National System for Incident Reporting

Learning From Medication Incident Data: A Guide to Using and Understanding NSIR Data

Introduction

The NSIR analytic tool gives users an opportunity to learn from medication incidents that occur across Canada or within their own facility. This document provides guidance on how NSIR data can be used to support sharing and learning.

NSIR Analysis—Where to Start

There are three general approaches to analysis:

1. Searching for incidents with very specific criteria, often in an effort to learn from similar situations that have occurred;
2. Summarizing data from within a user’s own facility, typically for feedback to front-line staff or for senior management reporting; and
3. Starting with very broad search criteria before drilling down on results to narrow the focus and (perhaps) to read the complete details of a few incidents.

The analytic tool offers templates that can be customized and saved by users. These templates offer analyses by single or multiple variables, by facility (in a multi-site organization or health region) or by ward/unit of a user’s own facility. Specific criteria (such as drugs involved or facility size) can be used to refine the search, and all results can be output in table or graph format.
Local Analyses

Analyzing a facility’s own data supports a broad range of applications. Some uses include engaging front-line staff in the identification and implementation of local solutions, reporting to senior management and examining patterns across several units or sites. The user’s knowledge of local contextual issues (recent program changes, policies, staffing patterns, physical surroundings, etc.) supports the interpretation of the data.

Pan-Canadian Analyses

Analyses using pan-Canadian data support participating facilities in several ways. For example, users are able to look more broadly at similar types of errors (such as heparin errors with severe harm) that occurred elsewhere and compare trends among peer hospitals (for example, based on bed size or hospital type). This can emphasize the inherently systemic nature of some incidents, provide evidence for the development of preventive strategies and help identify possible strategies. Users also have an enhanced capability to analyze rare and/or catastrophic events. By accessing a larger sample of incidents, new safety strategies can be identified and recommended to other users.

NSIR Analysis—Potential Uses of the Analytic Tool

The case example that follows illustrates potential uses of the NSIR MicroStrategy analytic tool at the local and pan-Canadian levels.

A risk manager at a teaching hospital receives a report that a patient was seriously harmed on a surgical unit as a result of an incident involving heparin. After collecting the initial details, an in-depth investigation is conducted to determine root causes.

The investigation of an incident can raise some of the following questions:

- Have similar incidents been reported at my facility?
- How can I reduce the risk of future incidents like this?

Have Similar Incidents Been Reported at My Facility?

NSIR data can be used to answer this question and to help create a context within which the incident can be viewed. NSIR is not able to answer the question “How often has this type of incident happened in my facility?” because not all incidents are necessarily reported. However, available data can guide future action.

A single-variable report (Table 1) of incidents involving heparin could illustrate the level of harm to patients. A multiple-variable report (Table 2) could be used to understand the type of problem involved in those heparin incidents. Other analyses (not shown here) could illustrate the wards/units where these incidents occurred, the periods in which they occurred or the factors that contributed to the incidents.

i. All data presented in this document is fictitious. All tables and graphs have been formatted and do not show the exact output format found in MicroStrategy.
### How Can I Reduce the Risk of Future Incidents Like This?

Analyzing data from other facilities can help users identify potential preventive strategies as well as validate the experiences of their organizations. In this example, a user could apply a very specific search (such as for harmful incidents involving heparin in surgical units in teaching hospitals) to find very similar situations, or a user could start more broadly with all heparin incidents (regardless of functional area or hospital size). To illustrate a key feature of the MicroStrategy tool, we will assume the user begins with a very broad search of heparin incidents across the entire database (Table 3).

If the user wanted to know more about the two incidents in Table 3 that resulted in severe harm, he or she could drill down on the results to see a summary of each incident. The case listing in Table 4 provides some key details about where the incidents occurred, the drug(s) involved and the text field description of what happened.
For even more information about a single incident, users can click on a record’s NSIR Case ID hyperlink to open a detailed view of all of the information that was submitted for that record. Often it is the information provided in the Investigation and Findings section of an individual NSIR case that can provide helpful context and safety strategies for the user.

If the complete record still does not provide enough information about a particular incident, the user can send an anonymous message from within the NSIR application to the facility that submitted the incident. By using this connectivity, all participants have further opportunity to discuss and learn.

The case listing analysis shown in Table 4 has applications that extend more broadly than the above example. Many NSIR users have produced summary reports of incidents to share with front-line staff on specific wards or units at their facilities. They have found that by providing a summary of the (anonymous) incidents that occurred over the past month, front-line staff will begin to discuss the incidents with coworkers, often developing unit-specific solutions to prevent similar incidents from recurring. This front-line engagement can also encourage further reporting and help to promote a culture of safety. An example of this application can be seen in the NSIR video “CIHI data: working to prevent medication incidents,” online at www.cihi.ca/land/Article/Data+In+Action/cihi010203.

Interpreting NSIR Analytic Reports—Limitations and Considerations

It is important to consider the limitations of the NSIR data as well as contextual issues when utilizing and interpreting the results of analyses. Key considerations are provided below.

- The number of reported incidents does not equal the number of incidents that occurred. Not all incidents that occur are discovered and not all incidents that are discovered get reported. As a consequence, the number of reports is always going to be fewer than the actual number of incidents.
- The literature estimates that between 2% and 20% of incidents are reported. The variance is influenced, at least in part, by the culture of safety within a facility—those that have a strong safety culture are likely to report a higher percentage of incidents.
- Higher levels of reporting do not equate with higher numbers of occurrences or a less-safe environment. High levels of reporting could mean that there is a campaign on that unit to report incidents and/or that the culture of safety permits front-line staff on the unit to feel confident to report without reprisal.
- It isn’t possible to determine the total number of incidents based on the number of reports. Biases may influence what types of incidents are reported, by whom and when. These make the number of reports misleading for any type of indicator use or benchmarking.