Final Progress Report

A Novel Debriefing Strategy for Interprofessional Simulation-Based Team Training

Principal Investigator: Sandrijn M. van Schaik MD PhD

Team Members:

- Naike Bochatay PhD
- Deborah Franzon, MD
- Mindy Ju, MD MEd
- Audrey Lyndon, RN, PhD
- Mary Nottingham, RN, MSN
- Lisa Tsang, BScN, MN
- Alexander Werne MD

University of California, San Francisco

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Abstract
Purpose: To develop, test, and assess the impact of an innovative approach to debriefing after interprofessional simulation-based team training (ISBTT). Scope: Despite the growing popularity of ISBTT in healthcare suboptimal interprofessional collaboration continues to compromise safety and quality of patient care. We postulated that current ISBTT approaches are not effectively designed to improve interprofessional dynamics. We therefore developed structured debriefing guidelines for ISBTT, determined feasibility and acceptability, and examined their impact on attitudes toward teamwork, perceptions of safety culture and team performance. Methods: We used a design research approach to iteratively develop and pilot guidelines, gathering feedback from facilitators and reviewing video-recorded simulation sessions and debriefings to guide modifications. We collected baseline and post-implementation data on measures attitudes to teamwork, safety culture and team performance. Results: We successfully created and implemented novel guidelines for debriefing and prebriefing and noted a positive impact on interprofessional co-facilitation and a shift in debriefing content with more attention to team dynamics. We also noted improved interprofessional learning. We did not note any improvement in qua1.1 (1f etf.g and)Tjt1pt in quA1s.te creformancebriefing and atti at2ono Twformanceanc

management.[32] The resulting set of tentative design principles informed the first version of guidelines for a structured prebriefing and debriefing process. During this

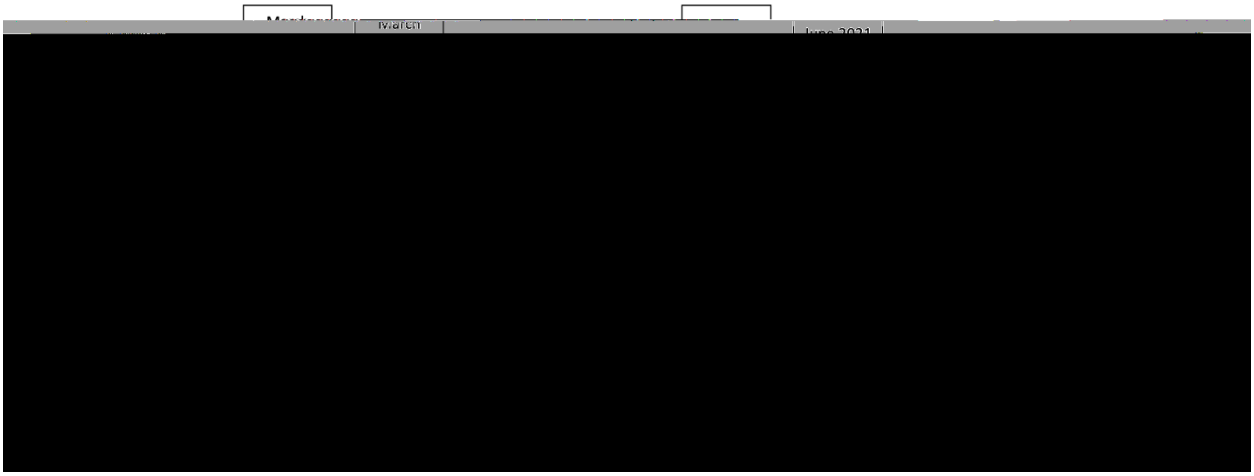
six dimensions: Teamwork Climate, Safety Climate, Perceptions of Management, Job Satisfaction, Working Conditions, and Stress Recognition. In the original publication on W K H 6 $ 4 Z K L F K F R Q V L V W V R I L W H P V W K H D X W K R U V U H S R 0.9, which represents strong reliability of the instrument. Subsequently, a short form with 32 items was created, and per the developer s recommendation, we used the first 14 items of the short form which measure teamwork and safety climate. We adapted the items to our context imported them in an online survey instrument and invited all physicians, nurses, and pharmacists working in the units in which we had implemented the debriefing guidelines to complete the survey.

c. To measure *teamwork performance* during simulation, we adapted the Mayo High Performance Teamwork Scale (MHPTS).[35] The MHPTS was developed for interprofessional teamwork in crisis situations in the initial publication, the authors report satisfactory internal consistency and construct validity by traditional psychometric indicators (Cronbach's alpha 0.85) as well as by indicators from the Rasch model (person reliability 0.77; person separation 1.85; item reliability 0.96; item separation 5.04). 7 K H \ reviewed video recorded simulation scenarios and assigned MHTPS scores to each team. They compared their ratings, calculated inter rater reliability based on their initial rating and subsequently reconciled differences to obtain final scoresentered in the analyses comparing different teams and examining changes over time.

Qualitative data: We collected three sets of qualitative data during the study: 1) video recordings of ISBTT sessions (including the pre- and debriefing) throughout the study period, (October 2020 ±December 2021), 2) video recordings and observation notes from facilitator trainingson the new guidelines (in February and March 2021) and 3) audio recordings of interviews with facilitators during the implementation phase (March – August 2021). To assess whether the guidelines impacted conversations in terms of participation in, and content of debriefing, we compared these conversations before and after implementation of the guidelines. We selected V H Y H Q sessions from the period preceding implementation of the first iteration of guidelines and V H Y H Q sessions from the period after implementation of the final iteration for qualitative analysis, including an equal number of sessions from acute care versus intensive care in the pre- and post-implementation sample V $ O W K R X J K analysis of videos focused on the pre- and debriefing, recordings of the associated simulation scenario were included to provide necessary context. One investigator (NB) attended all facilitator training sessions and took detailed notes, integrating actual quotes afterward from recordings made during training. For facilitator

operations and other challenges resulting from the pandemic constitute a potential confounder in several of our outcome measures related to patient safety. We initially had intended to also collect data on patient safety events at our institution for pre-post comparison K R Z H Y H U considering these challenges we did not think W KGDWL Q J V R would provide meaningful results.

Figure 1: Study design with the different study phases



Results

Principal findings:

During the preliminary research phase we conducted a literature review and developed five design principles for interprofessional debriefing guidelines through iterative discussions among the research team (Table 1) We used these design principles to create the first iteration of the guidelines, which we adapted based on observations and feedback obtained in interviews and focus groups as outlined below. A summary of changes made to the first iteration and the final guidelines are included in the Appendix.

Table 1 Design 3rinciples for ,nterprofessional 'ebriefing *uidelines

Design principle	Rationale/theoretical basis
1. Interprofessional collaborative approach to facilitation	Model desired behaviors; increase psychological safety for participants, social identity theory
2. Expect active participation by all	Transformational learning theory
3. Focus on teamwork and collaboration	Principles of interprofessional education, recommendations by Paradis et al[31]
4. Encourage perspective taking	Transformational learning theory, recommendations by Bainbridge and Regehr[32]
5. Make issues of hierarchy and power explicit	Recommendations by Paradis et al[31]

Quantitative data: For baseline data collection, we asked all 115 eligible participants (89 RNs and 26 MDs) in the simulation sessions that occurred between Nov H P E H U 20, 2020 D Q G February 23, 2021 to complete the ATHCT survey, and 87 responded for a response rate of 76%. During the post-intervention period, from September 20, 2021 through December 15, 2021 a total of 113 participants (70 RNs and 43 MDs) received the survey and 80 responded for a response rate of

71%. There was no statistically significant change in total ATHCT score among participants in the simulation sessions from pre intervention to postintervention (Table 2).

Table 2 Attitudes Toward Health Fare Teams Sc ale Scores Pre and Post Intervention

	All respondents	RN	MD
Pre intervention	103.4 r8.4	102.8 r7.9	105.6
Post intervention	99.2 r13.2	100.1 r9.9	98.4
P value	NS	NS	NS

Values represent mean scores r standard deviation. Max total score = 126. NS = not significant at P=0.05

We distributed the SAQ to 730 nurses, physicians, pharmacists and respiratory therapists who work in the units in which the simulation sessions occur; we received 331 responses fora response rate of 45%. As summarized in Table 3, SAQ scores *decreased* over the time period in which our intervention took place, a difference that was statistically significant and in post-hoc analysis Z D V found to be due to a decrease in SAQ scores among both nurses and physicians.

Table 3 Safety Attitudes Questionnaire Scores Pre and Post Intervention

	All respondents	RN	MD	Other
Pre intervention	55.0 r9.1	54.8 r9.1	54.7 r9.2	46.1 r12.2
Post intervention	51.6 r6.9	51.7 r6.2	49.5 r5.7	50.8 r5.8
P value	< .001	< .001	.006	NS

Values represent mean scores r standard deviation. Max total score = 70. NS = not significant at P=0.05

Ratings of team performance during simulation sessions based on video review using the MHTPS tool were not different before or after implementation of the guidelines Table 4 D Team performance during simulation sessions in the PICU received significantly higher ratings than team performance on the acute care floor (P<0.001).

Table 4 D Mayo High Performance Teamwork Scale Scores Pre and Post Intervention

	All	PICU	Floor	Scenario 1	Scenario 2
Pre	23.1 r4.4	27.5 r0.8*	21.4 r4.4	23.1 r4.9	23.1 r3.3
Post	25.2 r3.1	24.5 r2.6*	25.5 r2.7	25.5 r3.9	24.9 r2.4
3 Y D O X H	NS	NS	NS	NS	NS

*Values represent mean scores r standard deviation. Max total score = 30. NS = not significant at P=0.05 (S U H Sorvan-Jamison), *PICU teams scored significantly higher than floor teams throughout the study period, P<0.001.*

Qualitative data

Table E summarizes all qualitative data collected during the study period. For the qualitative content analysis, we reviewed an equal number of video recorded sessions E H I R U H D Q G D I W H U (7 each). We included all data sources in the thematic analysis.

Table 4 E: Qualitative 'ata 6 ources % H I R U H, 'uring and $ I W H U ,mplementation of *uidelines

Type of data	Pre	During	Post
Observations/video recordings of simulation sessions	10	6	7
Observations of train-the-trainer sessions	3	4	N/A
Interviews with facilitators	N/A	21*	N/A

**21 interviews total with 18 unique individuals 10 RN, 8 MD*

Discussion

Ju M, Bochatay, Essakow J, Tsang L, Nottingham M, Franzon D, Lyndon A, van Schaik SM.

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Benioff Children's Hospital

Debrief (15-20 minutes)

Main focus for facilitators:

Nurse Facilitator: Assess mental model, discuss role of hierarchy (speaking up)

Physician Facilitator: Perspective taking

- Physician Facilitator ~ Thank and congratulate people for participating, acknowledging that it –s challenging and how every person experiences the session differently due to their position (i Xe. U D / Z) and years of experience. Remind
- X

APPENDIX B Changes made to initial guidelines and rationale for changes

Designprinciple	Guideline element(s)	Observations	Recommendations
1. Interprofessional collaborative approach to facilitation	x Assigned roles and scripts for RN and MD facilitators in prebriefing and debriefing	Works well in prebriefing, debriefingstill mostly physician led	a. More prominent role for RN facilitator earl in debrief b. Ask MD facilitators to review their own videos and reflect on creating space for RN facilitator
2. Expect active participation by all	x Discuss Q 480.78 42.3 (l)		