Report to the
College of Pharmacists of Manitoba (CPhM)

Analysis of Medication Incidents Associated with Patient Harm in Manitoba using the Medication Safety Culture Indicator Matrix (MedSCIM)

December 2023

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Background

Continuous quality improvement, more commonly known as CQI, is an essential component of patient safety. CQI programs have been implemented in several Canadian provinces to support community pharmacy teams with identifying, resolving, and learning from medication incidents.[1] These programs serve an important role in reducing medication errors and mitigating patient harm.

In Manitoba, the Safety Improvement in Quality (Safety IQ) program was launched to support community pharmacy teams in their efforts to prevent medication harm and make patient care safer.[2] The Safety IQ program aims to promote a safety culture where pharmacy professionals feel comfortable reporting medication incidents and near-miss events without fear of reprisal. Community pharmacy teams should strive for a just culture, where there is shared accountability between individuals and organizations to learn from errors and support positive changes in pharmacy practice.[3]

To encourage comprehensive incident reporting, community pharmacies should aim to adopt a medication safety culture that focuses on system factors and generates solutions that would prevent errors from happening in the future. The objective of this analysis was to examine the medication safety culture demonstrated by Manitoba community pharmacies using the Medication Safety Culture Indicator Matrix (MedSCIM).[4]

Methods

Medication incidents from community pharmacies in Manitoba are submitted to the National Incident Data Repository for Community Pharmacies (NIDR). The NIDR is a national database managed by ISMP Canada which accepts reporting data from multiple reporting platforms using a common set of standards. All anonymous incident reports contain details related to: type of medication incident, medications involved, and a description of the medication incident. The information from these mandatory fields is combined with information from optional fields such as contributing factors, to support incident analysis and the development of recommendations for shared learning.

During the 2-year reporting period from June 1, 2021, to May 31, 2023, 138 incidents associated with patient harm were reported by community pharmacies in Manitoba. Among these incidents, 9 were omitted for varying reasons: five incidents were concluded to be adverse drug reactions instead of medication incidents; two incidents were related to side effects of vaccines; and two incidents were determined to be duplicate reports. Therefore, a total of 129 incidents were included in this analysis.

Analysis of the dataset was performed by two independent analysts using the MedSCIM tool.[4] The MedSCIM framework allows for the qualitative assessment of an organization's patient safety culture by evaluating narrative information contained in medication incident reports. The medication incidents were then categorized and given an alphanumeric score based on the two dimensions of the MedSCIM tool:

1. **Core Event: Degree of Documentation** evaluates incident reports based on their clarity and completeness. This includes whether readers can understand what the medication incident was, and why the incident may have occurred (i.e., underlying contributing factors). Ratings on the "Core Event" domain can range from 1 (Report fully complete) to 3 (Report not complete) (Table 1).
2. **Maturity of Culture to Medication Safety** evaluates incident reports based on the reporter's perceived approach to patient safety culture. This includes the reporter's ability to view medication incidents from a system-based perspective, rather than one focused on individual fault. Ratings on the "Maturity of Culture to Medication Safety" domain can range from A (Generative) to D (Pathological) (Table 1).

Results

The reports from the Manitoba community pharmacies had varying degrees of documentation, ranging from fully complete to not complete (Figure 1). Fifty-six percent of the reported incidents (72 of 129) were considered to be "fully complete" (i.e., Level 1), as the details of the medication incident were evident, and potential contributing factors were identified. Approximately 32% of the incidents (41 of 129) were deemed to be "semi-complete" (i.e., Level 2), as their level of documentation was sufficient to describe the medication incident but offered no potential contributing factors. Meanwhile, 12% of the incidents (16 of 129) were found to be "not complete" (i.e., Level 3), where details of the medication incident remained unclear.

Manitoba pharmacies also demonstrated some variability in their maturity of culture to medication safety (Figure 2). Nearly 35% (45 of 129) of the analyzed incidents were characterized as having a "generative" (i.e., Grade A) culture. For these incidents, the reporters identified system flaws and offered solutions to prevent error recurrence. Meanwhile, 15% (19 of 129) of the reports were categorized into the "calculative" (i.e., Grade B) culture, whereby the reporters considered how the medication system may have allowed the incident to occur but did not advance remedial strategies. A "reactive" (i.e., Grade C) culture was identified in 44% (57 of 129) of the reported incidents. These reports treated incidents as isolated events and did not approach the incidents from a system-based perspective or offer a solution. Lastly, 6% (8 of 129) of the reports displayed a "blame and shame" or "pathological" (i.e., Grade D) culture that emphasized human behaviours and individual fault in their description of incident details.

The most commonly assigned MedSCIM ratings, in decreasing order, were: 1A, 2C and 1B (Figure 3). Incident examples of varying MedSCIM ratings are described in Table 3.

Discussion

In addition to the required fields for incident reporting, reporters can share additional details about a medication incident through optional fields. As part of this analysis, these optional fields were considered alongside the information from required fields. The following three optional fields were particularly important during this MedSCIM assessment: “contributing factors”, “actions at store Level”, and “shared learning”.

To determine the degree of documentation relating to a medication incident (i.e., the number rating in MedSCIM assessment), the optional fields describing “contributing factors”, “actions at store Level”, and “shared learning” were assessed in addition to the incident description (Figure 4). The level of documentation relating to a medication incident correlates with the degree to which these reporting fields are completed. Approximately 82% (59 of 72) of the Level 1 reports from Manitoba pharmacies included information in at least one of the three optional fields of interest. “Actions at store level” was associated with the greatest number of reports, followed by “contributing factors” and then “shared learning” (Figure 4). As more optional fields are included in an incident report, it is more likely that the reporter will address potential contributing factors to the incident, which is indicative of a Level 1 rating. This is best shown by the fact that incidents which included all three optional fields of interest comprised the largest number of Level 1 reports (25 of 72) (Figure 4). Based on this data, it also appears that reports with information on “actions at store level” and “contributing factors” are particularly important to achieving a complete incident report, with the “shared learning” section providing additional value for the development of recommendations to prevent error recurrence. Overall, pharmacies are encouraged to submit medication incident reports that provide a sufficient level of documentation to understand both the incident and potential contributing factors. Detailed information in these reports can support a thorough analysis, leading to the development of appropriate strategies to improve the medication-use system and mitigate patient harm.

In addition to completeness of documentation, the maturity of culture to medication safety is also assessed through the MedSCIM tool. This parameter allows for an examination of the information contained within the reporting fields, thereby providing greater insight into how community pharmacies work to establish a supportive culture for medication safety. In determining a reporter’s perceived approach to patient safety culture or a pharmacy’s maturity of culture to medication safety (i.e., the letter rating in MedSCIM assessment), the optional fields describing “actions at store level” and “shared learning” are typically assessed in addition to the mandatory incident description field (Figure 5). A majority of the Grade A reports (43 of 45) included entries for either “actions at store level” alone or both the “actions at store level” and “shared learning” optional fields. More than 70% of the Grade A reports (32 of 45) included details for both “actions at store level” and “shared learning”, suggesting that Grade A reports are likely to have both fields completed. A single incident in the Grade A category (1 of 45) (Figure 5) completed the “shared learning” optional field alone. This may be attributed to few reports having learning to share without taking actions to address incidents at the pharmacy level. These results highlight the importance of reflection in response to medication incidents. Consideration of possible error prevention strategies and sharing this learning with the broader pharmacy community was indicative of a generative culture towards medication safety.

Limitations

A MedSCIM assessment relies on the qualitative interpretation and analysis of narrative data within incident reports. The different categories within the Core Event: Degree of Documentation and Maturity of Culture to Medication Safety domains are not mutually exclusive to one another. It is possible that some incidents may fall between two or more alphanumeric categories in the MedSCIM framework. The assessment and trends presented in this report were derived from the individual interpretations and subsequent consensus generated between the two independent analysts at ISMP Canada. Furthermore, this analysis was based on incidents causing harm, meaning that a review of near-miss events or no harm incidents may yield different results.

Conclusions

Overall, Manitoba pharmacies excel in many areas of patient safety culture. Most reports from this MedSCIM assessment were classified under a positive medication safety culture (Figure 3), suggesting that Manitoba pharmacies are submitting detailed reports that use a system-based approach to address possible causes of the incident. While most patient harm incidents were reported with enough detail to understand the medication incident and potential contributing factors (Figure 1), the reports varied in safety culture maturity (Figure 2), with a significant number of reports lacking solutions to prevent future recurrences of incidents.

Manitoba pharmacies are encouraged to use elements of their reporting platform, as well as resources provided through the Safety IQ program, to support a thorough review of medication incidents. When documenting medication incidents, pharmacies may use a checklist of contributing factors often provided in their reporting platforms, as a guide towards understanding how and why the incident occurred. Additionally, pharmacies should reflect on possible strategies that can be implemented to prevent similar errors from occurring in the future. When this reflection is captured with the relevant optional fields, the report is more likely to be complete and support the development of an improvement plan.

Through this analysis, it was found that Manitoba pharmacies are generally considering system-based contributing factors to medication incidents. To advance maturity of safety culture, pharmacies are encouraged to propose solutions that will address the identified root causes of medication incidents. This can be achieved by engaging in CQI meetings where pharmacy team members work collaboratively to review medication incidents and develop improvement plans to enhance the safety of their practice.[5] CQI meetings may provide an opportunity for pharmacy staff to openly communicate their perspectives about medication incidents, thereby supporting the development of error prevention strategies.

Manitoba pharmacies are encouraged to maximize use of their reporting platforms when documenting details of medication incidents and near-miss events. Comprehensive reporting allows pharmacies to demonstrate a commitment to system improvements, while promoting a positive medication safety culture.

Acknowledgements

ISMP Canada would like to acknowledge Manitoba pharmacies that anonymously reported incidents to the National Incident Data Repository for Community Pharmacies (NIDR) which is part of the Canadian Medication Incident Reporting and Prevention System (CMIRPS). A primary objective of CMIRPS is to analyze medication incident reports and develop recommendations for enhancing medication safety across all healthcare settings.

References

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Table 1 – Definition of MedSCIM Dimensions and Outcomes

MedSCIM Index	OUTCOME	DEFINITION
Core Event	Level 1: **Report fully complete**	The medication incident provides sufficient information to describe the medication incident and contributing factors.
	Level 2: **Report semi-complete**	The medication incident provides sufficient information to describe the medication incident. No information is provided about contributing factors.
	Level 3: **Report not complete**	The medication incident provides insufficient information to allow meaningful qualitative analysis.
Maturity of Culture to Medication Safety (Modification of Ashcroft et al.[2])	Grade A: **Generative**	The medication incident uses a systems-based approach to describe the root cause and develop possible solutions to prevent future recurrence.
	Grade B: **Calculative**	The medication incident uses a systems-based approach to describe the root cause. No solutions are offered to prevent future recurrence.
	Grade C: **Reactive**	The medication incident is treated as an isolated incident. No solutions are offered to prevent future recurrence.
	Grade D: **Pathological**	The medication incident focuses on human behaviours instead of a systems-based approach.

Figure 1 – Core Event: Degree of Documentation (*n* = 129)

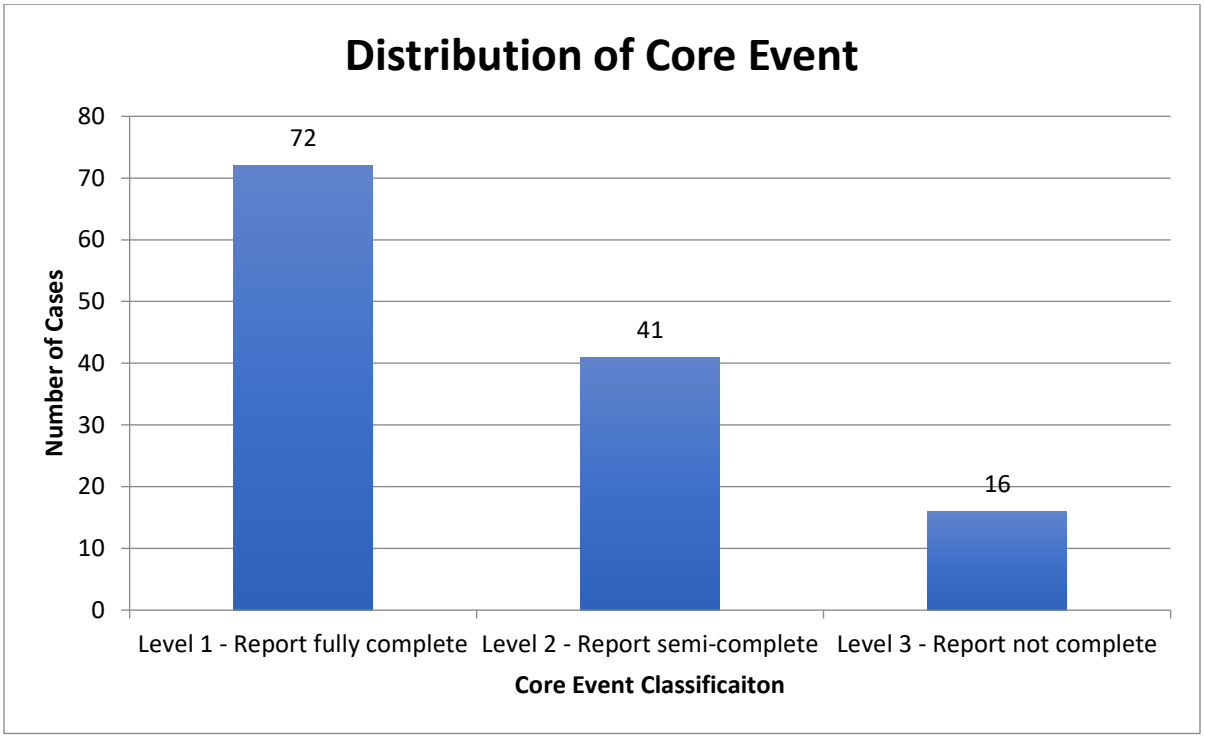


Figure 2 – Maturity of Culture to Medication Safety (*n* = 129)

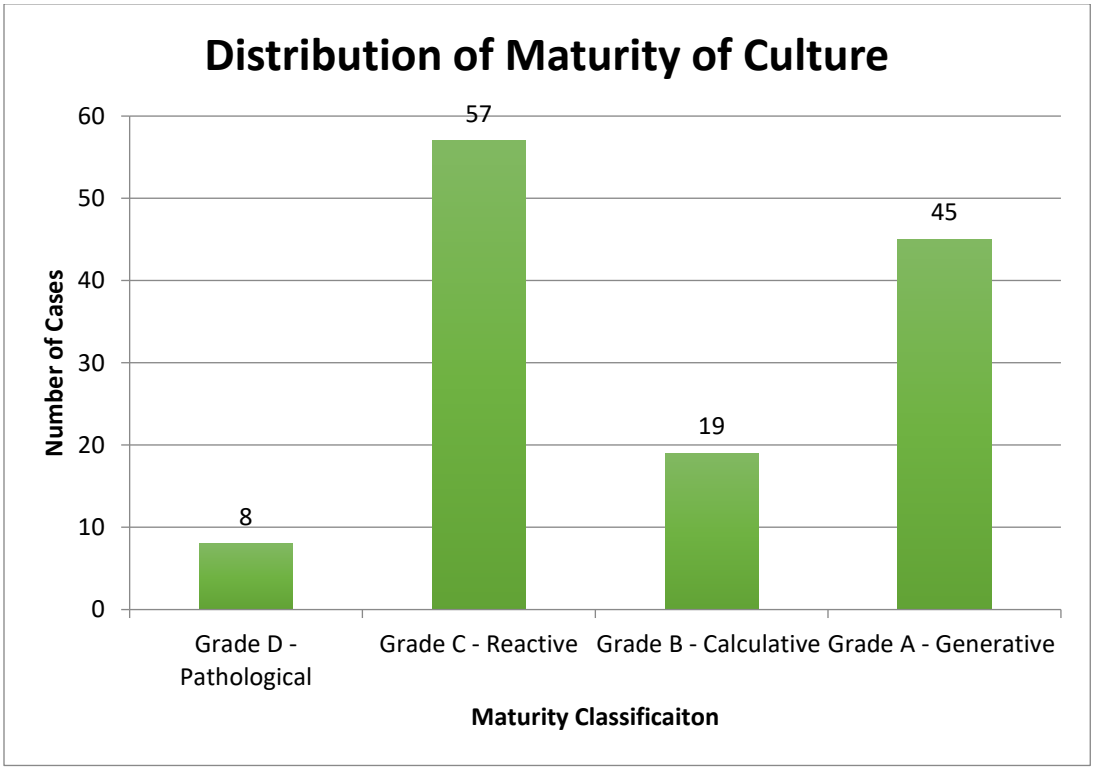


Table 2 – Classification of Medication Safety Culture

Medication Safety Culture	Corresponding MedSCIM ratings
Negative	1D, 2D, 3A, 3B, 3C, 3D
Neutral	1C, 2B, 2C
Positive	1A, 1B, 2A

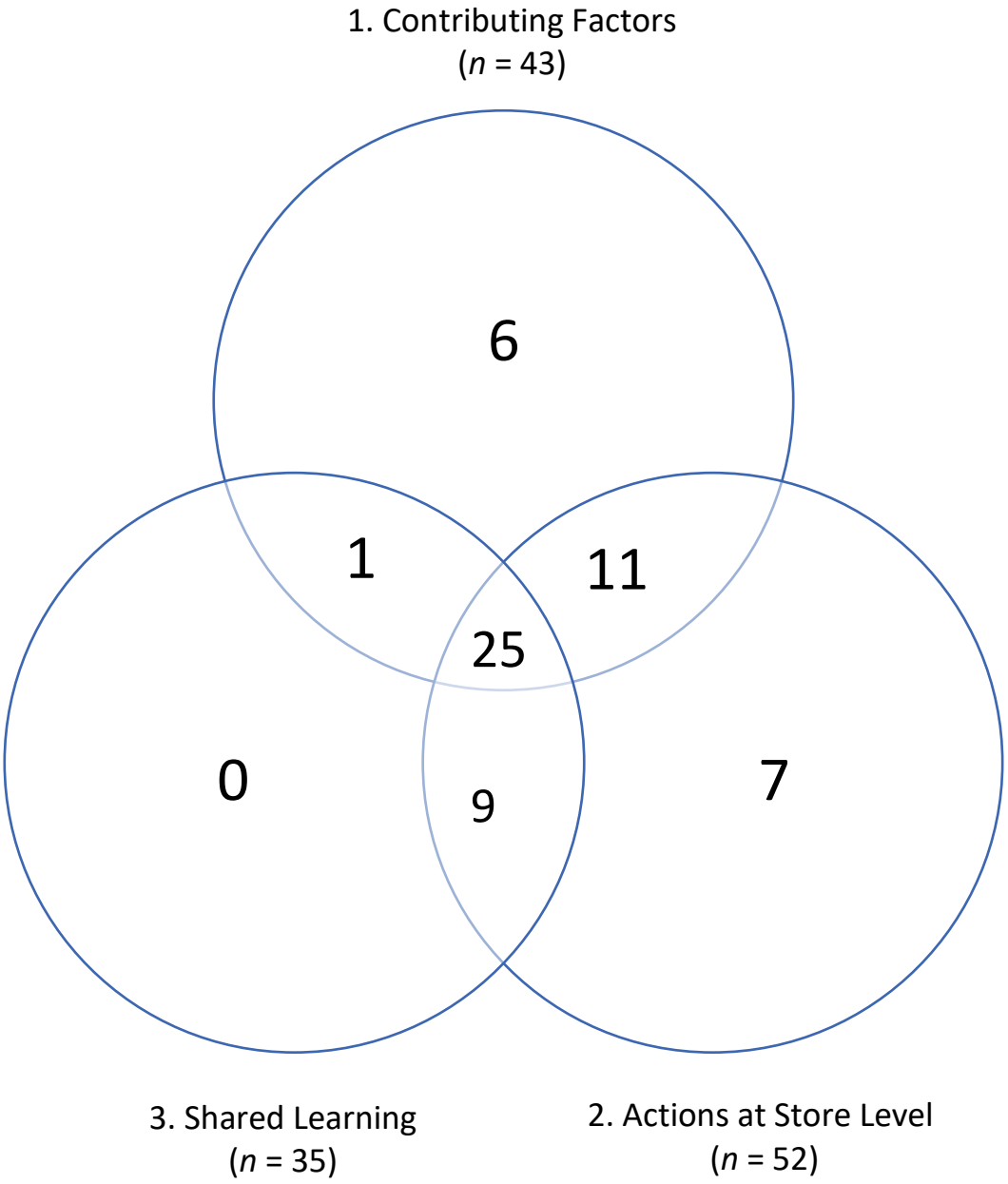
Figure 3 – MedSCIM Assessment (*n* = 129)

	Grade D: Pathological	Grade C: Reactive	Grade B: Calculative	Grade A: Generative
Level 1: Report fully complete	**4**	**10**	**16**	**42**
Level 2: Report semi-complete	**1**	**34**	**3**	**3**
Level 3: Report not complete	**3**	**13**	**0**	**0**

Table 3 – Incident Examples of Varying MedSCIM Ratings

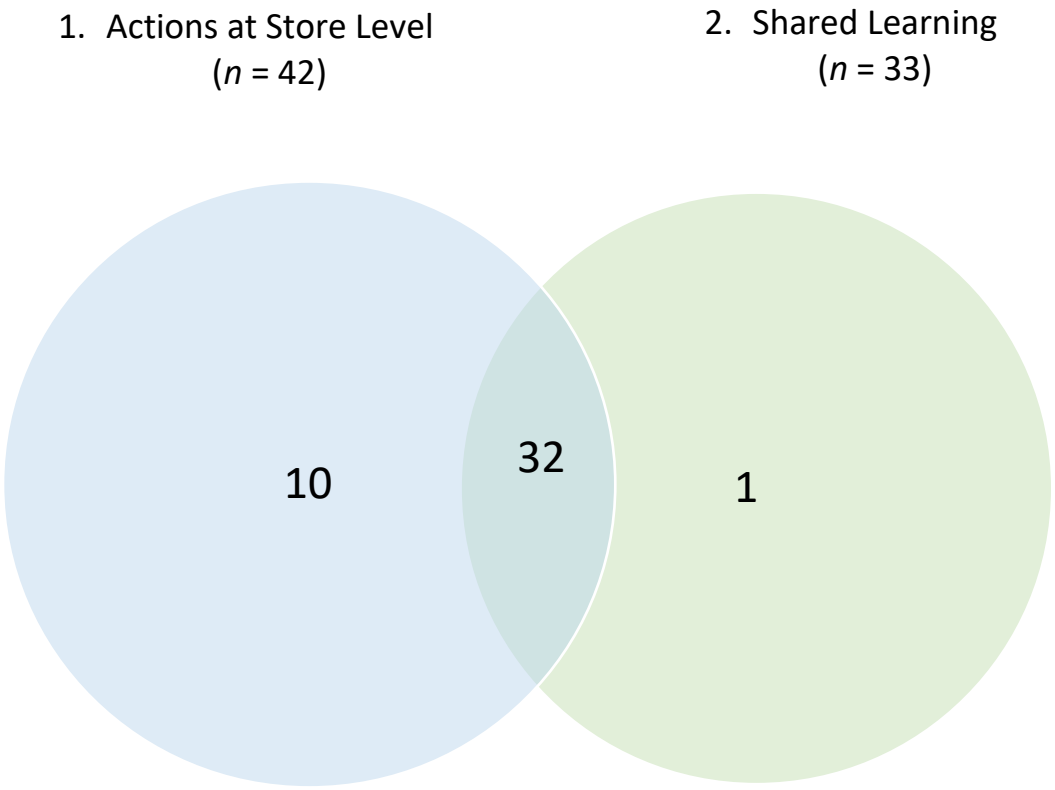
	Incident Examples *(Edited for clarity or to remove identifiable factors)*	Core Event: Degree of Documentation	Maturity of Culture to Medication Safety
#1	A patient was prescribed a prednisone taper with a starting dose of 50 mg (10 x 5 mg tablets) to be reduced by 10 mg every 3 days until complete. The assistant entered an incorrect starting dose of 30 mg which was not caught by the dispensing pharmacist. The quantity of medications and days supply were both entered correctly. The patient was provided with the correct number of tablets, although the directions were incorrect. The error was discovered the following day and the patient was contacted. The patient took 6 x 5 mg tablets for that day already and agreed to take another 4 tablets and continue with the correct directions thereafter. **Actions at store level:** The assistant and pharmacist involved in the incident were informed to take greater caution when entering and checking prescription details.	1	D
#2	A patient received a new prescription for empagliflozin in the middle of their compliance pack period. Since the patient was unable to return to the pharmacy to have their compliance packs modified, a vial of the medication was delivered to them. The patient's list of compliance pack medications was updated accordingly. When the patient's list of compliance pack medications was refilled, empagliflozin was missing from the packs. **Actions at store level:** The missing empagliflozin was delivered to the patient.	2	C
#3	A patient was prescribed apixaban but dispensed ticagrelor instead. The error was discovered after the patient called the dispensing pharmacy to clarify the medications that they received earlier in the day. The patient indicated that the medication label stated apixaban, while the packaging stated ticagrelor. This was confirmed after the patient returned to the pharmacy and showed the pharmacist. Contributing factors that led to this error include the storage of ticagrelor and apixaban beside each other, and the similar appearance of the packaging. **Actions at store level:** Following this incident, ticagrelor and apixaban were stored in separate sections of the pharmacy to avoid future mix-ups. The pharmacy team was also reminded to check DINs when dispensing medications, and to conduct independent double checks whenever possible to verify medication identity.	1	A

Figure 4 – Breakdown of "Level 1" Documentation Ratings by Optional Fields Entered (n = 72)*



**Thirteen Level 1 reports have none of the optional fields entered.*

Figure 5 – Breakdown of "Grade A" Culture Ratings by Optional Fields Entered (*n* = 45)**



***Two Grade A reports have neither Actions at Store Level nor Shared Learning*