



## CANADIAN INCIDENT ANALYSIS FRAMEWORK

### *Multi-Incident Analyses*

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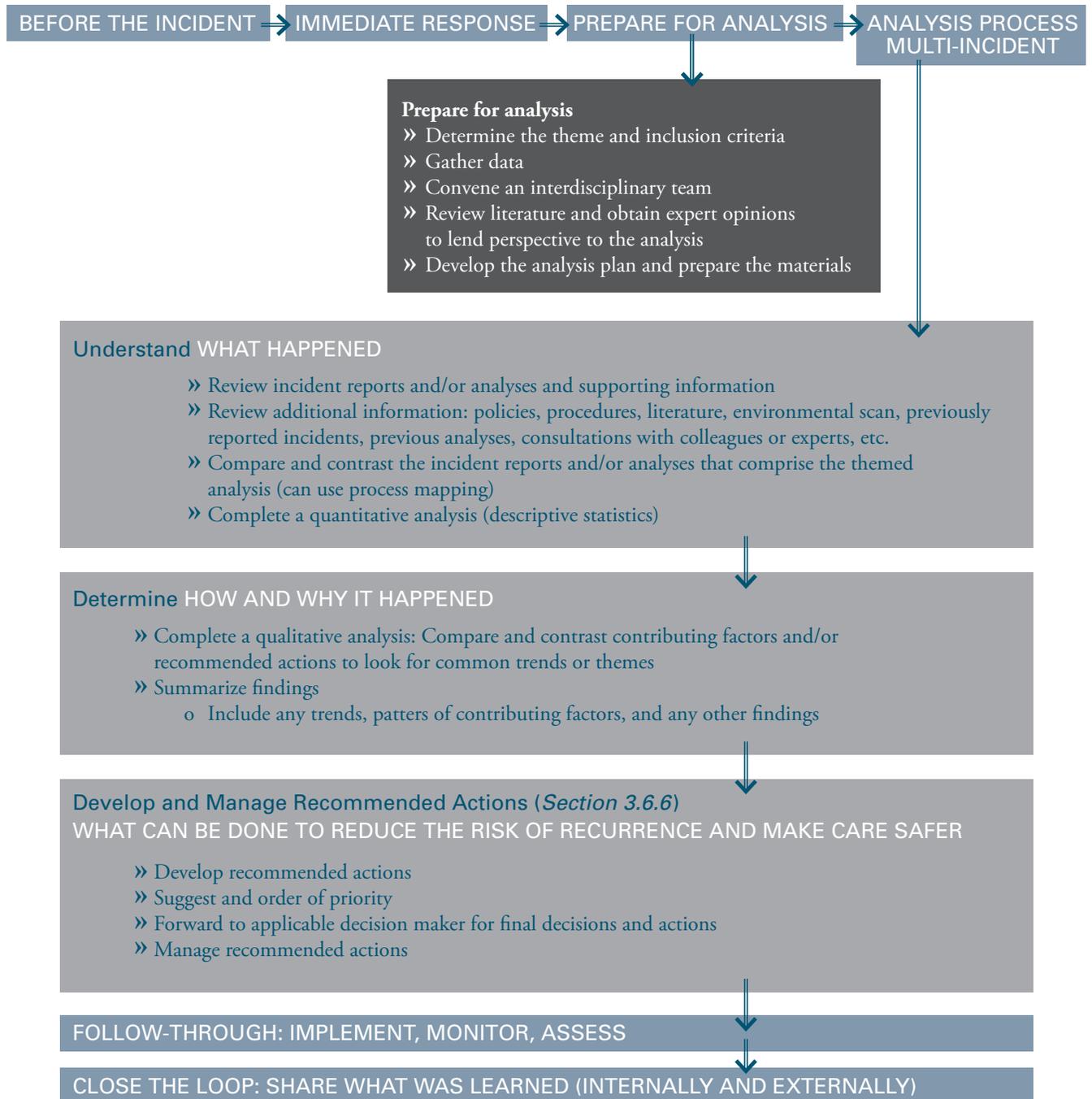
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### 3.6.5 Multi-Incident Analyses



## Introduction

In addition to individual incident analyses (comprehensive and concise), many healthcare organizations also require a methodology for analyzing multiple incidents that are identified by a particular theme. For example:

- A group of individual patient safety incidents, similar in composition and/or origin that caused no harm or lesser degrees of harm.
- A group of individual patient safety incidents that are similar in composition and/or origin that may have caused varying degrees of harm (no harm to catastrophic/major harm).
- A group of patients that are impacted by a similar contributing factor(s), and who experience the same harmful incident (to greater or lesser degrees).
- A group of completed comprehensive and/or concise incident analyses.

For the purpose of this framework, an analysis of multiple incidents is called “multi-incident analysis”. Alternate terms used in the literature for this type of analysis include cluster, aggregate and meta-analysis. Common features of any multi-incident analysis include:

- Pre-defined theme or scope;
- Involvement of an interdisciplinary team including frontline providers and possibly a patient representative; and
- Use of quantitative and qualitative methodologies.

A benefit of multi-incident analyses is they have the potential to reveal trends or patterns of contributing factors that were not previously perceptible. These analyses can also reveal previous recommended actions that were or were not effective. Below are examples that describe various types of multi-incident analyses and the methodology for conducting such analyses.

### **Example 1: A group of low and no harm incidents or near misses that have not been analyzed**

Most Canadian healthcare organizations have reporting systems in place for staff and physicians to report incidents that may have caused no harm or lesser degrees of harm. Although it is generally agreed that these incidents are valuable learning opportunities, in the absence of significant patient harm they are, too frequently, filed away with little or no review. In particular, when multiple no or low harm incidents are analyzed as a group, they have the potential to reveal trends or patterns of contributing factors that may not be identifiable by looking at a single incident. If actions are identified and taken as a result of the analysis, future incidents might be avoided.

This type of analysis would include three or more no harm, low harm and near miss incidents that have not previously been analyzed as a part of a patient safety incident analysis. For example, an analysis of 15 falls or near falls that identified common patterns of contributing factors and safety deficiencies was conducted by Zecevic A. et al and published in the *Gerontologist* in 2009.<sup>57</sup>

**Example 2: A group of incidents that are similar in composition and/or origin that may have caused varying degrees of harm (no harm to catastrophic/major harm)**

Some healthcare organizations may decide to analyse multiple incidents involving a predefined theme or criteria. The patient outcome of these incidents may be varied – from no harm to catastrophic/major harm. For example: all falls occurring in an in-patient acute care unit during a six month period, including eight incidents that were low harm and not analyzed and one event where there was severe patient harm and a comprehensive patient safety incident where analysis was previously conducted.

This type of analysis would include three or more near miss, no harm, low harm, or significant harm incidents occurring within a defined period of time or location. As noted above, one or more of these may have been previously analyzed using a comprehensive or concise analysis methodology.

The scope of these analyses can extend beyond organizational boundaries and jurisdictions. The Institute for Safe Medication Practices Canada (ISMP Canada) has prepared medication incident analyses using a variety of themes including the medication type, stages of the medication use process (e.g. prescribing, ordering processing, dispensing, administration, monitoring), and medication use settings (e.g. OR, ER, ICU) or subset(s) of the healthcare segment (e.g. outpatient clinics, nursing homes).

**Figure 3.8: EXAMPLES OF THEMED MULTI-INCIDENT ANALYSES PUBLISHED BY ISMP CANADA <sup>58</sup>**

- *Analysis of International Findings from Incidents Involving Fentanyl Transdermal, 2009; 9(10)*
- *Top Five Drugs Reported as Causing Harm through Medication Error in Paediatrics, 2009; 9(6)*
- *Analysis of a Cluster of Medication Incidents in Community Pharmacy, 2008; 8(8)*
- *Shared Learning – Reported Incidents Involving Hydromorphone; 2006; 6(9)*
- *Top 10 Drugs Reported as Causing Harm through Medication Error; 2006; 6(1)*

**Example 3: A group of patients that are impacted by a similar contributing factor(s), who experience the same harmful incident (to greater or lesser degrees)**

In recent years, Canadian jurisdictions have been alerted to situations whereby many patients experienced a similar harmful outcome that seem to be the result of similar contributing factors.

The theme of this type of analysis is a common outcome that impacted multiple patients. Although the contributing factors may be complex and unique to each incident, learning can be achieved by analyzing these multi-patient incidents. For example: medical imaging and pathology errors have impacted many Canadians in more than one province. Through multi-patient incident analyses, frailties in healthcare systems have been revealed and improvement strategies implemented. Recent examples that have received media attention

include: BC Patient Safety and Quality Council: *Investigation into Medical Imaging, Credentialing and Quality Assurance* (2011)<sup>62</sup>, and Health Quality Council of Alberta: *Investigation into Medical Imaging, Credentialing and Quality Assurance* (2010).<sup>63</sup>

#### **Example 4: A group of completed comprehensive and/or concise incident analyses**

Organizations that conduct analysis of individual patient safety incidents will accumulate a rich source of information regarding identified risks, contributing factors and action plans to reduce these risks for patients. Organizations are encouraged to develop and utilize a management system to coordinate the learning and ensure what is learned about the health system is not lost or forgotten.

An analysis of multiple comprehensive and/or concise event analyses<sup>9, 13, 37</sup> is not unlike an aggregate or epidemiologic meta-analysis, although it does not have as precise a scientific and statistical methodology associated with it. This analysis consists of a group of completed reviews conducted on similar types of incidents. An illustration of this type of analysis is available from Queensland Health, Australia.<sup>64</sup>

Ideally an organization will employ a management system to coordinate the identification of overarching themes related to multiple incidents that have been analyzed. The overarching themes may include types of incidents analyzed, contributing factors identified and action plans to reduce harm to patients. For instance, there may be a number of recommended actions made by reviewers that identify the need for improved teamwork and/or communication. This may in turn lead to the design of a strategic improvement priority for the organization with designation of appropriate resources to support the effort.

### **Steps in Conducting a Multi-Incident Analysis:**

#### **Prepare for analysis**

- Determine the theme and inclusion criteria (e.g. identify the characteristics of no or low harm incidents to be analyzed [no harm to catastrophic harm] or multi-patient incidents, or identify a theme for multiple completed analyses to be reviewed).
- Gather applicable data:
  - If applicable, conduct interviews with provider(s), patients/families, and others with knowledge of the incidents and/or care processes involved in the incidents.
- Review literature and obtain expert opinions to collect additional background and contextual information and lend perspective to the analysis:
  - Review other reporting and learning systems (such as the *Global Patient Safety Alerts*<sup>13</sup>) to see if similar incidents have been studied by other organizations.
- Develop the analysis plan, which will include both qualitative and quantitative analysis elements.

## WHAT HAPPENED

Review the patient safety incidents and/or previous comprehensive and concise analyses to look for common trends, patterns and issues. This will include comparing and contrasting timelines, contributing factors, and recommended actions from previous incident analyses. Process mapping, a tool frequently used to support Failure Mode and Effects Analysis (FMEA)<sup>59, 60</sup> and Lean<sup>61</sup> improvement methodology can also be used to support the identification of system weaknesses when conducting an analysis of multiple incidents.

Note the frequency of system issues or failure points and if applicable, recommended actions. This is the quantitative portion of the analysis and will include classifications such as: severity of harm, type of incident, patient diagnosis, etc.

## HOW AND WHY IT HAPPENED

The qualitative analysis involves focusing on the identified contributing factors as well as similarities that may not have been apparent through an individual incident review. Narrative descriptions are particularly helpful for this portion of the review. As common patterns are identified, the team may need to further sub-categorize to clarify trends or issues.

When a group of comprehensive and/or concise analyses are reviewed both the contributing factors and the recommended actions may be included in the qualitative analysis.

Summarize findings including contributing factors and previously recommended actions that may lead to system improvement. Include any trends, patterns of contributing factors, and any other findings.

## WHAT CAN BE DONE TO REDUCE THE RISK OF RECURRENCE AND MAKE CARE SAFER?

Develop recommended actions that will lead to system improvement, giving consideration to available supporting information, including evidence-based guidelines and leading practices. Identify both short term and long-term strategies. See [Section 3.6.6](#) for guidance in building effective recommended actions to reduce risk.

It is helpful for the team to consider a measurement and evaluation strategy before forwarding recommended actions to applicable decision makers for final decisions and delegation for implementation.

## WHAT WAS LEARNED

The findings (contributing factors, trends and themes), recommended actions and their outcomes should flow into and be coordinated with the organization's risk management and improvement processes, including processes for communicating and sharing learning.