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Narrative perspective, person references, and evidentiality in clinical incident reports

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Abstract

Clinical incident reporting provides opportunities for organisational learning, ideally leading to improved patient safety. However, this process requires healthcare professionals to record experiences where patients were harmed, or had the potential to be harmed. It also requires others to interpret the language used in order to make recommendations. We investigate the use of epistemic and evidential markers in incidents labelled as 'user error', in which a responsible individual is categorically implied, as opposed to other types of incidents where responsible individuals may not be tacitly assumed, such as 'failure of sterilisation or contamination of equipment' and 'lack of suitably trained staff'. By analysing the frequency of various linguistic features related to authority and accountability, we provide insights into the pragmatics of clinical incident reporting. We find that user error reports differ from other categories of reports in that the identity of the narrator is obscured and the locus of agency is removed, and that this difference is irrespective to levels of patient harm. User error reports differ from other incident reports in the following statistically significant ways: they are more likely to be written using impersonal absent narration and feature significantly higher frequencies of epistemic markers of uncertainty and evidentiality.

Keywords: Authority; Clinical incident reports; Epistemic markers; Evidentiality; Patient safety; Person references

1. Introduction

Clinical incident reports are one tool used to support learning from events in medical practice where patients are harmed or potentially harmed. Patient safety is a serious issue, and in the United Kingdom approximately 10% of hospital patients are injured during their stays (Leape, 2009). Although healthcare professionals are encouraged to report clinical incidents, including near misses, there is widespread underreporting of patient safety incidents in both the UK and the USA (Cousins et al., 2012; Wagner et al., 2013; Waring, 2005). In 2010, the UK's National Patient Safety Agency (NPSA) attempted to address this by making it mandatory for National Health Service (NHS) trusts in England and Wales to report all incidents involving severe harm or death to the National Records and Learning System (NRLS), although reporting of incidents resulting in no, low or moderate patient harm remained voluntary (Donaldson et al., 2014). Regardless of the severity of the incident, reports rely on healthcare professionals' descriptions of the incident and interpretations of the

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NPSA's definitions of severity. There is no national reporting form or system in the UK, and various healthcare professionals across the NHS complete a locally-designed form under localised circumstances (e.g., the format of the form, and the setting that the form is completed in, including the specific workplace demands and constraints the professional is under). These factors have led to a lack of consistency and reliability in the information included in clinical incident reports. There is also evidence that some healthcare professionals believe that there is little organisational learning following incident reporting until or unless there are severe incidents; thus limiting the belief amongst those working with patients that reporting is effective (Sujan, 2015; Sujan and Frau, 2015). All of this, collectively, limits the usefulness of the reports for organisational and system learning and inhibits opportunities to improve patient safety.

Medical errors with equipment such as infusion pumps are often among the most serious patient safety incidents (Cassidy et al., 2011), as they are typically used to administer and dispense medication. The vast majority of medication errors directly link with these concerns: more than 50% of reported medication errors are due to misadministration, while another 16.5% are the result of dispensation errors (Cousins et al., 2012). An 'out by 10' error,[1] which is a standard class of error involving an infusion pump, might not seem severe; however, if it results in an over-infusion it could cause permanent injury or death, while under-infusion of the same degree could leave a patient in unnecessary discomfort or pain (Thimbleby and Cairns, 2010). Due to the seriousness of errors with devices, there is a need to examine the subtype of incident involving medical devices that are linked specifically to 'user error'.

Unlike other error classification terms (e.g., *failure of sterilisation or contamination of equipment*, *lack of suitably trained staff*), 'user error' uses the active voice to emphasise an agent who operated the device and the user's perceived mistake. Computer scientists have made effective arguments that the ultimate causes of 'user error' are often the design of devices (Thimbleby, 2008) or environmental factors (Li et al., 2008), arguing that if problems are systemic or due to the devices then they may be eliminated by changes to device or system design. Learning from incidents categorised as user error has been stressed for these reasons (Horsky et al., 2005).

This paper uses quantitative methods to understand the narrative features of clinical incident reports in a subcorpus focusing on medical devices and user error, compared with a baseline corpus. Both are from the UK's NRLS database. Specifically, we address the following three questions:

1. Are incidents labelled as 'user error' narrativised differently than other incident types?
2. How might the use of narrative style (e.g., first, second- and third-person viewpoints) and person references in incident reports link to user error within a medical context?
3. Are epistemic weakening and markers of evidentiality more frequent in incident reports attributed to user error?

By understanding when and how different narrative structures are used in clinical incident reports, and how these map onto the use of evidential and epistemic markers, we are able to extend the longstanding debates at the intersection of pragmatics and medical linguistics. In addition, our results may make a contribution to clinical practice by understanding issues of authority and accountability in a context where organisational learning is critical in order to improve patient safety.

1.1. Clinical incident reporting

If clinical incident reporting consists of healthcare professionals recording those events that caused or had the potential to cause patient harm, then there are a number of different ways to both approach and understand this phenomena. Because there is no national reporting system in the UK, the circumstances and settings in which the reports are completed may vary. In addition, the members of staff who fill them out, and the demands they do so under differ. As a result, it is difficult, though not impossible, to apply genre criteria such as that developed by Biber and Conrad (2009). The full table of the situational characteristics of clinical incident reporting in the NHS based on Biber and Conrad's (2009) genre criteria is Appendix 1.

By understanding the production circumstances of incident reports using Biber and Conrad's (2009) genre criteria, it is possible to treat clinical incident reporting as a *genre*, and given their purpose (i.e., to provide a description of a patient safety incident) and workplace context, we posit that this text genre can be understood as a form of organisational *narrative*. While we apply Labov and Waletzky's (1967) approach to narrative to these documents, there are other equally valid approaches. One of these is Biber's (1988, 1993) microstructural approach. In Biber's (1988, 1993) binary between narrative and non-narrative, he lists specific linguistic features that are typical of the narrative genre (past tense, perfect

[1] An 'out by 10 error' refers to an error by a multiple of ten. It could be made by adding/omitting a zero or miskeying a decimal. See Thimbleby and Cairns (2010) for more information.

aspect, third-person, and speech act verbs) and those features that characterise the non-narrative genre (e.g., present tense, attributive adjectives); clinical incident reports can be understood as satisfying many of the structural features of narratives that he outlines. Although his approach for studying narratives differs greatly from Labov and Waletzky's (1967), as we will demonstrate using examples from our data set, there is little consensus in linguistics as a broad discipline in defining a narrative beyond the basic notion that it is at least two clauses that are spatiotemporally bound (Labov, 1972; Sacks, 1995; Thornborrow and Coates, 2005; Toolan, 2012).

Example 1
UserError83: *The incorrect volume was programmed into a pump therefore air entered into the giving set.*[2]

As we can see in Example 1, if the clauses are reversed: *Air entered into the giving set[;] therefore[,] the incorrect volume was programmed into a pump*, the narrative is fundamentally altered. Example 1 satisfies both criteria for a narrative.

However, clinical incident reports may occasionally take the form of a single clause, which restricts their narrative function, and leaves much information untold; this may also restrict organisational learning.

Example 2
UserError108: *Incorrect infusion rate set on intravenous drug infusion pump.*

This very brief report lacks two clauses, thus failing to satisfy the criteria of a narrative that has been generally agreed upon by linguists. The lack of two clauses means that the content cannot be tested for spatiotemporal binding. If we apply Biber's (1993) linguistic features of narrative, the report contains a perfect aspect, though the past tense must be implied (absence of the auxiliary verb *was*), and there is an absence of pronouns, including the third-person. However, it is possible to argue that Example 2 *is* a narrative based on the context in which the story was told. Labov (2006) states that narratives are the abstraction of an event that a potential narrator has deemed reportable, and with Waletsky, he devised a list of six components of narratives (abstract, orientation, complicating action, result, evaluation, coda) (Labov and Waletzky, 1967). Of these, Labov (1997) considers only complicating action, which describes what happened, as essential to narratives. At their most fundamental level all clinical incident reports describe a patient safety issue that has been considered worthy of being reported; that is, whether brief, as seen in Example 2, or detailed, as will be demonstrated in Example 3, an incident report contains a 'complicating action' and will meet Labov's criteria for a narrative. Therefore, on some level while we can understand incident reports as descriptions of incidents, and also as arguments about incidents (they tell the teller's version of the incident), at the very least they are *intrinsically* 'complicating action'. Beyond that, all incident reports contain an implied coda, or a statement of 'what it all means' by being recorded at all – there was an error or near miss that either caused patient harm or had the potential to cause patient harm.

Example 3
UserError753: *Patient transferred to the ward from ITU, day 1 post op. Handed over that the patient had a PCA. The prescription was checked on PICS when handing over on the ward. When the ITU staff had gone back to their unit, I checked the programme settings on the pump as it persistently bleeped. After checking there was no air in line etc, I realised when looking at the PCA settings that the 'lock out' time (which should be programmed at every 5 mins) was actually set incorrectly at 50 mins. This meant that the patient was in unnecessary pain and the PCA was set up incorrectly, meaning that the drug could not be delivered appropriately.*

This report is more complete in terms of the classic Labovian narrative structure than the previous examples. There is a clear orientation, in addition to the complicating action and coda, and while there is no direct resolution, it is implied (i.e., if the lockout time was incorrectly set at 50 minutes, which was discovered and reported, presumably it would have been set to the correct time of five minutes that was described, therefore fixing the problem).

While some clinical incident reports may lack the detail necessary to contain the beginning, middle, and end that characterise the traditional Aristotelian narrative, incident reports are never without purpose, which is key to narratives from a pragmatic perspective. The reason why the report is filed, or the story is told, is always clear at the meta level: there

[2] All examples are provided in full, using their original language features, including syntax, grammar and acronyms. We have chosen not to explain acronyms in each example because it is possible that the narrators are using different terms than we would expect, and it is impossible for us to verify their use (e.g., while *S/N* is most likely to refer to *staff nurse* in our data, it is possible that there is a report where it is used to refer to *sister nurse*). This choice does not impede the discussion of examples.

was a critical incident that either caused or had the potential to cause patient harm, and with adverse events significantly underreported in healthcare that the narrator deemed the incident 'tellable' is significant.

1.2. Indexing authority and responsibility

The act of writing an organisational narrative, such as a formal report, requires the author to linguistically commit to their evaluation. How individuals present their perspectives on a given topic, and the linguistic features employed to encode this is often referred to as *stance marking*. The concept of stance is traditionally considered to represent subjective opinion and perspectives on objects and events (e.g., Biber and Finegan, 1988, 1989; Biber et al., 1999; Conrad and Biber, 2000). Early studies in linguistics on stance-related concepts, such as Lyons (1977), created a diverse lexicon for describing the expression of stance. Biber and Finegan (1988) address lexical and grammatical marking of stance, with a focus on evidentiality and affect, and the role of adverbials (Biber and Finegan, 1988), while Palmer (2001) presents a grammatical topology of mood and modality.

Two salient aspects of stance are evaluations and assessments. The presentation of evaluations and assessments are subject to modality, which can affect levels of certainty and speaker commitment. Epistemic and evidential markers are two categories of pragmatic markers that can affect the perceived knowingness or commitment associated with an assertion. While evidentiality and epistemic modality are closely related concepts, with evidentiality sometimes considered as a subset of epistemic modality, Cornillie (2009: 46–47) argues that they are conceptually different: ''[e]videntiality refers to the reasoning processes that lead to a proposition and epistemic modality evaluates the likelihood that this proposition is true''. Thus, epistemic modality is the evaluation of possibility, probability, and certainty. Evidential markers can also provide information on the degree of speaker commitment, but their critical function is their link to the evidence behind the utterance (Cornillie, 2009).

There are various linguistic phenomena that can index the degree of certainty a person communicates about a given topic and the level of authority with which they deliver their message. For example, epistemic adverbials refer to those adverbs that address the state of the speaker or writer's knowledge and are used to express probability, possibility and certainty (Biber and Finegan, 1988). More recently, Wierzbicka (2006) has identified various types of epistemic adverbials, such as 'maybe' adverbials, which perform the function of marking questionable assertions or hedging, and 'surely' adverbials, which express certainty.

Evidentiality can be understood as making apparent how a proposition is known through the reference to an information source and is related to the construction of authority and responsibility (Fox, 2001; Heritage and Raymond, 2005; Schubert, 2014). Expressions of evidentiality can encode the source of knowledge or information and the means by which the knowledge was acquired. Conversely, if the knowledge source is omitted, the reader will be unable to ascertain the chain of information. How the knowledge was acquired is typically indicated in English through verb choice (e.g. '*I saw*', '*I felt*', '*she said*'), which we see in Example 3 through ''*I realised*''. In the context of incident reporting, which is a form of formal written discourse that is submitted, readers do not have the same opportunity as a hearer to interject with a question for further information or clarification. As such, clarity is needed in reporting in order to learn from errors and inform future practice, but some evidential markings can obscure responsibility, making this difficult.

Evidential markings are used to accomplish social goals, and as such may function to create 'distance from one's own misdeeds' (Fox, 2001: 170). This is relevant to errors because evidential markers offer a frame for the interpretation of the information provided. This can also indicate a speaker's authoritative positioning on a given subject and can bear insights into their positioning in relation to responsibility and accountability.

Example 4

UserError368: *I took over patient care at 2030 hrs. I checked correct fluids running, new syringe (insulin) had been started by Late shift, I could not see label on syringe but did not remove syringe from pump. I noticed patient BM were rising, not settling as would be expected. Insulin running at correct rate. At midnight BM had risen further even though now on 0.9% Saline. I looked again at the pump and noticed the syringe was not correctly positioned. Syringe was not correctly positioned. Syringe still read 51 mls. Pump had totals according to setting. I repositioned the syringe correctly. Informed Paed SHO. Checked pump working correctly once syringe repositioned, as did not alarm error.*

The person reporting the incident described here uses three perceptual verbs (*checked*, *noticed*, *noticed*), and a reporting verb (*informed*) all of which can frame the incident by creating distance and explaining their actions (our full list of markers is in Appendix 2). It is also notable that in the first clause of the report, the narrator establishes their positioning in relation to responsibility and blame through the utterance ''I took over patient care at 2030 hrs''.

Fox (2001) suggests that 'evidential marking' can index the social meanings of responsibility and the construction of authority, but is sensitive to context. Hunston (2007) observes that context is crucial, as evaluative meaning does not occur in discrete units, but across phrases, and is cumulative, making it challenging for quantitative analysis. While no

definitive list or criteria for indexing evidentiality, certainty, and speaker commitment exists, in part because of the problems mentioned above, Heritage and Raymond (2005) describe practices for indexing relative primacy and subordination of assessments in dialogue. While sequential and interactional aspects, such as tag questions, are more closely related to dialogue, the reflections on first position epistemic downgrading are also relevant for written registers. They further assert that when an individual wishes to convey a lack of certainty about a claim and reduce their own responsibility for the accuracy of what they are saying, individuals may index this epistemic downgrade by evidential weakening (Heritage and Raymond, 2005). Evidential weakening is typically signalled through a variety of cue words (e.g., *seems*, *sounds*).

Example 5
UserError531: *Baxter Colleague Triple channel Infusion pump, CU508, reported * Won't turn on manual tube release reset seems okay now * by POCCU. Event log checked, pump had alarmed and displayed 804:26 at 19.35 on 18 / 5 / 10 which indicates that following power up the manual tube release was opened before the speaker test was completed. Staff training issue.*

In this example, *seems okay* operates as a weak statement that the infusion pump is in working order. *Seems okay* is in a quotative that the person reporting this incident offers as evidence. The weakness of the statement is demonstrated by the fact that the device is then checked to ensure that it was working. The incident is then classified as a 'staff training issue' in the incident description. The classification of the incident as a 'staff training' issue shows how evidential weakening, and the related lack of certainty, can affect how incidents are understood by others even within the same workplace.

Meanwhile, Willett (1988) identifies a general list of cue words that index evidentiality, and Biber and Finegan (1988), Biber et al. (1999) and Wierzbicka (2006) locate the role of particular adverbials in conveying speaker commitment. Work on hedging often incorporates some of the linguistic features outlined above, as well as additional markers, such as approximators (Prince et al., 1982; Sauerland and Stateva, 2007) and impersonal narratives (Nielsen, 2004; Toolan, 2012).

Aikhenvald (2004), Biber and Finegan (1989), Biber et al. (1999), and Precht (2003) have provided categories of evidentials. However, as Chindamo et al. (2012) reflect, there is no consensus on the name nor composition of evidential categories. In this study we work with the following categories: reporting verbs (e.g., *said*, *told*, *reported*, *read*) also referred to as quotatives and hearsay in the literature; internal verbs (e.g., *think*, *believe*, *feel*) and relationship verbs (e.g., *appears*, *seemed*), also referred to as inferential evidentials in the literature and perceptual verbs (e.g., *saw*, *heard*, *read*). These can be further collapsed into the two higher level categories of direct and indirect evidentials. Direct evidentiality, which includes only the perceptual evidentials, conveys that the speaker or author has immediately ''witnessed the action'' (De Haan, 2005: 379) via sensory perception. Indirect evidentiality, which includes reports, relationship and internal verbs, conversely, rests on the speaker's use of ''other sources for making the statement'' (De Haan, 2005: 379). The precise pragmatic effect of direct and indirect evidentials is somewhat contested beyond the prioritising of firsthand evidence; for example, Plungian (2001) argues that less direct information is less reliable, whereas de Haan's (2005) position is that indirect evidentials can be used to indicate the speaker's deictic distance from the incident.

For our purposes, we have aggregated these various markers and extended them with any context-specific markers that were characteristic of our corpus. For example, the prepositional phrases 'on examination' and 'on inspection' were commonly used in the corpus as a direct evidential in place of a perceptual verb, as can be seen in the following example.

Example 6
UserError96: *Patient became agitated at 04:00 hours. On examination patient arm had become extremely edematous and blistering. The pump didn't alarm and continued to pump fluid into the arm.*

Here, rather than using 'saw' or a similar standard perceptual verb, the person who reports the error uses 'on examination' to frame the perceptual element of the incident. The use of 'on examination' and 'on inspection' as perceptual verbs is likely to be specific to the medical context. This highlights the need to consider clinical incident reporting as a specific *genre* for this type of pragmatic analysis.

In addition to this complexity, some pragmatic markers, such as 'probably' have been classified both as hedges and epistemic adverbials in the wider literature. We acknowledge this duality, but in this study we distinguish hedges as approximators and pragmatic particles that serve to make things 'more or less fuzzy' (Lakoff, 1977), and separate epistemic adverbials into two categories: those which express certainty (e.g., *surely*, *obviously*) and those which express anything less than certainty, such as possibility or probability (e.g., *maybe*, *probably*). Our separation between those that express certainty and possibility is to acknowledge that through probability there is less authorial commitment.

Furthermore, by breaking down the epistemic adverbials into those expressing certainty and those expressing uncertainty, we can learn more about the epistemic status and weakening in our corpus.

1.3. Authority and authorial absence: a form of hedging

Work on the construction of responsibility within medical settings has examined both spoken and written contexts. For example, Atkinson (1977, 1995, 1999) and Anspach (1987, 1998) studied oral patient case presentations, while Hobbs (2003) investigated physicians' notes. While Anspach (1987, 1998) examined strategies for mitigating responsibility and the use of rhetorical devices for claiming authority and credibility, Atkinson (1999: 89) observes that due to the complex division of labour within hospital settings, case presentation is a 'metanarrative in which different stories and information from different sources are interwoven.' Here, Atkinson attributes the use of the impersonal passive voice in case presentation to the integration of reported facts from these multiple sources and viewpoints, indicating uncertainty. He stresses the analytic significance of passive impersonal reportage when considered in contrast to attributions of personal agency: ''The contrast between personal agency and impersonal reportage in the passive helps construct the contours of credibility and the zones of responsibility'' (Atkinson, 1999: 103). What is key, in Atkinson's (1995: 121) account, is how eventuality is used as a strategy to create 'domains of credibility'. These subtle shifts in language use treat some information as less sound than others, and may do so by adding a single word (e.g., *that*) or by employing repetition, particularly of temporal markers. This led to Hobbs' (2003) assertion that the one-sided communication of written medical texts requires more effort from both the narrator and reader. As a result, she finds that the third-person narrative perspective is a strategy used for presenting perceptual information as fact within physician reports.

2. Materials and methods

The England and Wales National Records and Learning System, established in 2003, receives approximately 76,000 reports per month from all NHS organisations in England and Wales (Cousins et al., 2012). The system is designed to identify and extract learning from patient safety incidents. Each incident report contains a series of variables including patient age, incident location, date of incident, severity of harm, and three fields of free-text describing the incident, its contributory factors and recommendations for prevention.

All reports involving 'medical devices', a broad category that mainly includes infusion pumps, but also content related to saline drips and adjustable beds, were identified between 2005 and 2011 (n = 8877) by an NHS staff member who searched the NRLS master corpus for relevant terms. This staff member was authorised to send the anonymised data to our team for research purposes. This data was relevant to our work because our study is part of a large project investigating medical device design, use, and safety. Using this corpus of 8877 incidents, we constructed a relevant sample by selecting the NRLS variables of 'incident category' levels one and two to limit our sample to those that were explicitly deemed as 'medical device/equipment related' (n = 3822) and further demarcated as 'user-related' (n = 757). By compiling our corpus (Medical Device: User Related), referred to as the User Error Corpus, we have selected all incidents that have been identified as user-related, allowing us to investigate the ways in which incidents involving user error are reported.

In order to assess the patterns related to narrative point of view, evidentials, and epistemic markers in these reports we needed a reference or baseline corpus for comparison. The reference corpus (n = 5055), referred to as the Baseline Corpus, is compiled from the same source data but includes incident reports from categories that were labelled other than 'medical device' related, such as 'Infection Control Incident', 'Treatment/Procedure' and 'Patient Accident'. No incident reports labelled as 'medical device/equipment related' or 'user-related' were included in the Baseline Corpus.[3]

The word count for incident reports in the User Error Corpus ranged from 7–445, with a mean word count of 71.99. Reports in the Baseline Corpus, which through incident classification categorisation did not attribute agency to the error, had a word count range of 4–830 and a mean word count of 91.09. While the User Error Corpus has a longer minimum word report, reports in the Baseline Corpus are approximately 19 words longer, and the maximum word count found in a

[3] Within the top-level category 'medical device/equipment related' there are at least two optional subcategories available to the person logging the report. As well as 'user error', these optional labels include: 'other', 'lack of device', 'failure of device' or 'wrong device/equipment used'. While 'lack of device' and 'failure of device' seem to distinguish from 'user error', 'wrong device used', does not exclude the possibility of user error. Close examination of the reports within the medical device labelled data set revealed that the process of classification was not clear-cut, with some categorised as 'failure of device', for example, but within the description mirroring user error reports. As such, when compiling our Baseline Corpus we discounted all incidents labelled as medical device related in order to more accurately compare incidents classified as medical device/user error with those that were definitely not user error related, regardless of their classification. An investigation of pragmatic issues as they pertain to the classification of reports would be a worthy study, but it is outside the remit of this paper.

Table 1
Descriptive statistics indicating the number of incidents categorised as no, low, moderate or severe harm levels.

Harm level	Baseline		User error	
	Number	Percentage (%)	Number	Percentage (%)
No	3745	74.09	629	83.09
Low	467	9.24	99	13.08
Moderate	796	15.75	25	3.30
Severe	38	0.75	4	0.53
Death	9	0.18	0	0
Totals	5055		757	

user error report is 53.61% the length of the maximum word count length in the Baseline Corpus. Table 1 provides a full breakdown of harm levels for both the User Error and Baseline corpora.

Using these two corpora, the User Error Corpus and the Baseline Corpus, we conducted a quantitative study using descriptive statistics taking two main factors into consideration: person references and epistemic and evidential marking. Examining the use of personal references and narrative viewpoint are of interest this allows us to investigate how the person reporting the incident positions themselves within a narrative. In the case of incidents that are classified as 'user-related', we can deduce that there is at least one person (i.e., a device user) actively involved in the incident. This individual may be the one who is reporting the incident, though it is also possible that another individual has done so. In most cases there will be an additional subject, a patient (real or abstract), who was harmed or had the potential to be harmed by the incident (therefore making the incident worth reporting). How the narrative is constructed has the potential to shed light on how authority, responsibility and blame are negotiated in the reporting process.

3. Results

3.1. Narrative style

Firstly, we created an algorithm to classify the reports according to the 'narrative point of view' adopted in the report. In order to do this, we sampled 250 incident reports and double-coded these to compile a list of the most commonly used pronouns. This process enabled us to define three distinct narrative style sub-corpora: first-person; third-person with references to either patients or staff; and third-person absent narration, in which there are no references to any persons. The algorithm applied these in a sequential or priority system using if/then statements. The definitions, explanations, and examples of each narrative viewpoint are listed in Table 2. The sequential system was employed in the order that the

Table 2
Definitions and examples of the different viewpoint/narrative style classifications.

Narrative style/point of view	Explanation	Illustrative example from the User Error Corpus
First-person narrative (e.g., me, my, we, I, myself)	Directly locate a 'self' within the narrative; narrative may/may not contain references to other grammatical subjects (e.g., staff, nurse, patient)	UserError663: *I was called to the ward to check a patient controlled analgesia pump. The reading of the pump was different to how much volume had been used in the syringe. On examination of the pump the syringe was not correctly fitted in the mechanism which I corrected. The pump was changed the previous evening. The nurses on the ward told me that they had not been trained to use the pump and were unsure how to read it.*
Third-person narrative with staff person references (e.g., dr, staff, nurse)	No first-person references, but members of staff are located in the narrative; may contain references to patients as well	UserError565: *Staff nurse reported that she had not received medical training on nutricia flocare infinity pump and that only 3 staff nurses on ward [name] had. She also reported that giving sets were being primed by squeezing tube rather than using fill set button on pump.*
Third-person narrative referencing patient (e.g., pt, pts, baby, child)	No first-person or staff references but patient terms are used	UserError129: *High risk patient arrested during spinal surgery, stabilised on inotropes, and transferred to PICU. Pump found to be programmed in mls / hr instead of mcg / kg / min.*
Third-person absent narrator and subject (no person references)	No first-person, staff, nor patient references; often written using the passive voice	UserError666: *On checking insulin pump (syringe driver) only 4mls infused over 13+ hours. Pump alarming intermittently but appeared to be infusing.*

Table 3
Descriptive statistics indicating the number of incidents written in each narrative viewpoint.

Narration	Baseline		User error	
	Number of reports	Proportion of corpus (%)	Number of reports	Proportion of corpus (%)
First-person	1421	28.11	163	21.53
Third-person (staff)	1615	31.95	250	33.03
Third-person (patient)	1337	26.45	193	25.50
Absent narrator	682	13.49	151	19.95
Totals	**5055**		**757**	

styles appear. This means that if a narrative contained the first-person point of view, it was classified as such regardless of whether or not it also contained references to third-person grammatical subjects, as is the case with the example we provide in Table 2 for a first-person narrative. Similarly, if a narrative contained references to members of staff as grammatical subjects, then the algorithm classified it as such, regardless of whether or not it also contained references to patients. References to staff were prioritised over patients because of the possibility that these references were linked to issues of accountability of the error. If the report contained references to no grammatical subjects, it was classified as third-person absent narration and subject, which we tend to refer to as third-person absent in short. The examples discussed earlier can be classified as follows: Examples 1 and 2 as third-person absent narration; Examples 3 and 4 as first-person narratives; Example 5 as a third-person narrative with staff references; and Example 6 as a third-person narrative with patient references.

We then conducted analysis of the data to find the distribution of these narrative styles (Table 3). We also checked the corpus for second-person references and found a total of three reports using this form (one in a quotative inside a first-person narrative and the remaining two in third-person narratives with references to staff, again one of those two reports uses the second-person in a quotative). Our analysis of the corpus found that the first-person narrative viewpoint, which is typified through the use of pronouns that include *I*, *me*, *myself*, *we*, is used in 21.53% (n = 163) of the reports, as illustrated in Table 3. The third-person narrative perspective is used in the remaining 78.48% (n = 595) of the reports in the corpus. Of those incident reports written in the third-person, approximately one-third (n = 250, 33.03%) reference a member of staff in some way (e.g., *staff*, *nurse*, *s/n* [likely staff nurse], *sister*, *SHO* [senior health officer], *anaesthetist*). An additional 25.50% (n = 193) make reference to a patient in some capacity (e.g., *patient*, *pt* [patient], *child*, *baby*). The final 19.95% (n = 151) of incident reports are written in a third-person form but reference no grammatical subjects.

First person narration is significantly more present in the Baseline Corpus than in the User Error Corpus (χ^2 (1) = 14.37, $p < 0.01$). Conversely, third-person absent narration is significantly more common in the User Error Corpus than in the Baseline Corpus (χ^2 (1) = 22.34, $p < 0.01$). There is no significant difference in the proportion of third person narratives featuring only patients (χ^2 (1) = 0.23, $p = 0.63$) or staff (χ^2 (1) = 0.35, $p = 0.55$). This confirms that when reporting incidents involving user error, there is a significantly different approach to narration. The narrative style that characterises the User Error Corpus is more likely to omit references to culpable named actors, in general, and when references are made to individuals it is likely to be other staff members or patients; thus, the role of the person making the report remains ambiguous.

We also investigated the relationship of level of harm and narrative style between the Baseline and User Error corpora. Although it is intuitive to believe that there would be a relationship of narrative distance, characterised through third-person absent narration and grammatical subjects and the severity of the incident, the results do not support this link. Our findings demonstrate that there is no statistical correlation between the narrative point of view used and the harm level of the incident being reported (see Table 4).

We performed a Chi squared test for significance, which shows that first-person narration is no more likely to be used in a report of a low harm incident than a high harm incident. This means that the individual who has reported the incident does not make or alter the choice to provide intradiegetic narration depending on the potential impact of the incident (assuming that more severe incidents could result in greater personal and organisational consequences). Furthermore, an absent narrator, which is a narrative that is also devoid of other grammatical subjects, is not significantly more present in one harm level than another, given that we find that the difference in 'no harm' in comparison with all other harm is not significant (χ^2 (1) = 0.94, $p < 0.33$). We also find that this pattern holds true when investigating the most severe incidents (i.e., patient death), and that there is no significant difference in narrative point of view and named grammatical subjects when comparing incidents that resulted in patient death with those that did not (χ^2 (1) = 1.49, $p < 0.22$). For example:

Table 4
Descriptive statistics indicating narrative style and incident harm level.

Narrative point of view	Harm level	Baseline	User error
First-person	No harm	73.40%	80.37%
	Low	19.99%	14.11%
	Moderate	5.98%	5.52%
	Severe	0.63%	0.00%
Third-person (staff)	No harm	73.50%	87.76%
	Low	20.56%	10.61%
	Moderate	4.71%	1.63%
	Severe	0.93%	0.00%
	Death	0.31%	0.00%
Third-person (patient)	No harm	74.27%	76.65%
	Low	19.15%	17.77%
	Moderate	5.61%	5.08%
	Severe	0.67%	0.51%
	Death	0.30%	0.00%
Absent narrator	No harm	76.54%	86.84%
	Low	18.04%	9.87%
	Moderate	4.69%	1.32%
	Severe	0.73%	1.97%

Example 7: Harm level: Moderate
UserError407 (first-person narration): *Patient had a PCA insitu to control pain. During the night the PCA was occluding and alarming therefore not providing any pain relief. The PCA was assessed to be working so education was given to the patient to keep her arm as straight as she could when pressing the PCA. The pca continued to alarm all night. We attended to her pca and reset it for use. At 07.00 I attended to the patient to administer her iv antibiotics. She was very upset that she had been left all night without a PCA and no pain relief. I apologised that she felt this way, but encouraged her to keep her arm straight when pressing the PCA. I remained at the patients bedside for 15 minutes and encouraged her to press the pca every 5 minutes. Each attempt was a success and i left the patient happy. The PCA was alarming 5 minutes after i left the patient.*
UserError510 (third-person narration – staff): *Delay with placing syringe driver as battery placed in the wrong way. Nurses appeared to have little experience with setting up, placing and using a syringe driver. The patient was displaying signs of terminal agitation and needed urgent and continuous medication, the problems on the ward caused this to be delayed.*
UserError255 (third-person absent narration): *Infusion device would only allow a 50 ml syringe to be used, saying smaller syringes were invalid graseby 3200 syringe pump, set up for use on ACU.*

As illustrated in Example 7, which is a collection of three incidents from the User Error Corpus categorised at the moderate harm level, the level of reported patient harm has no statistically significant effect on the narrative viewpoint used by the person reporting the incident. Here, a first-person narrative, third-person narrative involving a reference to a member of staff (*nurse*) and finally a third-person absent narrative perspective show that instead of incident harm level being statistically relevant in what shapes narrative viewpoint, other pragmatic issues are at play, as we will demonstrate in the succeeding sections.

3.2. Hedging, evidential and epistemic markers

After analysing the corpora with respect to narrative viewpoint, we examined the significance of hedging and evidentiality. Once again we designed an algorithm, this time in order to classify the reports according to hedging and evidentiality. Research on linguistic strategies of hedging and evidentiality tend to either provide a few examples or study the use of specific terms, rather than supply a complete list that could aid in quantitative work. However, by reviewing the literature on epistemic authority and evidential marking, combined with the same systematic dual-coding process that we used previously, with two authors sampling 250 incident reports, we identified a series of markers: hedging cue words (e.g., *possibly*, *perhaps*, *quite*); evidentials (e.g. reporting verbs and perceptual verbs); epistemic adverbials expressing certainty (e.g., *surely*, *clearly*); and hedges and approximators (e.g., *about*, *kind of*). We then compiled these terms into a list (see Appendix for our complete list) in order to search for their presence within our sample and Baseline corpora.

Table 5
Frequency of epistemic markers, evidential verbs and hedges per 1000 words of text.

	Baseline	User error
Evidentials	21.62	22.89
Epistemic adverbials: uncertainty	0.32	0.53
Hedges, approximators and pragmatic particles	2.11	1.60
Epistemic adverbials: certainty	0.48	0.53

We find that epistemic adverbials expressing both certainty and uncertainty occur quite infrequently in both corpora (Table 5). However, epistemic adverbials that express uncertainty are 1.5 times more likely to appear in the User Error Corpus compared to the Baseline Corpus (χ^2 (1) = 6.47, $p < 0.01$).

Example 8
UserError497: *Visit requested to give medication for troublesome secretions to a palliative patient. She was receiving symptom control via two syringe drivers. Both checked as part of assessment. Syringe driver (2) was not flashing and on examination had not delivered any medication since the syringe was filled at 1100 on 26 / 01. 2010 the start button was pressed and the driver started to work. Checked over a period of 15 minutes and was apparently working properly*.

Here, in Example 8, the adverbial is applied to the infusion pump (*apparently working properly*), which is combined with a dependent clause about checking the device over a specific time frame. Together the dependent clause and the epistemic adverbial express uncertainty.

There is no significant difference in the frequencies of epistemic adverbials that express certainty in the User Error and Baseline corpora (χ^2 (1) = 0.25, $p = 0.62$). Hedges and approximators, however, are significantly more common in the Baseline Corpus (χ^2 (1) = 6.18, $p = 0.02$).

With respect to evidential verbs there is no significant difference in the overall frequency across the two corpora (χ^2 (1) = 3.87, $p = 0.05$). Evidential verbs, such as in Example 3 where the person reporting the incident used three perceptual verbs (*checking*, *checking*, *checked*) and one internal verb (*realised*), and Example 4, which contains the perceptual verbs *noticed* (twice) and *checked* (once), as well as the reporting verb *informed* (once), provide an information source, conveying how the proposition that is expressed has come to be known. Within the wider category of evidentials, there are particular types and we find differences in their use in the two corpora. Table 6 details the breakdown of the different types of evidential verbs, namely: reporting verbs (e.g., *said*, *read*, *told*), perceptual verbs (e.g., *saw*), internal verbs (e.g., *thought*) and relationship verbs (e.g., *appeared*).

When the evidential verbs are broken down by type, it becomes apparent that direct evidentials, i.e. perceptual verbs and markers (as seen in Examples 3 and 4, and explained above) are far more prevalent in the User Error Corpus (χ^2 (1) = 8.11, $p < 0.01$). However, this is not the case with the indirect evidentials which feature a similar frequency distributions in the two samples, internal verbs (χ^2 (1) = 1.88, $p = 0.17$), reporting verbs (χ^2 (1) = 0.02, $p = 0.89$), and relationship verbs (χ^2 (1) = 0.82, $p = 0.37$). When comparing the use of direct and indirect evidentials, there is a significantly higher probability that when an evidential *is* used in the User Error Corpus it will be a direct evidential as opposed to an indirect evidential (χ^2 (1) = 4.25, $p < 0.05$). Thus, Examples 3 and 4, which contain more direct evidentials than indirect evidentials are representative incident report samples. Internal verbs (e.g., *think*, *feel*, *believe*), which typically attached to an agent on the basis of their internal nature, are the only category of evidentials that occur more frequently in the Baseline sample.

Table 6
Frequency of evidentials by type per 1000 words of text, and as percentage of total evidentials provided in parenthesis.

Evidentials	Baseline		User error	
	Per 1000 words	Percentage	Per 1000 words	Percentage
Internal verbs and markers	1.75	8.07%	1.49	6.50%
Relationship verbs	0.77	3.55%	0.88	3.85%
Reporting verbs	8.10	37.46%	8.15	35.63%
Perceptual evidentials and markers	11.01	50.91%	12.36	54.01%
Total indirect evidentials	**10.61**	**49.09%**	**10.53**	**45.99%**
Total direct evidentials	**11.01**	**50.91%**	**12.36**	**54.01%**
Total evidentials	**21.69**	**100%**	**23.00**	**100%**

4. Discussion

Our findings demonstrate that there is a significant statistical difference between the narrative perspective used in clinical incident reports that have been classified as 'user error related', and those in the Baseline Corpus. Reports classified as user error are more likely to be written using the third-person viewpoint without references to staff members, patients, or patient family members/carers. In fact, references to persons as grammatical subjects are much more likely to be entirely absent in medical incident reports in the user error context; this 'absent' narrative perspective can be found occurring 13.49% in the Baseline Corpus in comparison with 19.95% in the User Error Corpus. We have investigated, and can verify, that despite being counter-intuitive, particularly when considering implications of reporting errors in an organisational setting where employees may report to researchers that they are careful with the language they use on incident reports due to concerns of repercussions, particularly legal liability regarding the incident (Gallagher et al., 2003), narrative viewpoint is not affected by level of harm; user error incidents in our corpus are more likely to be rated as 'no harm' (83.09% in the User Error Corpus compared with 74.09% in the Baseline). Therefore, we can assert that the reporting style used is not linked to harm, but to error typology.

Hobbs (2003) asserts that evidentiality adds clarity to physician notes, acting as a strategy to present perceptual information as fact. She counters Anspach's (1989) claim that the passive voice suppresses the identity of the narrator. Instead, Hobbs (2003) suggests that the third-person voice is used to indicate that the person reporting the information is *merely* reporting it. Yet, our data and statistical evidence do not support these claims. If Hobbs' argument for physician notes could be extended to medical error, and clinical incident reports more specifically, we would have found no statistical significance in narration between the corpus of user error incident reports and the Baseline Corpus. The passive voice and the absence of the narrator certainly suppresses the identity of the narrator. Yet, it is more complex from a pragmatic perspective. It also has the potential to universalise perceptual insights and present them as fact, and it allows narrators to position themselves as simply reporting information regardless of whether or not they were involved in the incident (i.e., contributed to the user error). What draws these three distinct elements together is the context of narrative: the use of the third-person absent narrative viewpoint is a distancing mechanism that places the narrator or reporter outside of the 'complicating action' (cf. Labov and Waletzky, 1967) of the incident. Its effectiveness in medical reporting is not, as Hobbs' (2003) argues, that reporters are merely, simply, or only reporting information. It can be argued that this is a *stylistic choice*, whether conscious or not, that narrators employ for specific communication purposes and in specific genres of medical reporting, notably user error reporting, where a responsible human agent is implied and given prominence (e.g., *user error* rather than *failure of sterilisation*). Third-person absent narration *creates the possibility* that the narrator is merely reporting the incident and that the reporter is not responsible let alone culpable for the error. While this distancing mechanism is statistically correlated to user-related incidents, which through their very name imply an agent who is culpable, it is not linked to whether or not the incident was classified as involving no harm to the patient or as severe.

Our findings show that as well as employing third-person absent narration, the inclusion of epistemic adverbials that express uncertainty are significantly more frequent when reporting user error incidents. However, there is no significant difference in the frequencies of epistemic adverbials that express certainty in the two corpora. What can be drawn from this is that there is greater expression of caution, referring to what is probable, likely or possible, rather than committing to certainty of the account. User error reports can, therefore, be seen as using these markers to create ambiguity and reserve commitment to certainty. Yet, hedges, such as approximators, were no more frequent in the user error sample. Hedges create fuzziness and imprecisions, and while reports in the User Error Corpus were more likely to contain possibility and probability rather than certainty, they were not any more likely to be presented imprecisely. This is supported by the patterns of use of evidentials in the incident reports. Direct evidentials, which denote that the author has direct evidence or 'witnessed the action' (De Haan, 2005: 379) firsthand in the form of sensory perception, are significantly more frequent in the User Error Corpus. Conversely, indirect evidentiality and internal verbs, which can signal a lack of direct evidence and greater distance between the speaker and the action, are less frequently used in user error reports. Thus, although couched with modulated degrees of speaker commitment, user error reports are more likely to refer to directly observed evidence.

When we attempt to ascertain 'how' reports in the user error category are written, we can assert with statistical evidence that the reports in the User Error Corpus are more likely to be both cautious and precise in their use of language. This distinction, between certainty and precision, is important in a context where the error typology includes an active human agent rather than in error categories where their agency can only be assumed, such as in 'failure of sterilisation or contamination of equipment'.

Despite the cautious imprecision in the User Error Corpus, there is a higher frequency of approximators in the Baseline Corpus. This could be that it contradicts the factual and evidence-focused language that characterise user error reports. Approximators, such as *quite* and *a bit*, can indicate that a personal judgement has been made or operate as imprecise quantifiers, which authors of user error related reports may wish to avoid. Both personal judgements and imprecise

language counter the language of user error reports and, with this in mind, it then makes sense that approximators occur with less frequency in the user error corpus.

The higher frequency of evidential verbs in combination with the absent third-person narration suggests that in user error reports additional measures are taken to provide an information source whilst simultaneously obfuscating the individuals involved. Furthermore, we have the addition of epistemic adverbials which express uncertainty, meaning that although there is more evidencing in the user error reports, the certainty with which content is provided is more likely to be framed as probable, or possible, rather than certain. If we attempt to characterise the language of reporting in the user error context, what can be said is that this sub-genre of clinical incident reporting where grammatical subjects are more likely to be absent contains a language of *precise ambiguity*.

By precise ambiguity we mean that evidence is offered more frequently in user error reports, facts are presented, but ownership and accountability of individuals is masked. Here, we are reminded of Gallagher et al. (2003: 1004) who state, ‘‘many physicians spoke of ‘choosing their words carefully’’’ with respect to errors. In our user error corpus this means that sometimes it is impossible to distinguish the reporter's position: was the person writing the report involved, a witness, or merely reporting what occurred? This is presented in clinical incident reports that state ‘*The pump was programmed*’ but fail to provide crucial expository information. This may strengthen the argument from Sujan (2015) and Sujan and Frau (2015) that some consider the forms to be ineffective for organisational learning. The inverse pattern of lower frequencies of internal verbs such as ‘*thought*’ in the User Error Corpus, and the relatively equal distribution of relationship verbs, such as ‘*seemed*’ in the two corpora, suggests that there is a greater tendency to report observable evidence. In practice, this means that reporters are more likely to contain information in their narrative about the information displayed on a medical device or what they heard, instead of using internal and relationship verbs, which are notably less factual and more subjective. By avoiding these classes of verbs, and sticking to observable evidence, narrators are able to avoid potentially implicating themselves in the narrative. These choices appear as responses to a cultural code that treats error as individual rather than systemic that may be linked to error typology. Individuals preparing clinical incident reports for issues classified as user error adopt pragmatic strategies rich in pre-emptive defensiveness, including: removing oneself and others from reporting narratives; choosing to accentuate the lack of certainty of surrounding evidence; and offering precise testimony in the form of evidence in order to mitigate the fears associated with the act of reporting errors.

The pragmatic strategies used in clinical incident reporting are not without effects at local and national levels. Reports that are too brief or have details missing can be obstructive to their purposes of producing organisational learning and improving patient safety. Organisational learning in the medical context is not an abstract issue, nor one that can only be considered on economic grounds, but one that ties to patient harm reduction and improving the quality of patient care. Extracting information from clinical incident reports for learning in the user error context especially, where reports are characterised by precise ambiguity, is vital. Pragmatic investigation of the user error context of clinical incident reporting, in which a responsible individual is categorically implied, is needed. This is because of the ways in which the linguistic strategies are employed by those completing reports in this sub-field. These strategies indicate that those completing the reports are conscious that words have the potential to be misinterpreted by those who read and interpret them. This may result in inadvertently concealing or withholding information about the incident through the pragmatic cloak of what we refer to as *precise ambiguity*. This then makes organisational learning from the reports difficult, and as such may impede efforts to use them to reduce the likelihood of similar incidents and improve patient safety.

5. Conclusions

In this article, we investigated the narrativisation of clinical incident reports, comparing a corpus of ‘user error’ incident reports (n = 757) to a baseline corpus (n = 5055). We found that the narrative viewpoints in the corpora differ in ways that are statistically significant, which leads to multiple other related findings, and our findings extend debates at the intersection of pragmatics and medical linguistics. Most notably, the reports in the User Error Corpus tend to be written in the third-person narrative perspective and are devoid of any person references, including to external staff members, patients, and others. Furthermore, we investigated and can confirm that harm level does not alter the narrative perspective used by the person reporting the incident. Additionally, the third-person style, and particularly one that avoids all person references, must be considered as a stylistic choice given that all incidents have been attributed to one or more user and relate to patient safety typically in a direct rather than abstract way.

A first-person narrative point of view places individuals directly within the incident that is reported and in direct contrast with this is the third-person absent narration in which the position of the narrator is often ambiguous, and the patient is removed from the scenario. The narrative style that removes all person references is circumspect given its statistical significance tied to a specific subgenre of incident typology. The individual writing the report is working within constraints of the individual level using language that manages their role in the incident and the institutional demands that are comprised of structures at local and national levels that limit the discursive possibilities available.

Beyond differences in narrative style, these stylistic choices differ in additional significant ways, including the use of evidentials. Evidentials provide a source, and explain how a piece of information came to be known. In incident reporting, this includes the explanation of how events unfold and the evidence observed that corroborates the reporter's account. Evidencing claims in this way is much more frequent in user error incidents than those in the Baseline Corpus. Furthermore, the type of evidencing in user error reports relies much more upon denoting what was directly observable. This contributes to a more factual and evidence-based account that avoids subjective testimony and individual responses, such as expressions relating to how things *seemed*, *appear*, or what the individual *felt* or *thought* about the event.

The higher frequency of adverbials expressing uncertainty reinforces the interpretation that strategic attempts are being made to denounce individual responsibility for the incident. Adverbial markers of uncertainty position the author in an unknowing position and typically relate to necessary assumption due incomplete knowledge. For example, 'allegedly', 'apparently', 'conceivably' and 'inexplicably' convey a limitation in access to facts and demonstrate that while the author may acknowledge limitations, they have submitted the available evidence. Our findings demonstrate that clinical incident reports classified as User Error have a statistically significant use of language as it pertains to narrative viewpoint, evidentials, and approximators. These findings show that in a genre of incident reporting that highlights individual culpability from the offset there is a tendency to engage in pragmatic strategies that can be referred to as *precise ambiguity*, which mark uncertainty and serve as testimony while removing agency and suppressing identity.

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Appendix 1. Situational characteristics of clinical incident reporting in the NHS based on Biber and Conrad's (2009) genre criteria

Situational characteristic	Clinical incident reporting
I. Participants	
• Addressor	
1. Single/plural/institutional/unidentified	Unidentified individual/institutional representative
• Addressee	
1. Single/plural/un-enumerated	Line manager, institution, other organisational bodies
II. Relationships among participants	
• Interactiveness	No direct interaction
• Social roles	Professional but variable
• Personal relationship	None
• Shared knowledge	Variable (will share knowledge about healthcare/medicine and the NHS), will not necessarily share knowledge about the incident
III. Channel	
• Mode	Written
• Specific medium	Unknown (e.g., printed, online – no national form; variable)
IV. Production and comprehension circumstances	
• Production	Unknown (variable depending on local conditions)
• Comprehension	Varies depending upon reader and readers' objectives
V. Setting	
• Time and place shared by participants	No physically shared time and place; no expectation that report will be read by others the same day that the report is submitted
• Place of communication	Healthcare setting; document will be read by others locally (who may respond to it), filed with the NPSA, and all incidents involving severe patient harm or death will be individually read at a national-level
VI. Communicative purposes	
• General purposes	Informational – to report incidents that caused or had the potential to cause patient harm within the NHS

Appendix 1 (*Continued*)

Situational characteristic	Clinical incident reporting
• Specific purposes	Primarily, to report incidents that harmed or potentially harmed patients; secondarily, to prevent similar incidents in the future through learning from the reports (in addition to the compulsory 'description of incident' there are columns that may be completed by others in the investigation process capturing 'actions preventing reoccurrence' and 'apparent causes' of the incident)
• Factuality	A report is expected to provide a 'description of the incident'; this is someone's point of view as to what is important information
• Expressing stance	Varies
VII. Topic	
• General topic area	Errors in healthcare settings that could adversely affect patient safety
• Specific topic	Varies

Appendix 2. Complete list of markers

Evidentials	
Internal verbs and markers	assume, assumed, became aware, believe, believed, believes, came to attention, came to my attention, knew, know, predicted, proposed, realise, realised, think, thought
Perceptual verbs and markers	checked, calculated, detected, discovered, displayed, found, heard, indicating, looked, looking, looks, noted, noticed, observed, on examination, on inspection, saw, see
Relationship verbs	appear, appeared, appears, seemed, seems
Reporting verbs	explained, explains, heard, inform, informed, informs, read, reported, reports, said, say, says, showed, shown, stated, stating, states, told
Epistemic adverbials	
Certainty	absolutely, actually, certainly, clearly, definitely, evidently, for certain, for sure, indeed, obviously, of course, plainly, really, surely, undoubtedly, unquestionably
Uncertainty (those expressing probability and possibility)	admittedly, allegedly, apparently, arguably, conceivably, inexplicably, likely, maybe, perhaps, possibly, potentially, presumably, probably, reportedly, seemingly, supposedly
Hedges, approximators, and pragmatic particles	a bit, a little bit, at least, about, almost, approximately, around, just, kind of, might, pretty, quite, sometimes, something like, sort of

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