

Overcoming Inconsistencies: Enhancing Inter-Rater Reliability in the Trauma Registry

Kayla R. Chu BSN RN, S. Alexandra Kim BA RN CAISS, Kimberly Madison MS RN, Shoshana Rothwax MS RN, Valerie Billingsley BSHA CSTR, Shannon R. Hanchin, Jean Fitzgerald BSN RN, Robert J. Winchell MD FACS

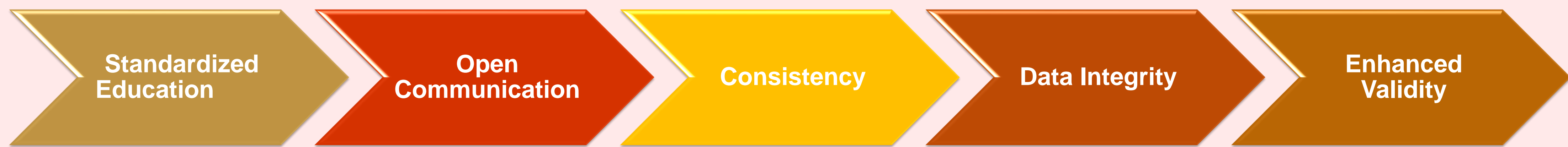
What is the problem or challenge you identified?

In Fall of 2022, the trauma registry team noticed their Inter-Rater Reliability (IRR) validation rates hovered below the acceptable threshold of 96%. To investigate, they ran numerous reports to validate arbitrary data fields to identify the most problematic data before the 2023 reporting period. Meeting the data validation goal can be challenging for several reasons:

- Experience level of individual registrars
- Updating knowledge to the most recent dictionary definitions and revisions
- Differing interpretations of the current data dictionary and accompanying guidelines
- Variations in diagnosis and procedural coding

Figure 1 illustrates the objectives of the new validation process, emphasizing the importance of standardized education and transparent communication fostering enhanced validity.

Figure 1: Goals for the New Validation Process



Describe the intervention you developed/change you implemented to address the problem:

REPORT WRITER

Through the analysis of report queries within the ImageTrend registry software, the team can identify any inconsistencies in data abstraction. These reports are generated monthly for a comprehensive data cleaning assessment across random data fields. For example, in July 2022, a discrepancy was identified during this process, outlined in Figure 2.

Figure 2: Action Plan through Report Querying

Data Abstraction and Error Identification	The registry team noticed an error in abstraction practices for the 2022 National Trauma Data Bank (NTDB) updates relating to Pre-maturity and Congenital Anomalies.
Request for Correction	The team contacted ImageTrend to request a bulk correction of 895 cases.
Expansion of Issue Identification within Regional Hospital Network	Coincidentally, a report revealed that our New York-Presbyterian Regional Trauma Network (NYP RTN) sites also had the same issue.
Agreement on Bulk Correction	The RTN members agreed to a bulk correction of inaccurate data → ImageTrend updated 1,438 total cases with a click of a button.
Data Resubmission and Implementation of Internal Validator	After corrections, the registry team resubmitted the data to the Trauma Quality Improvement Program (TQIP) and ImageTrend set up an internal validator alert for the RTN which signaled errors in the problematic data fields.

INTER-RATER RELIABILITY

In October 2022, the registry team updated their IRR form to require the original abstractor's signature and date in acknowledgment of any corrections that were made. This practice followed the advice of the America Trauma Society (ATS) to foster open communication and educational feedback. The new form provided:

- Transparency among registrars
- Constructive criticism while avoiding punitive action
- Opportunity for the original abstractor to review their errors and/or share disagreements with the validation findings

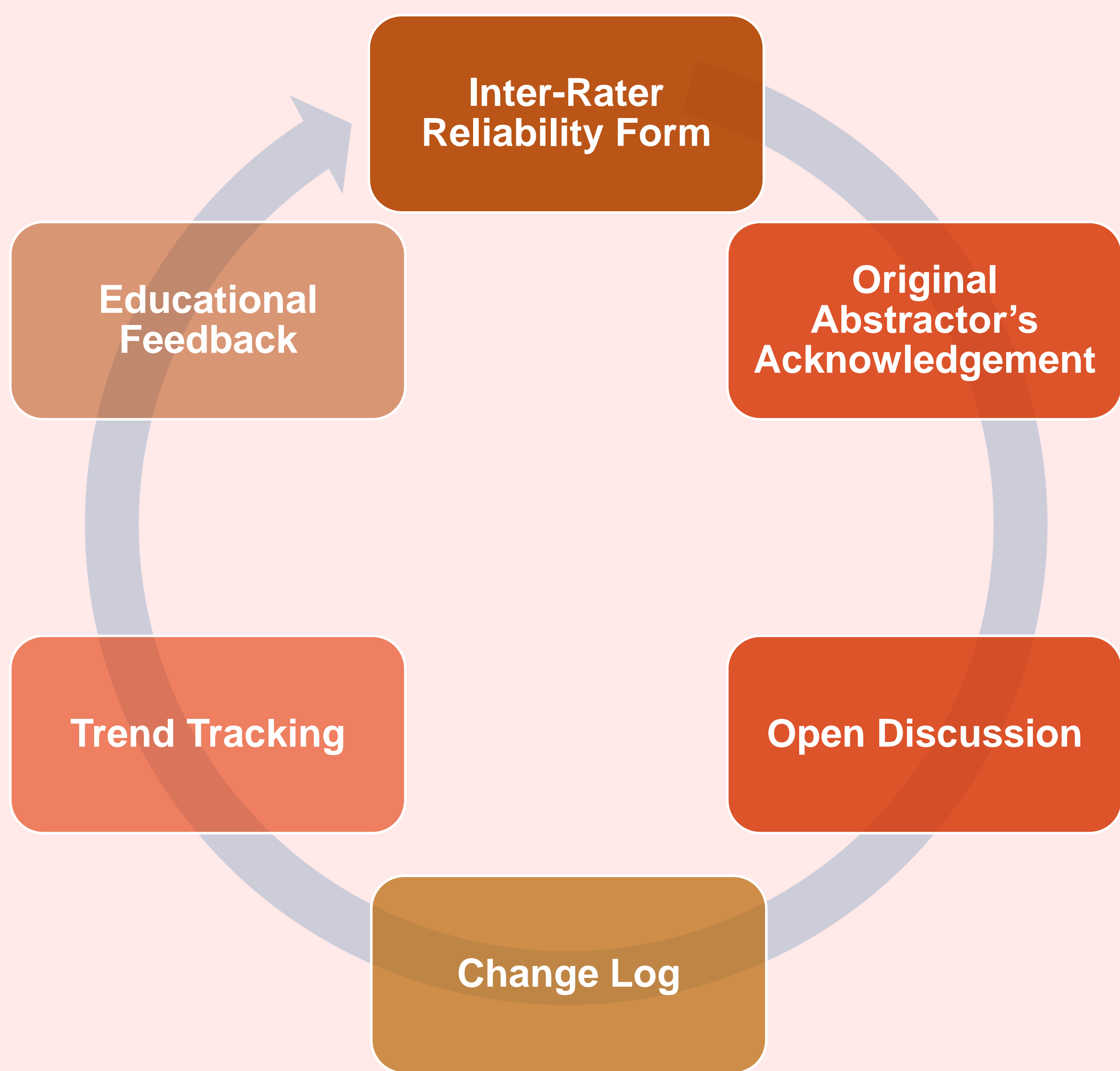
TREND TRACKER

The registry team also implemented a new trend tracker form to note recurring issues within a specific field each month. The trend tracker facilitated targeted discussions and educational sessions by identifying data issues concerning abstraction practices, data hierarchy, mapping, and the necessity for registry vendor-assisted bulk corrections. At the end of each month, the registry team created a summary that highlights discrepancies for review and future reference.

CHANGE LOG

By December 2022, the team reinstated the use of a change log to track changes and clarifications to abstraction practices. The updated workflow is shown in Figure 3. Prior to the abstraction of 2023 trauma registry cases, it was also required that the team complete the TQIP 2023 course, ensuring a comprehensive grasp of the recent NTDB updates.

Figure 3: Inter-Rater Reliability Workflow



How did you measure the effects of the change?

Each month the registry team analyzes the findings of the IRR studies, trend tracker, and trauma registry queries. When the trend tracker detects a high inaccuracy rate for a particular data field, the team identifies the root cause. For instance, Vent Days in the registry is a free text box and while some registrars left the field blank, others entered "0" to reflect no days on the ventilator. Depending on who was completing the IRR form, this field was marked incorrect. After reviewing the Submission Frequency Report, the team discovered that both "blank" and "0" responses were mapped to the field value of "0" vent days. Consequently, the team updated the IRR forms from January to June 2022 to accommodate the acceptance of both responses without any point deductions. As a result, data validation rates increased, shown in Figure 4, prompting the team to implement necessary revisions to the change log.

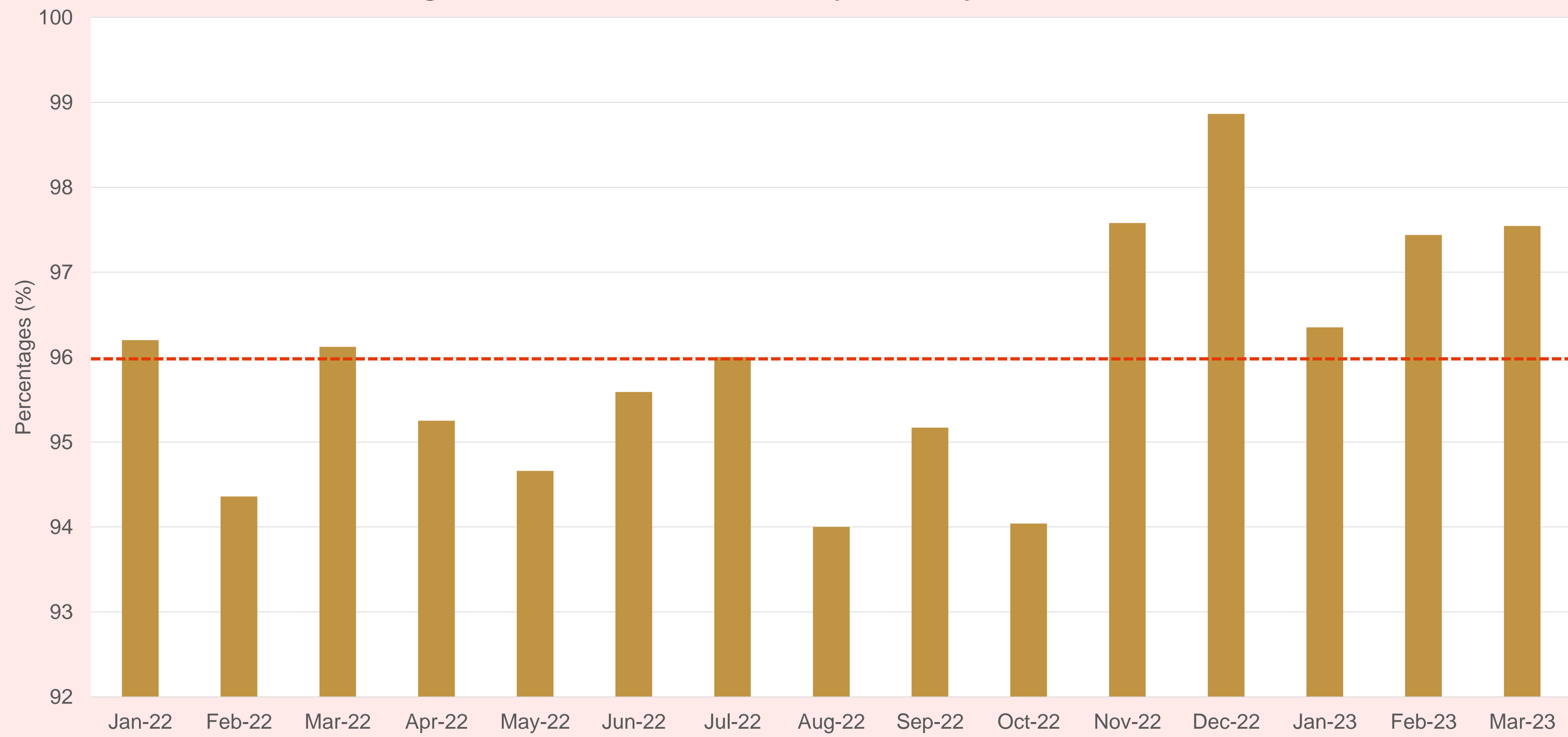
Figure 4: Inter-Rater Reliability Percentages Before and After Vent Days Correction



Since implementing this new IRR approach in October 2022, the following improvements have been noted:

- Inter-rater reliability validation percentages remain > 96% (Figure 5)
- Registrars report better communication and understanding of errors
- Registrars are better equipped to prevent recurrent errors in the future
- Productivity increased due to a decreased need to revisit and further clarify previously addressed issues
- Efficiency improved as fewer manual corrections were required

Figure 5: Inter-Rater Reliability Monthly Validation Studies



How did you sustain the change?

Inter-rater reliability is an integral component of a trauma registry, ensuring consistent, accurate, and valid data. High IRR leads to better analysis and strategies for preventing trauma. It also builds trust in registry data and enables accurate benchmarking. Sustaining this process change has been reliant on:

- Consistent, ongoing communication between registrars facilitated through email threads, registry calls, and validation forms
- Detailed change log audits and a facility data dictionary that serve as valuable reference tools to minimize variability among abstractors
- Continuing education courses offered within the ATS and TQIP platforms throughout the year to familiarize abstractors with new changes to the data dictionary, provide comprehensive instruction on data abstraction techniques, and offer opportunities for practice and feedback

Maintaining a high level of IRR will remain an ongoing process, as continuous monitoring and assessment help identify areas for improvement and ensure sustainable data quality.

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