of TVR practices at US level I and level II trauma centers, Dumas

	N	Discomfort with recording	P value
All respondents			
Pre-implementation	106	3 (2–4)	0.002
Post-implementation	82	2 (2–3)	
Residents			
Pre-implementation	55	3 (2–4)	0.001
Post-implementation	29	2 (1.5–3)	
Faculty			
Pre-implementation	30	3 (1.75–4)	0.053
Post-implementation	31	2 (2–3)	

All data are presented as median (IQR).

Table 3 Changes in perceptions of team dynamics

	N	Team communication	P value	Team leader effectiveness	P value	Confidence in individual role	P value
All respondents							
Pre-implementation	106	3 (3–4)	<0.001	3 (3–4)	0.002	4 (3–4)	0.001
Post-implementation	82	4 (3–4)		4 (3–4)		4 (4–5)	
Residents							
Pre-implementation	55	3 (3–4)	<0.001	4 (3–4)	<0.001	4 (3–4)	0.006
Post-implementation	29	4 (4–4)		4 (4–4)		4 (4–4)	
Faculty							
Pre-implementation	30	3 (2–3)	0.006	3 (3–3)	<0.001	4 (4–5)	0.941
Post-implementation	31	4 (3–4)		4 (3–4)		4 (4–5)	

All data are presented as median (IQR).

et al found that staff concerns were important considerations in the maintenance of mature TVR programs and to centers planning to start a TVR program but were not as important as other factors to past or non-users.¹³ In a single-center report from a level I trauma center in Canada, interviews with trauma staff members prior to TVR implementation found that most staff had a favorable perception of TVR and the positive opportunities associated with it. However, many had a core sense of unease and apprehension about the program related to personal professional privacy and how video data would be used.¹⁹

Despite these staff concerns reported in studies evaluating overall TVR utilization, some of the aforementioned studies and more recent work has shown that TVR is highly regarded by end users at centers with mature programs, suggesting a possible disconnect between *perceived* concerns and *real* issues. In a 2013 study by Davis *et al* involving 39 trainees, attending physicians, and nurses, TVR was well-perceived with respect to educational value and utility, with nurses reporting the least anxiety related to TVR compared with trainees and attending surgeons.¹⁸ In the aforementioned 2020 survey by Dumas *et al*, respondents reported a median score of 8 on a 10-point Likert scale with respect to overall perception of TVR, and 62% of centers reported PI initiatives increased secondary to TVR utilization with 41% reporting that TVR activities directly led to changes in institutional practice.¹³ In a more recent single-center study from an active TVR program, participants found TVR to be more educational than punitive and overall, respondents agreed that TVR improved the quality of trauma resuscitations.¹⁷

The current study expands on this existing body of literature by comparing overall perceptions before and after implementation of a new program at an institution where one previously did not exist. Participants were more likely to disagree that the

“possibility of being videotaped during a trauma resuscitation makes me uncomfortable” post-TRV implementation, suggesting that these concerns fade after having more experience with TVR and realization of its benefits. We also found favorable improvements in perception of TVR’s role in trauma team dynamics, team leader effectiveness, communication, overall confidence in roles, and overall value of TVR to the institution. Interestingly, we did not find any significant differences in the perception of TVR role in patient care, quality improvement, education, or research, perhaps because of high baseline perceptions prior to implementation.

We have found TVR to be highly valuable for our trauma program and believe that perceptions related to TVR likely improved post-implementation from staff witnessing in real time the benefits of the TVR program. As one example, TVR was used soon after its inception to identify opportunities to improve speed of rapid infuser set-up. Directed educational sessions were conducted by the trauma program staff, and TVR was used post-training to show a 2 min improvement in this metric (unpublished data). In our opinion, this type of granular performance improvement in the trauma bay is vastly more effective with TVR. Additionally, as physicians and staff realize the power of TVR, they also witness first-hand that TVR is not used to single-out individuals or for punitive purposes. Resuscitation videos are reviewed in multidisciplinary sessions with emergency medicine staff, trainees, nurses, and physicians as well as participants from other specialties including radiologists and blood bank staff. Recordings are also used in trauma morbidity and mortality conferences, individual coaching sessions with trainees, and for performance improvement. At our institution, PGY-3 residents lead the trauma service during the day, and we started TVR coaching sessions to specifically prepare these residents for this

Table 4 Changes in perceptions of value

		Value of trauma video review to									
	N	Education	P value	Patient care	P value	Research	P value	Quality improvement	P value	Trauma program	P value
All respondents											
Pre-implementation	106	4 (4–5)	0.404	4 (4–5)	0.06	4 (4–5)	0.765	4 (4–5)	0.247	4 (4–5)	0.02
Post-implementation	82	4 (4–5)		4 (4–5)		4 (4–5)		5 (4–5)		5 (4–5)	
Residents											
Pre-implementation	55	5 (4–5)	0.04	4 (4–5)	0.006	4 (4–5)	0.749	4 (4–5)	0.01	4 (4–5)	0.002
Post-implementation	29	5 (4–5)		4 (4–5)		4 (4–5)		5 (5–5)		5 (4.5–5)	
Faculty											
Pre-implementation	30	4 (3–5)	0.025	4 (3–4)	0.001	4 (3–4.25)	0.221	4 (4–5)	0.082	4 (4–5)	0.01
Post-implementation	31	4 (4–5)		4 (4–5)		4 (3–5)		5 (4–5)		5 (4–5)	
All data are presented as median (OR).											

All data are presented as median (QR).

experience. Anecdotally, these sessions have been highly educational, and we are currently evaluating the effects of resident coaching sessions as part of a formal research project.

Limitations

Our study has several important limitations. As with any survey, our results suffer from response bias. Additionally, we were unable to calculate a response rate as the total number of email addresses on the distribution lists were unknown and therefore our results could be biased by a disproportionately high or low response rate from particular subgroups. Of the responses that were submitted, junior residents were the most represented cohort in the pre-implementation group. It is possible that lack of career experience in this group could have biased the pre-implementation cohort's overall perceptions of TVR, although, as discussed above, we have specifically targeted the more junior residents with TVR coaching sessions to prepare them for their trauma rotations.

Importantly, both the pre-implementation and post-implementation surveys were anonymous, and responses cannot be matched to measure changes at the individual level. Because of this, the pre-implementation and post-implementation groups were not identical, as evidenced by the considerably higher response rate of nurses and technicians in the post-implementation group. Although the groups were not identical, the data collected by the pre-implementation and post-implementation surveys represent a snapshot of overall perceptions of TVR during the pre-implementation and post-implementation time periods. Therefore, comparisons between these two groups of respondents are representative of a shift in overall perceptions of the TVR program during these time periods.

Another limitation was a relatively favorable baseline perceived value, possibly due to experience at other institutions as well as the pre-implementation discussions with key stakeholders that were necessary to develop the program. Similarly, respondent's baseline perceptions of TVR and their discomfort with being recorded, may be influenced by their professional roles.

Finally, we noted in our study that respondents reported a high level of involvement in TVR prior to program implementation. While it is possible that respondents were referring to exposure at a different institution, it may also be due to a misinterpretation of the question stem by the respondents. This is supported by the fact that 53% of pre-implementation respondents who reported involvement with TVR were residents who likely did not have a major role in recorded trauma resuscitations prior to training at our institution.

While our study shows that staff concerns were ameliorated over time, we did not evaluate other real concerns that must be considered when starting a program, including costs, time constraints, and medicolegal implications that have been addressed elsewhere.^{4 13 20}

CONCLUSION

Overall, our results suggest that TVR is very well perceived among involved personnel and initial concerns related to staff perceptions may decrease following program implementation. These results may encourage centers interested in starting new TVR programs by helping to mitigate staff concerns and demonstrate the value a TVR program can add, particularly with regard to improvement in team dynamics and value to the trauma program overall.

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Contributors MM: study conception, data interpretation, data analysis, drafting and revision of manuscript, final approval. ER: study conception, data acquisition, data interpretation, drafting of manuscript, final approval. KD: data acquisition, data interpretation, drafting of manuscript, final approval. RPD: study conception, data interpretation, revision of manuscript, final approval. MAV: study conception, data acquisition, data analysis, data interpretation, drafting and revision of manuscript, final approval. MAV is accountable for all aspects of the work and the guarantor.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests MAV and RPD receive paid honoraria for speaking engagements with Teleflex Corporation, which is not applicable to anything discussed in the current manuscript. RPD also receives consulting fees as a strategic advisor for Surgical Safety Technology.

Patient consent for publication Not applicable.

Ethics approval This study was reviewed by the Institutional Review Board of the University of Rochester and determined to be exempt, as the project was originally a quality improvement/performance improvement initiative. The study was conducted after data were collected from video review; as such, informed consent from participants was not required.

Provenance and peer review Not commissioned; internally peer reviewed.

Data availability statement Data are available on reasonable request.

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REFERENCES

- Hoyt DB, Shackford SR, Fridland PH, Mackersie RC, Hansbrough JF, Wachtel TL, Fortune JB. Video recording trauma resuscitations: an effective teaching technique. *J Trauma* 1988;28:435–40.
- Wurster LA, Thakkar RK, Haley KJ, Wheeler KK, Larson J, Stoner M, Gewirtz Y, Holman T, Buckingham D, Groner JJ. Standardizing the initial resuscitation of the trauma patient with the Primary Assessment Completion Tool using video review. *J Trauma Acute Care Surg* 2017;82:1002–6.
- Chreiman KM, Dumas RP, Seamon MJ, Kim PK, Reilly PM, Kaplan LJ, Christie JD, Holena DN. The intraosseous have it: A prospective observational study of vascular access success rates in patients in extremis using video review. *J Trauma Acute Care Surg* 2018;84:558–63.
- Dumas RP, Vella MA, Maiga AW, Erickson CR, Dennis BM, da Luz LT, Pannell D, Quigley E, Velopoulos CG, Hendzlik P, et al. Moving the needle on time to resuscitation: An EAST prospective multicenter study of vascular access in hypotensive injured patients using trauma video review. *J Trauma Acute Care Surg* 2023;95:87–93.
- Dumas RP, Chreiman KM, Seamon MJ, Cannon JW, Reilly PM, Christie JD, Holena DN. Benchmarking emergency department thoracotomy: Using trauma video review to generate procedural norms. *Injury* 2018;49:1687–92.
- Rees JR, Maher Z, Dumas RP, Vella MA, Schroeder ME, Milia DJ, Zone AI, Cannon JW, Holena DN. Trauma video review outperforms prospective real-time data collection for study of resuscitative thoracotomy. *Surgery* 2022;172:1563–8.
- van Maarseveen OEC, Ham WHW, van Cruchten S, Duhoky R, Leenen LPH. Evaluation of validity and reliability of video analysis and live observations to assess trauma team performance. *Eur J Trauma Emerg Surg* 2022;48:4797–803.
- Marinica AL, Nagaraj MB, Elson M, Vella MA, Holena DN, Dumas RP. Evaluating emergency department tube thoracotomy: A single-center use of trauma video review to assess efficiency and technique. *Surgery* 2023;173:1086–92.
- Maiga AW, Vella MA, Appelbaum RD, Irlmeier R, Ye F, Holena DN, Dumas RP, TVRC Investigators. Getting out of the bay faster: Assessing trauma team performance using trauma video review. *J Trauma Acute Care Surg* 2024;96:76–84.
- Nagaraj MB, Lowe JE, Marinica AL, Morshedi BB, Isaacs SM, Miller BL, Chou AD, Cripps MW, Dumas RP. Using Trauma Video Review to Assess EMS Handoff and Trauma Team Non-Technical Skills. *Prehosp Emerg Care* 2023;27:10–7.
- Bhangu A, Notario L, Pinto RL, Pannell D, Thomas-Boaz W, Freedman C, Tien H, Nathens AB, da Luz L. Closed loop communication in the trauma bay: identifying opportunities for team performance improvement through a video review analysis. *CJEM* 2022;24:419–25.
- Ritchie PD, Cameron PA. An evaluation of trauma team leader performance by video recording. *Aust N Z J Surg* 1999;69:183–6.

- 13 Dumas RP, Vella MA, Hatchimonji JS, Ma L, Maher Z, Holena DN. Trauma video review utilization: A survey of practice in the United States. *Am J Surg* 2020;219:49–53.
- 14 Ellis DG, Lerner EB, Jehle DV, Romano K, Siffring C. A multi-state survey of videotaping practices for major trauma resuscitations. *J Emerg Med* 1999;17:597–604.
- 15 Rogers SC, Dudley NC, McDonnell W, Scaife E, Morris S, Nelson D. Lights, camera, action... spotlight on trauma video review: an underutilized means of quality improvement and education. *Pediatr Emerg Care* 2010;26:803–7.
- 16 Campbell S, Sosa JA, Rabinovici R, Frankel H. Do not roll the videotape: effects of the health insurance portability and accountability act and the law on trauma videotaping practices. *Am J Surg* 2006;191:183–90.
- 17 Scrushy MG, Nagaraj M, Burke K, Kuhlenschmidt K, Jeter S, Johnson D, Brown K, Edwards C, Marinica A, Vella MA, et al. Under the Lens: Team Perception of Trauma Video Review. *J Trauma Nurs* 2023;30:171–6.
- 18 Davis L, Johnson L, Allen SR, Kim PK, Sims CA, Pascual JL, Holena DN. Practitioner perceptions of trauma video review. *J Trauma Nurs* 2013;20:150–4.
- 19 Dainty KN, Seaton MB, McGowan M, Nolan B. Staff perceptions of the implementation of a trauma video review program at a level I trauma center. *AEM Educ Train* 2021;5:e10714.
- 20 Dumas RP, Cook C, Holena DN, Qi Y, Tabone N, Studwell SL, Miglani A, Vella MA. Roll the Tape: Implementing and Harnessing the Power of Trauma Video Review. *J Surg Educ* 2022;79:e248–56.