APPENDICES

Appendix A: Engagement with Specialty-Specific Incident Reporting System Analysis Preparation and Detail

The Department's Quality Council spreadsheet used for analyzing engagement consisted of information from encounters that was filled out by the reporting clinician (such as procedure, whether it was a "Quality concern/Notable event" or "What went well? (Highlight a success)", types of concerns, comments about the procedure, encounter anesthesiologist(s), reporting clinician, and date of encounter) and the assessment filled out by the physician lead (author AP). For "Quality concern/Notable event" reports, there were 50 possible types of concerns that were collapsed into 6 categories for reporting purposes: equipment or technology issue, delayed or unexpected disposition, communication or scheduling concern, clinical complication, case cancellation, or other. The assessment was made up of 8 categories: discuss with committee, follow-up, follow-up & forward, forward, NTD (not to discuss), project, project & forward, and track. Assessments of reports that were discussed with the committee would later change to project, project & forward, follow-up, or follow-up & forward.

The outcome total number of unique patient encounters with a report was included to describe the number of anesthesia encounters where a quality or safety concern was present and provide insight into whether multiple anesthesiology team members would submit multiple reports for a single case.

Specialty-Specific Incident Reporting System Quality Safety Concern Categories

Quality of Safety Concern Categories	Quality of Safety Concerns
Equipment or Technology Issue	• Epic/software problem • Equipment malfunction • Equipment unavailable/delayed • Ventilator Malfunction • Other equipment/technology
Delayed or Unexpected Disposition	• Delayed case • ICU Hold • PACU hold • Unanticipated ICU admission • Unanticipated hospital admission
Communication or Scheduling Concern	• Administration error • Care coordination • Case scheduling • Communication with clinical staff • Handoff • Other communication • Other scheduling and cancellation
Clinical Complication	• Airway/oral injury • Dental injury • Ocular injury

	• Other patient injury • Significant arrhythmia • Cardiac arrest • Anaphylaxis • Other airway/respiratory • Other cardiovascular • Aspiration (suspected or confirmed) • Awareness (suspected/confirmed) • Delayed Emergence • Other disposition and holds • Intraoperative Death • Other medication/pharmacy • Pharmacy concern • Cannot intubate • Wet tap • Block complication • Surgical intubate • Line complication • Unplanned reintubation • Other procedural complication • Myocardial infarction
Case Cancellation	• Canceled after induction • Canceled before induction
Other	• Blank • Other • Blood delayed or not available • Transfusion reaction • Other transfusion • Needle stick • Other provider safety

Specialty-Specific System Assessment categories.

Assessment Category	Description
Discuss with Committee	Discussed report with committee
Follow-up	Obtain more information about report
Follow-up & Forward	Delegated to another unit/service line and then follow-up
Forward	Delegated to another unit/service line
NTD	Not to discuss
Project	Create a QI project
Project & Forward	Create a QI project and forward to an anesthesia technician
Track	Track report

Appendix B: January 2023 and May 2023 survey questions and modifications for analysis.

Information collected included how likely a physician was going to submit a report (“Extremely unlikely”, “Unlikely”, “Neutral”, “Likely”, and “Extremely likely”) and how confident they were that their concerns would be addressed (“Not confident at all”, “Slightly confident”, “Somewhat confident”, “Fairly confident”, “Completely confident”, “Not applicable”). The responses for these questions were collapsed into “Extremely unlikely”, “Unlikely”, “Neutral”, and “Likely”/“Extremely likely” and “Not confident at all”, “Slightly confident”, “Somewhat confident”/“Fairly confident”/“Completely confident”, and “Not applicable”, respectively. Additionally, both surveys collected reasons a physician was less likely to fill out a report (“Limited time”, “Reporting link was not handy/Difficult to access”, “Form not designed for physicians or CRNAs”, “Nothing will change as a result of me filling out the form”, “The report could lead to punitive action for me or my colleagues”, “Don’t know what should be reported”, and “Not applicable/ I didn’t observe any potential patient safety issues”) for the hospital-wide system (January 2023 only) and specialty-specific system (January 2023 and May 2023). Physicians checked all reasons that applied and there was also a free response option. A written free response that was similar to one of the seven given responses and not yet checked, was recoded to the given response. Only the given responses were used in the analysis as written free responses each had a frequency of one. The January 2023 survey also collected information on the number of hospital-wide reports filled out in the last fiscal year from September 2021 through August 2022 (0, 1-2, 3-5, 6-10, 10+ reports). For the analysis, these categories were categorized into 0, 1-2, and 3+ reports.

January 2023 Survey

Questions	Original Options	Modified Options for Analysis
1. Do you currently provide any anesthetic care in the adult hospital?	• Yes • No	[No modifications made.]
2. Approximately how many SAFE reports did you fill out in the last fiscal year (September 2021 through August 2022)?	• 0 • 1-2 • 3-5 • 6-10 • 10+	• 0 • 1-2 • 3+
3. If you observed a possible patient safety incident and did not fill out a SAFE report, what were the reasons you did not fill out the report? [Check all that apply]	• Limited time • Reporting link was not handy/Difficult to access • Form not designed for physicians or CRNAs • Nothing will change as a result of me filling out the form • The report could lead to punitive action for me or my colleagues • Don’t know what should be reported	[A written free response that was similar to one of the seven given responses and not yet checked, was recoded to the given response.]

	• Not applicable/ I didn't observe any potential patient safety issues • (Free text)	
4. How likely are you currently to create a STANDUP report if you experience a quality or safety issue?	• Extremely unlikely • Unlikely • Neutral • Likely • Extremely Likely	• Extremely unlikely • Unlikely • Neutral • Likely/ Extremely Likely
5. What are the reasons you are less likely to fill out a STANDUP report? [Check all that apply]	• Limited time • Reporting link was not handy/Difficult to access • Form not designed for physicians or CRNAs • Nothing will change as a result of me filling out the form • The report could lead to punitive action for me or my colleagues • Don't know what should be reported • Not applicable/ I didn't observe any potential patient safety issues • (free text)	[A written free response that was similar to one of the seven given responses and not yet checked, was recoded to the given response.]
6. How confident are you that if you filled out a STANDUP report, your concern would be addressed?	• Not confident at all • Slightly confident • Somewhat confident • Fairly confident • Completely confident • Not applicable	• Not confident at all • Slightly confident • Somewhat confident/Fairly confident/Completely confident • Not applicable

May 2023 Survey

Questions	**Original Options**	**Modified Options for Analysis**

1. Do you currently provide any anesthetic care in the adult hospital?	• Yes • No	[No modifications made.]
2. How likely are you to submit a report if you experience a quality or safety issue?	• Extremely unlikely • Unlikely • Neutral • Likely • Extremely Likely	• Extremely unlikely • Unlikely • Neutral • Likely/ Extremely Likely
3. What are the reasons you are less likely to fill out a report? [Check all that apply]	• Limited time • Reporting link was not handy/Difficult to access • Form not designed for physicians or CRNAs • Nothing will change as a result of me filling out the form • The report could lead to punitive action for me or my colleagues • Don’t know what should be reported • Not applicable/ I didn’t observe any potential patient safety issues • (free text)	[A written free response that was similar to one of the seven given responses and not yet checked, was recoded to the given response.]
4. How confident are you that if you filled out a report, your concern would be addressed?	• Not confident at all • Slightly confident • Somewhat confident • Fairly confident • Completely confident • Not applicable	• Not confident at all • Slightly confident • Somewhat confident/Fairly confident/Completely confident • Not applicable
5. Currently, reports are triaged by QI leadership and then reviewed by a volunteer committee of anesthesiologists on a monthly basis. The team sends out a monthly report to the department which includes a list of improvement projects based on the reports, a tip sheet, and summary statistics.	• Too much feedback • The right amount of feedback • Too little feedback	[No modifications made.]

Is the feedback currently provided to the department sufficient?		
6. What suggestions do you have to improve the EPIC reporting system itself, how reports are reviewed, and/or how feedback from the review process is shared with the department?	[free response]	[No modifications made.]

Appendix C: Interview protocol

ICDP Anesthesiology Qualitative Interview Guide

Date:	Type of Provider:
Interviewer:	Participant ID:

Research Question: How do you design a system and culture to optimize quality and safety reporting in the operating room, with specific attention to mechanisms for feedback, clinician engagement, and psychological safety?

Introduction

Summary:

1. *Confidentiality*
2. *Skip and end at anytime*
3. *30 minutes, hard stop*
4. *Consent to record*

Hi, my name is XXXXXX and I work with the Evaluation Sciences Unit, a group of researchers at Stanford School of Medicine focused on improving healthcare. We are currently working with the Stanford Anesthesiology department on a project to examine physician engagement in quality and safety reporting, specifically Will Gostic and Ashley Peterson. Today, we want to learn about your understanding of this project and how you think about quality and safety reporting.

I do not represent Stanford Health Care (SHC) or the Anesthesiology department and everything you say today will remain **confidential.** This means that we will ensure to not share your identity when sharing your insights with the team. We'll plan to talk about your experience with the SAFE reporting system, and the new anesthesia system.

Conversations typically take around **30 minutes**, and you are free to **skip questions or end the interview** at any time. **To be cognizant of your time**, how long are you able to chat with me today? Do you have a hard stop we need to pay attention to?

I would like to audio record the interview to help me focus on you instead of taking notes. Are you comfortable with me **audio recording** our confidential discussion?

- Can you **please say the date** and that you **consent to being recorded**?
-

Questions

Background Information: Just to confirm you are a [*role: i.e. anesthesiologist, trainee, CRNA, etc*.], correct?

Section 1.

Domain: Safety and Quality Definitions

Let's start with talking about safety and quality and the difference between the two [*It's also fine if you don't see any difference]*:

1. What do you see as a safety issue?
2. What do you see as a quality issue?
3. What is the difference between the two?

Section 2.

Domain: SAFE reporting experience, Clinician Engagement/ Psychological Safety

4. What do you think about the current safety and quality monitoring system at Stanford?
    - *Tell me about your best and worst experience with SAFE reporting at Stanford.*

5. Have you ever filled out a SAFE report? *[If they are unaware of the system, can describe it as an online, nationally-mandated reporting system run by Stanford Health Care to monitor patient safety events]*
    - Why or why not?
    - Who typically fills out these types of reports?
    - What would incentivize you/ disincentivize you to submit a report?
    - What type of impact do they typically have?

6. Think back to the last safety event that you witnessed or were otherwise involved in—either directly, or near miss, compromising patient care.
    - Was a report completed? Why or why not?
    - If yes, who completed the report?
    - How was that decision made?
    - What happened as a result of the report?

7. How are near-miss events – [*an event that almost compromises patient care but is caught before it reaches the patient*] – handled differently than events that actually compromise patient care?
    - Are these more or less likely to be reported?
    - What percentage of safety events overall, including near-miss events, would you guess go unreported?

Section 3.

Domain: SAFE Reporting, Voice, and Empowerment

8. As a *[role]* , how empowered do you feel to submit a SAFE report yourself?
    - What impact do you feel a report coming from a [*role*] has relative to other clinical roles? What impact would you ideally like a SAFE report to have?

9. What would be your ideal process for handling safety and quality issues in the OR?
    - Do you know of any safety or quality reporting process anywhere (other departments, other institutions) that you feel works well? Any specific to the OR? Can you tell me more?
    - What evidence would you need to believe reports would be handled in a sensitive and appropriate way?
        i. How do these issues change when it's a matter of professionalism?

Thank you so much for your time so far. We are about half-way through. We're going to shift gears to talk about your perspective of the implementation of the project. Before we do that, do you have any questions for me?
Let's take 10 seconds or so before the next section just to recalibrate, glance at email/text if needed, grab water or whatever you need.

Section 4.

Domain: Clinician Engagement for Anesthesiology Quality System/ Any Alternate Quality Systems

For interviewees in the Anesthesiology department:

In October 2022, Stanford Anesthesiology launched a novel quality and safety tracking tool for anesthesiologists and certified nurse anesthetists, which can capture both quality and safety concerns. I'm referring to the tab at the end in EPIC to report any quality or safety issues before closing out the chart.

10a. What have you heard about this system?

11a. Have you submitted any reports through this new system?

- Why or why not? *[Note this may not be applicable depending on their role]*
- What would make you more likely to report a quality or safety issue through this system?
- What would make you less likely to use this report?

For interviewees in other departments:

10b. What other ways exist to report quality or safety issues in your *[department/ hospital (adult versus pediatric]?*

11b. Have you submitted reports through *[that system*]?

- Why or why not?
- What would make you more likely to report a quality or safety issue using that system?

Section 5.

Domain: Clinician Engagement/ Feedback

12. In the future, would you like to receive feedback on actions taken as a result of any quality and safety reports you submit?
    - What kind of feedback would you hope for?
    - Would a department-wide monthly report be acceptable to you as a form of feedback? What kind of detail would you want in it?

13. Who else might we talk to about this? Could you direct us to three people, please? *(Request for contact information as well)*

Any other questions for us? Is there something you were expecting us to ask that we didn't?

Rest of the guide are questions for direct stakeholders in the project.

Section 6.

Domain: Background/Role in Project

14. What is your role in the project?
    - Is that a hands-on/direct role?

Section 7.

Domain: Aims and Limitations

15. What problem is the project hoping to solve?
- What aspects of this problem do you think the project will change?
- What aspects of this problem do you think the project cannot change?

Section 8.

Domain: Pre-mortem (Implementation Barriers and Facilitators)

16. Imagine this is in the future and the project has failed—what would it mean to have failed? What ways did it fail?
- Why did it fail?
- What are all the ways this project could fall apart? Who would be responsible for this?

17. Imagine this is in the future and the project has succeeded, what does that mean?
- How will you know the project is working?

Section 9.

Domain: Lightning Report Content

18. What's working now and what is getting in the way/ not working?

Section 10.

Stakeholders and Organizational Factors

19. Who else is involved?
20. Who supports you in leadership?
    a. Who might you need additional support from?

Any other questions for us? Is there something you were expecting us to ask that we didn't?

Appendix D: Characteristics of Clinicians Who Participated in Qualitative Interviews

Type of clinician[1]	**Number interviewed (N=24)**
Anesthesiologists	12

Surgeons	4
Nurses (includes RNs and CRNAs)	4
Quality improvement project team (including anesthesiologists and QI specialists)	4

1. Trainees included in their respective categories

Appendix E: Codebook

Codes

Name	Description
1 Safety and Quality Definitions	Answers to the following questions: 1. What do you see as a safety issue? 2. What do you see as a quality issue? 3. What is the difference between the two?
Adverse Events and Near misses	These are hazards that result in harm as well as hazards/ mistakes that don't result in harm.
Difference between quality and safety	Difference between quality and safety depending on the clinician
2 Thematic Codes	Themes on safety and quality reporting generally rather than specific to SAFE/ new anesthesiology system.
Barriers to reporting	Any noted barriers to safety or quality reporting
Clinician type submitting reports	This is to record the type of clinicians who tend to submit reports or what the perception is of who submits reports.
Facilitators to reporting	Elements that make it easier to submit safety or quality reports.
Professionalism	Anything to do with how systems capture colleagues professionalism or lack thereof. Excludes impact of reporting and psychological safety.
Psychological safety	Any content that pertains to "individual confidence in the belief that speaking up will not result in embarrassment, rejection, criticism, or punishment from others."
Suggestions or improvements	Any suggestions on what could be done to improve current safety and quality reporting systems at Stanford.
3 SAFE reporting experience	
Events and experience submitting reports-SAFE	This code includes both the events that prompted someone to submit a SAFE report as well as the experience submitting the report.
Follow up as reporter or involved party in report-SAFE	What occurs after submitting a report or if there is a report submitted which involves you.

Name	Description
Perceived Impact of SAFE reporting	Actual or perceived impacts of SAFE reporting. Could be an organizational change or professional/punitive feedback/ being reviewed by people who are not colleagues.
4 Alternate or ideal quality safety reporting systems	Content regarding alternate department/ institution models for quality and safety reporting.
Confidence building in reporting	Meant to capture any content relevant to this question: What evidence would you need to believe reports would be handled in a sensitive and appropriate way? More about what happens with the reports/ how they are handled
Experience with other systems or ideal system	Description of systems in other departments/child hospital or other institutions.
5 New anesthesiology system	Anything noted about the new anesthesiology system.
Experience submitting reports (new system)	Clinicians reporting their experience submitting reports.
Follow up as reporter (new system)	Captures what information people want to hear after submitting reports (ie monthly progress reports) either about the status of the report or actions taken as a result.
Impact of new anesthesiology system	Any noted impacts of the new anesthesiology QI reporting system.
Overall feedback to department	
6 Implementation team	These codes are for the direct team members of the implementation team.
Aims and potential impact	To capture these questions: What problem is the project hoping to solve? • What aspects of this problem do you think the project will change? • What aspects of this problem do you think the project cannot change?
Implementation barriers	What has made it more difficult to implement the new system (actual encountered barreirs)
Implementation facilitators	What has made it easier to implement this new system (actual encountered facilitators)
Pre mortem failure	Includes potential barriers and sources of failure. Content for these questions: Imagine this is in the future and the project has failed—what would it mean to have failed? What ways did it fail? • Why did it fail? • What

Name	Description
	are all the ways this project could fall apart? Who would be responsible for this?
Pre mortem success	Includes potential facilitators and sources of success. Content from the following questions. Imagine this is in the future and the project has succeeded, what does that mean? • How will you know the project is working?
Role	Role in implementing the system.
z Emergent codes	
Bias in reporting	This code is meant for any group that might be over-represented in terms of who is reported on.
Examples of events or incidents that don't get reported	Any incident or hypothetical scenario brought up by an interviewee as something they would NOT report.
Measurement of safety	
Other Relevant Parties	This is meant to identify other parties that are involved in the implementation. (trying to avoid using the term stakeholders)