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Original Research Article

Comparative analysis of routine clinical debriefings and incident reports: insights for patient safety and teamwork enhancement

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Abstract

Background: Routine clinical debriefings (RCDs) have been shown to improve communication, team reflexivity, and safety in clinical settings. When combined with incident reports (IRs), RCDs offer a potential tool for enhancing quality improvement frameworks. This study aimed to identify and compare healthcare safety-related information captured through RCDs and IRs in a Belgian emergency department operating across two distinct facilities.

Methods: This study employed a quasi-mixed-method design with a monostrand conversion approach. Information was collected from 90 RCDs and 263 IRs. Data were analyzed using two frameworks: the World Health Organization's Incident Report Classification Grid and the Debriefing and Organizational Lessons Learned Grid.

Results: The findings revealed significant differences in the types of information captured by RCDs and IRs. RCDs predominantly highlighted teamwork, internal organization, and procedural issues, while IRs focused more on care processes, patient concerns, and patient flow. These complementary insights demonstrate the value of integrating RCDs and IRs to create a comprehensive understanding of patient and clinician safety.

Conclusions: This study highlights the complementary nature of RCDs and IRs in addressing healthcare safety. RCDs foster team reflexivity and promote open discussions about systemic challenges, directly improving team cohesion, resilience, and learning. Combining RCDs and IRs provides actionable insights for enhancing safety and driving organizational improvements.

Keywords: safety; patient; emergency service; hospital; management; risk; practice community; debriefing

Introduction

Routine clinical debriefings (RCDs) are structured interprofessional meetings, guided by trained facilitators who aim to promote team reflexivity, learning, and empowerment in clinical settings. They help teams to learn from experience [1–4]. During RCD, clinicians exchange viewpoints on the past shift to emphasize positive aspects and identify potential shortcomings. RCDs present an opportunity for discussion, learning, and system enhancement [5–8]. Recent studies even highlight the value of RCDs in facilitating leadership interventions, offering peer support, and providing leaders with insights into team well-being [9, 10]. By addressing team well-being, it can be assumed that positive effects will extend to productivity, organizational efficiency, morale, and the quality of patient care [2, 11, 12]. Moreover, RCDs can align with this Safety-II approach as they not only address areas for improvement but also explore how positive performance can be maintained [9, 13, 14]. However, without a concerted effort to extract value from the insights gleaned, there is a risk of participants viewing RCDs as a mere ritual, devoid of tangible impact, leading to demotivation or process fatigue [14].

Despite international recommendations and evidence supporting the benefits of RCD, its widespread adoption remains limited [15, 16]. Escalating adoption of RCD during the COVID-19 pandemic underscores its potential as the linchpin for healthcare team reflexivity [5]. However, substantial change depends on its seamless integration into a more comprehensive improvement ecosystem. While some studies have

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explored effective methods for conducting RCD, there is a glaring paucity of evidence concerning its integration into a cohesive strategy. This gap becomes clearer when considering the lack of established implementation strategies for embedding RCDs within broader quality and safety initiatives. Thus, it becomes imperative to explore strategies that not only sustain but enhance the promise held by RCD. Studying the actual topics clinical teams discuss during RCDs should facilitate their alignment with a broader patient safety strategy. Achieving this goal necessitates structured RCD processes and standardized tools for analyzing the data collected during these sessions.

Well-established processes for reporting patient safety information, such as incident reports (IRs), patient experience surveys and patient complaints, have been in place for a considerable time. Both IRs and RCDs function as critical tools for healthcare teams to convey essential safety information, indicating a potential synergy between these mechanisms [9]. To advance the practical implementation of RCDs, it is essential to examine how RCDs and IRs can be integrated within a holistic quality and safety strategy. Investigating their complementary roles could lead to a more cohesive and effective approach to enhancing patient safety, but also fortify the overall framework for continuous improvement in healthcare settings. Therefore, the objectives of the study were to identify and compare healthcare safety-related information and insights captured through RCDs and IRs.

Methods

Design and hypotheses

The study employed a quasi-mixed-method with a monostrand conversion design. To meet the two stated objectives, we collected information and insights from RCDs and IRs. To ensure a thorough and comprehensive analysis, two frameworks were applied in the coding process: (I) The World Health Organization's (WHO) Incident Report Classification Grid (adapted to the hospital) [17]; and (ii) The Debriefing and Organizational Lessons Learned (DOLL) Grid [14]. Table 1 illustrates the structure and granularity of these two frameworks. The information and insights extracted from both processes, RCDs and IRs, were coded based on these two grids as the WHO framework is more focused on IRs while the DOLL framework is more aligned with RCDs. Once sorted, we transformed qualitative data into quantitative data to compare distributions and gain a deeper understanding of the relationships between the data and the two frameworks. Given that our study follows a mixed methods approach, the Mixed Methods Appraisal Tool (MMAT) was used to assess the relevance and rigor of this approach. Meanwhile, The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) was used as a reporting guideline, with particular emphasis on the quantitative component of the study. These tools helped guide the design and execution of the study. The proposed design aimed to test the following empirical hypothesis that "the information and insights obtained from RCDs and IRs are complementary in terms of healthcare safety."

Study site

Researchers collected data from the Emergency Department (ED) of the University Hospital of Liège, Belgium. This ED operates in two geographically distinct facilities: Main and Satellite. The Main facility is part of a tertiary care hospital located in a suburban area, while the Satellite is an urban secondary hospital. The ED from the Main facility was raised under the cultural umbrella of a Public University Teaching Hospital while the second ED history started as part of a private clinic that was merged with the Main Hospital. Therefore, the facilities can be considered as two distinct hospitals operating under the same overarching organization and management structure. The two facilities combine an annual ED census of ~100 000 patients, with the Main handling ~57% and the Satellite handling 43%. The ED employs ~50 physicians and 120 nurses. Nurses are assigned to Main or Satellite while physicians are scheduled at both sites.

Data collection

Routine clinical debriefings

We collected data from RCDs conducted between February 2021 and December 2021. RCDs were performed face-to-face after morning, afternoon or night shifts among medical and nursing members of the ED in the two facilities. Debriefings were held in a private room adjoining the unit to promote access and privacy. All debriefers had a clinical background and previous training in Debriefing with Good Judgment and the Plus-Delta method [18]. Debriefing began with a quick status check of the team, then, a plus/delta investigation was conducted. Pluses/deltas and suggestions for improvement were written down by the debriefer. Then a single delta or plus was chosen to be explored to better understand the clinical and team thoughts and motivations behind the topic and to explore possible solutions by encouraging team reflexivity. Once the RCD was over, a brief report was written and included: the date, location, number of participants, CD duration, plus/delta points and specific suggestions for improvement. Participant anonymity was faithfully maintained in the report. The Quality and Safety Manager (QSM) collected the reports and entered them into the RCD database. The QSM works within the Emergency Department with the goal of organizing and overseeing the department's quality and safety strategy. The QSM is also responsible for coordinating IRs and RCDs processes, as well as developing action plans based on the analyzed data.

Incident reports

The data related to IR were systematically extracted using computer-based methods, as they are routinely collected at the Hospital BlueKango software system. IRs are typically gathered through electronic submission by clinicians, who have the option to report either anonymously or with identification. Once an IR is submitted, it is forwarded to the QSM for detailed analysis and follow-up. To ensure consistency with the RCDs, only IRs generated by the same ED team were included in the analysis. Therefore, IRs from other hospital units concerning the ED were excluded to maintain uniformity in the dataset.

Data analysis

Our study followed a "monostrand conversion design," meaning that coded qualitative data were later transformed into quantitative data, with the quantitative phase being predominant. This approach allowed us to better align with our

Table 1. Overview of the structure and granularity of the frameworks

The DOLL		The WHO's incident report classification grid	
Dimensions	**Sub-dimensions**	**Incident type**	**Incident characteristics: number and examples**[a]
Patient		Patient accidents	6 Items (e.g. falls, pressure ulcer)
Individuals	People behavior	Medical device/Equipment	8 Items (e.g. malfunction, unavailable)
	Training and knowledge of the workplace		
	Physical and psychological state		
Internal unit organization	Roles, tasks, and responsibilities	Behavior	11 Items (e.g. verbal aggression, substance use issue/abuse)
	Communication		
	Humans and materials resources management		
Procedures		Documentation	4 Items (e.g. missing document, delay in accessing the document)
Work environment	Material and equipment	Patient flow/handover/discharge[b]	5 Items (e.g. wrong patient, inadequate)
	Computer technology		
	Site and infrastructure		
	Workload		
Other Hospital Units		Healthcare-associated infection	7 Items (e.g. urinary, respiratory)
Institution	Institutional policy	Sterile equipment[b]	8 Items (e.g. not sterile, connection failure)
	Economic and political constraints		
	Institutional network		
		Medication	14 Items (e.g. wrong medication, wrong dose)
		Nutrition	10 Items (e.g. inappropriate product temperature, exceeded shelf life)
		Oxygen /Gas/Vapour	8 Items (e.g. incorrect administration mode, inappropriate storage/conservation)
		Loss/Damage of patient property[b]	0 Item
		Organization/Resources	5 Items (e.g. bed availability, workload)
		Blood/Blood products	10 Items (e.g. wrong patient, contraindication)
		Patient care[b]	9 Items (e.g. incomplete, no fly)
		Others[b]	0 Item

[a]Excluded from this study analysis due to the extensive number of characteristics.
[b]Adapted from the original classification.

study objectives than a typical mixed-methods design with in-depth thematic analysis.

Qualitative analysis

The analysis followed the six steps of thematic analysis described by Braun and Clarke. Two researchers started the analysis by individually reading RCDs and IRs several times to become familiar with the data. This approach acknowledges that multiple issues can be reported within a single IR or RCD. The researchers started collectively the sorting on a subset of the data to reach reasonable understanding and convergence to foster consistency of the process (60 RCD and IR items). Then, the researchers worked independently to classify each item into the DOLL and WHO frameworks. Resulting individual analyses were compared and discussed by the researchers until consensus was reached. For that purpose, the two researchers exposed each item and its classification. When a classification was not the same between the researchers, they reanalyzed the item and together reached 100% reconciliation through discussion, curiosity, frames, exploration, and clarification using a process similar to a learning pathway grid. Due to their different professional backgrounds, discussion helped improve interrater reliability. Prior to the analysis, all transcriptions were verified independently by two researchers in Excel to ensure consistency and accuracy before importing the data. This screening process also improved traceability. To manage and facilitate the data analysis process, the data were uploaded to NVivo, which supported the organization, coding, and analysis. The data were securely stored in accordance with data protection protocols to ensure confidentiality.

Quantitative analysis

Following this, we conducted statistical analyses on the transformed qualitative data. We summarized the distributions of (sub-)dimensions and incident types from the classifications, along with Plus and Delta categories, using descriptive statistics in the form of frequency tables and percentages. Fisher's exact tests were employed to investigate the relationship between the different sub-dimensions and information/insights types (Plus/Delta). Subsequently, we performed pairwise proportion comparisons using Fisher's tests with Benjamini & Yekutieli correction. No missing data were encountered as the quantitative data were derived directly from the previously coded qualitative data. The transformed data were securely stored in accordance with data protection

protocols to ensure confidentiality. To support the quantitative analysis, R Commander was used for statistical processing and calculations.

Ethics

This study was approved by the ethical committee of the University Hospital of Liège with the reference number 2023/29. All participants gave informed consent to participate in the study.

Results

Data were collected from 90 RCDs, with 42 held at the Satellite site and 48 at the Main site. There was a total of 458 items with 231 from the Satellite and 227 from the Main.

IRs information and insights were collected from a total of 263 reports, with 98 items originating from the Satellite site and 165 from the Main site. To address our study objectives of identifying and comparing healthcare safety-related information and insights captured through RCDs and IRs, the results are structured into two parts. The first section provides an overview of the distribution of items between RCDs and IRs, while the second section compares the content within and between the two classifications to highlight similarities, differences, and their potential implications for patient safety strategies.

Information and insights identification: what do clinicians talk about when they debrief and report incidents?

Using DOLL framework

In Table 2, we present the distribution of RCDs information and insights based on their type (Plus/Delta) and the DOLL (sub-)dimensions. Out of the 458 RCDs elements, 280 (61%) were categorized as negative. Nearly half of the data (43%) pertained to Internal Unit Organization, while approximately a quarter (26%) was related to the Work Environment. Additionally, no positive elements were identified in the Patient or Institution categories. The association between the type of content (plus/delta) and the dimension to which it belongs is significant (P-value < .001). Regarding IRs information and insights, which is exclusively comprised of deltas, Table 2 illustrates their distribution in relation to the DOLL framework.

Using WHO framework

Table 3 presents the distribution of RCDs information and insights based on their type (Plus/Delta) and IRs using the WHO classification. Nearly half of the RCDs (43%) pertained to Organization/Resources, while just under a quarter (22%) related to Patient Flow/Handover/Discharge. Notably, no data were categorized in seven out of the 15 types (Patient Accident, Healthcare-associated Infection, Sterile Medical Equipment, Nutrition/Food Production, Oxygen/Gas, Loss/Damage of Patient Property, and Blood/Blood Products).

Information and insights comparison: do clinicians prioritize different issues in debriefings and incident reports?

Regarding the DOLL, the results of the pairwise comparisons of delta proportions across the dimensions show significant differences between the Internal Unit Organization dimension and each of the other dimensions. Post-hoc chi-square tests indicate a significantly lower proportion of deltas in the Internal Unit Organization dimension (P < .001). Additionally, the Procedures dimension shows a significantly higher proportion of deltas compared to the Environment dimension (P < .001), suggesting more negative items in the Procedures dimension.

When it comes to the WHO classification, post hoc chi-square tests indicate a significantly lower proportion of deltas in the Organization/Resources category compared to most other incident types, except for Documentation and Medication (P < .001). Conversely, the Equipment category shows a significantly higher proportion of deltas compared to Patient Flow/Handover/Discharge (P = .002), Organization/Resources (P < .001), and Others (P = .003). Additionally, the Patient Care category has a significantly higher proportion of deltas compared to Patient Flow/Handover/Discharge, Organization/Resources, and Others ($p < 0.001$), indicating more negative items in this category.

Discussion

Statement of principal findings

We compared what clinicians talked about during RCDs with what they reported via IRs systems. We assumed clinicians would bring up different information and insights in each system. The findings highlighted significant differences in data distribution between RCDs and IRs: clinicians voiced different safety information in each tool. In RCDs, they discussed teamwork, organization and procedures application more often. In IR, they reported care processes, patient concerns, and patient flow more often.

Interpretation within the context of the wider literature

Questioning healthcare dynamics: what do RCDs and IRs reveal?

Our results confirm that RCDs and IRs offer significantly different information and insights concerning healthcare safety. This validates our hypothesis that these two data sources reflect distinct aspects of safety concerns in the healthcare domain. Looking at the Plus and Delta elements, we see that teams often talk about the negative aspects of clinicians' work environment. Specifically, all comments about Equipment and Computer Technology are negative. Teams frequently mention that support services like maintenance and information technology need to be easily accessible to improve patient care in an interdisciplinary environment. These observations offer a fresh perspective, as few studies to date have underscored their importance [19–21].

Of particular interest, we noticed that the elements related to perceived workload are not significant for both IRs and RCDs. There are very few mentions in IRs, and the elements mentioned in RCDs are mostly positive. This observation contrasts with existing literature, which often emphasizes the direct impact of workload on care quality. Given that workload is known to be challenging nowadays, we expected to see more Deltas than Pluses in this category [22]. One possible explanation is that workload issues often appear as a consequence of other problems. In these cases, our classification rule was to list and categorize the root cause instead. When the workload was directly discussed as problematic, it

Table 2. Distribution of debriefings and incident reports information and insights based on their type (plus/delta) and the (sub-)dimensions of the DOLL framework.

		Routine clinical debriefings				Incident reports	
DOLL dimensions	**DOLL sub-dimensions**	**Delta, *n* (%)**	**Plus, *n* (%)**	**Total, *n* (%)**	**Examples (P = Plus; D = Delta)**	**Delta/Total, *n* (%)**	**Examples (all deltas)**
Patient		3 (100)	0 (0)	3 (1)	D: Many patients come to the ED with general medical issues because they don't have a general practitioner.	36 (14)	A patient arrives at the ER demanding a COVID test. Reception says it's not standard procedure. Patient insists, claiming COVID symptoms. Triage nurse explains she needs to see a doctor first. Patient threatens complaint. Doctor orders tests. Patient leaves after tests, still threatening complaint
Individuals		19 (90)	2 (10)	21 (5)		13 (5)	
	People behavior	14 (88)	2 (12)	16 (3)	P: The team today was in a good mood;, the atmosphere was positive.	13 (5)	A bed for Mrs. X was scheduled on the +5B floor. Despite the service doctor's approval, the nurse on +5B refused the patient transfer. It required involvement from higher management to facilitate the transfer.
	Training and knowledge of the workplace	5 (100)	0 (0)	5 (1)	D: It was the medical assistants' first day. Not all of them were well acquainted with the surroundings or what was expected of them. Some had reviewed the service presentation documents, others had not	0 (0)	
	Physical and psychological state	0 (0)	0 (0)	0 (0)		0 (0)	
Internal unit Organization[a]		71 (36)	128 (64)	199 (43)		13 (5)	
	Roles, tasks and responsibilities	25 (48)	27 (52)	52 (11)	P: Given the understaffing and heavy workload, teams have been really flexible and supportive. Whenever something needed doing—whether it's a task, a patient call, or a triage—whoever's available jumps in, no matter their usual role. This teamwork has helped tackle challenges. And they've also gotten a lot of help from the pediatric emergency nurse when possible, which has been a lifesaver.	2 (1)	A stroke patient arrived (with a score of 2, showing increased symptoms in the past 15 minutes). The doctor accompanying the patient left, leaving the student nurse alone, resulting in no monitoring as recommended in the stroke procedure.
	Communication	25 (37)	43 (63)	68 (15)	D: The nursing team found communication to be more challenging. They felt they were not adequately informed about patient updates or important information. The doctors responded that due to the workload being relatively "light," they deemed it unnecessary to communicate every minor update.	4 (1)	The patient underwent X-ray and CT scans with a request indicating "non-COVID." However, after the tests, the orderly informed that the test was positive. The doctor who ordered the tests did not communicate the information

(continued)

Table 2. (Continued)

DOLL dimensions	DOLL sub-dimensions	Routine clinical debriefings				Incident reports	
		Delta, *n* (%)	Plus, *n* (%)	Total, *n* (%)	Examples (P = Plus; D = Delta)	Delta/Total, *n* (%)	Examples (all deltas)
	Human and material resources management	21 (27)	58 (73)	79 (17)	P: Since October, there has been an increase in medical staff. Nurses have expressed satisfaction, noting that work organization has become easier since then.	7 (3)	A patient with cerebral hemorrhage was transferred to the operating room with monitoring equipment. However, the equipment remained in the operating. This led to a stagnation of emergency equipment because there was no monitoring equipment prepared in the operating room for the patient's arrival. This equipment is crucial for the proper management of the patient in shock
Procedures[b]		43 (98)	1 (2)	43 (10)	D: The management of psychiatric patients remains chaotic. The flow of these patients is unclear. When should the teams contact the psychologist or psychiatrist? What about during on-call hours?	66 (25)	A patient transferred from the Dominican Republic with approval from the orthopedic surgeons was admitted to the ED due to a lack of available beds in the orthopedic surgery unit upon arrival. This did not comply with the procedure, which mandates direct admission to the receiving unit.
Work environment[b]		82 (70)	35 (30)	117 (26)		31 (12)	
	Material & equipment	23 (96)	1 (4)	24 (5)	D: Team suggests having a second blood collection cart in Zone C of the ED for seated patients. This would minimize the need for back and forth between different areas.	21 (8)	Missing stretchers. For several days now, there has been a shortage of stretchers in the emergency department. Contacted the stretcher dispatch to locate them within the hospital -> managed to find one, but we're still short of at least three stretchers.
	Computer technology	8 (100)	0 (0)	8 (2)	D: ECGs don't pick up the network in boxes 3 and 4, preventing us from scanning the patient's bracelet and saving the ECG to their file. What about moving the existing Wi-Fi relays or adding another one to improve coverage	2 (1)	Unable to scan the labels printed from the printer as it constantly shifts, resulting in incomplete printing. Request for intervention made, IT and lab notified.
	Site and infrastructures	22 (92)	2 (8)	24 (5)	P: The new Zone for seated patients has a much quieter environment since the renovations, with less noise pollution, which is greatly appreciated	6 (2)	The triage infrastructure causes confusion among patients. There's an issue with directing patients from registration to the triage area; some get lost between the two.
	Workload	29 (48)	32 (52)	61 (13)	D: The teams feel like they didn't perform well due to the intense workload they faced tonight	2 (1)	Upon our arrival in the department, there are 28 patients in the B emergency unit with only one assigned nurse. No reinforcements are planned. The workload is unsafe for everyone, including both patients and nursing staff. There are 13 hospitalization boxes in addition to the full ward in the morning, with a mix of 3 flu cases and 2 COVID cases circulating in the department. Nursing staff are exhausted by their working conditions

(continued)

Table 2. (Continued)

DOLL dimensions	DOLL sub-dimensions	Routine clinical debriefings				Incident reports	
		Delta, *n* (%)	Plus, *n* (%)	Total, *n* (%)	Examples (P = Plus; D = Delta)	Delta/Total, *n* (%)	Examples (all deltas)
Others hospital units		56 (82)	12 (18)	68 (15)	D: Lack of specialist consultations. For instance, when asked for a cardiology consultation, we responded to the doctor to submit a written request, and the consultation will be provided within the week. Similar situations have been noted in pulmonary and ophthalmology consultations.	94 (35)	The patient was sent to the hospital ward with medical approval over the phone. However, the ward sends the patient back to the emergency department because they changed the room assignment and are now unable to accommodate the patient
Institution		6 (100)	0 (0)	6 (1)		10 (4)	
	Institutional policy	4 (100)	0 (0)	4 (1)	D: The nurses are questioning their reassignment to simulation activities. There was discussion about allocating days off for nurses to participate in simulations. What's the status on that?	6 (3)	Small fire in a trash can due to a cigarette. Smoke and odour spread throughout the entrance hall of the emergency department. What about the tobacco-free hospital project?
	Economic and political constraints	1 (100)	0 (0)	1 (0)	D: The team feels it's unfair that recall shifts aren't paid for supervisors but are for residents. They think the challenges of being an emergency physician aren't recognized enough within the hospital	0 (0)	
	Institutional Network	1 (100)	0 (0)	1 (0)	D: There was a highway accident, but teams weren't informed even though four ambulances arrived one after another. They claimed the victims knew each other. The emergency coordinator called the dispatch center for explanations, but they couldn't provide any	4 (1)	A patient suffering from sickle cell disease has been discharged from our site (satellite location) since 3:30 this morning. The –3AB ward is available to receive her, but it's impossible to find an ambulance at night for the transfer. At 6:30, we contacted UMS (ambulance company), but they couldn't be on our site before 8 a.m
Total		280 (61)	178 (39)	458 (100)		263 (100)	

Notes. Post hoc chi-square indicate:
[a]Less deltas in internal unit organization ($P < .001$).
[b]More deltas in the dimension procedure and work environment ($P < .001$).

Table 3. Distribution of routine clinical debriefings and incident reports information and insights based on their type (plus/delta) and the WHO framework.

	Routine clinical debriefings			Incident reports
WHO incident type	Delta, *n* (%)	Plus, *n* (%)	Total, *n* (%)	Delta/Total, *n* (%)
Patient accidents	0	0	0 (0)	6 (2)
Medical device/Equipment[a]	25 (100)	0 (0)	25 (5)	12 (5)
Behavior	17 (90)	2 (10)	19 (4)	38 (14)
Documentation	3 (100)	0 (0)	3 (1)	13 (5)
Patient Flow/Handover/Discharge	67 (66)	35 (34)	102 (22)	76 (29)
Healthcare-associated infection	0 (0)	0 (0)	0 (0)	0 (0)
Sterile equipment	0 (0)	0 (0)	0 (0)	1 (0)
Medication	4 (100)	0 (0)	4 (1)	5 (2)
Nutrition	0 (0)	0 (0)	0 (0)	1 (0)
Oxygen /Gas/Vapour	0 (0)	0 (0)	0 (0)	3 (1)
Loss/Damage of patient property	0 (0)	0 (0)	0 (0)	7 (3)
Organization/Resources[b]	81 (41)	118 (59)	199 (43)	22 (8)
Blood/Blood products	0 (0)	0 (0)	0 (0)	6 (2)
Patient care[c]	44 (98)	1 (2)	45 (10)	72 (27)
Others	39 (64)	22 (36)	61 (13)	1 (0)
Total	280 (61)	178 (39)	458 (100)	263 (100)

Notes. Post hoc chi-square indicate:
[a]More deltas in the category equipment compared to patient flow/handover/discharge ($P = .002$), organization/resource ($P < .001$), and others ($P = .003$).
[b]Less deltas in organization/resources category compared to other incident types, except for documentation and medication ($P < .001$).
[c]More deltas in the category patient care compared to patient flow/handover/discharge, organization/resources, and others ($P < .001$).

was classified under "Workload." Similarly, teams mentioned that when the workload was manageable, it was such a rare occurrence that they wanted to highlight it. This aspect likely skews the interpretation of the results.

Conversely, Internal Unit Organization exhibits fewer deltas, with inter-team behaviors appearing predominantly positive. RCDs and IRs reveal that the Internal Unit Organization has fewer deltas and shows predominantly positive inter-team behaviors. This finding highlights the effectiveness praised by clinicians of team coaching interventions, such as briefings, debriefings, feedback sessions, and regular simulations, which may foster a more positive perception of the team organization and encourage the development of team reflexivity. We posit that team reflexivity, facilitated by the debriefing process, not only enhances collaborative learning but also contributes to the well-being and staff resilience, reducing professional burnout [8, 23, 24]. Recent studies suggest that debriefing Plus/Delta elements plays a crucial role in reducing emotional fatigue related to work [10]. Indeed, focusing solely on negative aspects does not lead to a significant reduction in emotional fatigue. These considerations underscore the need to explore strategies for effectively reporting daily successes of clinical teams, as these valuable insights have the potential to improve team well-being and efficiency. One notable consideration is that the presence of a skilled facilitator, specifically trained in RCDs and knowledgeable about the importance of recognizing successes, might have played a key role in bringing out the positive elements. Unfortunately, we did not record the pluses spontaneously mentioned by the team without the facilitator's prompting. Investigating this aspect in the future would be valuable. A skilled facilitator who understands the RCD analysis process seems essential for guiding discussions, maintaining focus on clinical practice improvements, and recognizing team successes. This rekindles the debate surrounding the effectiveness of scripted versus non-scripted debriefings [24, 25] and the impact of facilitator-led versus self-led approaches [26, 27].

Transitioning to the method of extracting relevant information and insights related to healthcare quality and safety, two key messages should be highlighted. First, we should highlight that our study fails to capture variations linked to the most commonly reported incidents in the literature, such as medication errors [25]. Hospitals often do not systematically quantify the occurrence of these incidents, suggesting that the actual frequency of such events may be significantly higher than what is reported. For instance, one study found that the incidence of medication errors was nearly 20 times higher than that identified through voluntary reports. We hypothesize a similar trend in our study, thereby highlighting the limitations of our ability to reliably assess actual incidents using perceived data from RCDs or even IRs. Second, it is important to realize that the way we analyze the data influences the issues or successes we identify. Our insights and interpretations depend on the analytical approach and theoretical model we use, which can affect decision-making.

Enhancing DOLL applicability: towards a dual-use strategy

Our findings support that DOLL and WHO frameworks can both be applied to RCDs and IRs. The DOLL tends to offer a managerial perspective, whereas the WHO has a more patient-centered focus.

In this context, we observe that certain items are underutilized depending on the framework employed. For instance, among the 458 RCD elements categorized using the DOLL framework, only three fall under the patient dimension. This finding aligns with the previous DOLL study [14] and is likely due to the fact that very few items mentioned during RCDs were exclusively related to the patient. Furthermore, it is noteworthy that no debriefing data were classified within 7 out of the 15 incident types of the WHO framework. When examining the DOLL sub-dimensions, for our 458 debriefings, no data was classified under the physical and psychological state

category, and only one item was included in the constraints and network categories.

In examining IRs, we find that the WHO classification leads to the underutilization of various items, while the DOLL framework shows a more consistent distribution. This difference could be due to the WHO framework's primary focus on patient care, which may overlook organizational aspects and result in fewer relevant items for incidents that are not solely patient-centered [26]. The observed parallels between the DOLL and WHO frameworks suggest that a revision of the DOLL framework could improve its utility and complement the WHO framework, revealing the added value of use both frameworks simultaneously. The DOLL framework serves a mainly managerial and actionable role, concentrating on broad organizational aspects, while the WHO framework offers a more detailed and structured approach to incident characteristics, emphasizing patient safety and providing a comprehensive incident census. The precision of the WHO framework facilitates a detailed inventory of incidents, a function that the DOLL framework does not emphasize as much [27]. The combined use of the DOLL and WHO frameworks to analyze RCDs and IRs offers a way to merge detailed incident documentation with managerial insights for quality improvement. This approach reflects implementation science methodologies that aim to translate detailed evidence into effective, actionable strategies for enhancing healthcare practice. Lastly, one of the strengths of the DOLL framework lies in its ability to classify elements, both positive and negative, effectively, thus positioning itself within a safety II paradigm [28, 29].

Implications for policy, practice, and research

The study highlights the value of using RCDs and IRs to provide complementary insights into healthcare safety. In terms of policy, there is a clear need to exploit RCDs similarly to how IRs are handled, applying a dual analytical approach to capture both patient-centered and organizational aspects. This would allow a more comprehensive understanding of incidents and successes in clinical environments.

For practice, the findings underscore the importance of structured debriefings in fostering team reflexivity and enhancing well-being. The presence of trained facilitators appears to be a critical factor in bringing out positive elements in team discussions, thus promoting a more resilient and collaborative work environment. Implementing such facilitated sessions can reduce burnout and improve team performance. Future research should focus on exploring the techniques and strategies for conducting effective "positive debriefings." This includes determining the optimal methods and comparing the data and outcomes of RCDs led by different facilitators. Additionally, evaluating the levels of reflexivity developed within teams as a result of various RCD styles will provide deeper insights into improving clinical team dynamics.

Strengths and limitations

This study offers key strengths. It is the first to assess the safety management aspect of RCDs and employs two frameworks for a more comprehensive evaluation. Additionally, the large number of IRs and RCDs analyzed strengthens the validity of the findings. However, some limitations should be noted. It remains unclear whether the themes discussed were raised spontaneously or prompted by the facilitator, which may impact the interpretation. Moreover, the study is limited to a single geographic area, and broader comparisons across institutions or emergency departments in multiple hospitals would be necessary for more generalizable conclusions.

Conclusion

Our study identified and compared healthcare safety information captured through RCDs and IRs. The findings highlight clear differences in the type of information provided by each tool, reflecting their complementary roles in safety management. RCDs focused on teamwork, internal organization, and procedural issues, while IRs emphasized care processes, patient concerns, and patient flow. Combining RCDs and IRs offers a more complete picture of healthcare safety. RCDs promote team reflexivity and open discussions on systemic challenges, improving team performance, resilience, and collaboration. This contributes to better organizational efficiency and higher-quality patient care. Using both the DOLL and WHO frameworks demonstrated their distinct strengths. The DOLL framework provides actionable insights for managers, while the WHO framework delivers patient-centered incident data. Together, they create a balanced approach to aligning team discussions with safety and quality goals. Our findings support integrating structured RCDs into broader quality and safety strategies. When paired with IR analysis, RCDs can identify key areas for improvement, strengthen team cohesion, and enhance staff well-being. Future research should investigate not only the long-term impact of this integration on team performance, organizational culture, and patient outcomes but also focus on identifying a structured method of integrating RCDs and IRs into routine clinical practice

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Author contributions

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Conflict of interest

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Data availability statement

Data available on request due to privacy/ethical restrictions. The data that support the findings of this study are available on request from the corresponding author, M.P. The data are not publicly available due to request from the ethics committee to safeguard the privacy of research participants (hospitals) or the directives from the involved hospitals to maintain the confidentiality of patient information.

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