Concise Incident Analysis Tool

Concise Incident Analysis Tool:
A Resource for Health Care Organization

Sponsored by:

Canadian Patient Safety Institute

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CHAPTER 1: BACKGROUND

Root cause analysis (RCA) investigations of patient safety incidents (an event or circumstance that could have resulted, or did result, in unnecessary harm to a patient)[1] have played an important role in improving care. This rigorous methodology is designed to understand all relevant aspects of an incident and to take effective actions that reduce the risk of a recurrence.

Given the complexity of the health care environment and the significant resource requirements of an RCA (a form of comprehensive incident analysis), health care leaders and patient safety experts have begun to look for a more *concise* method of incident analysis that is timely yet accurate. Examples of abbreviated incident analysis methodologies exist,[2-4] but evaluation of their effectiveness has been limited.[2]

Comprehensive incident analysis is defined as an analysis by an inter-disciplinary group of staff and physicians that is facilitated by a person(s) with knowledge of the process, human factors, and effective solutions development in health care. The patient, family members, and/or independent experts may also be involved. The process may take up to 90 days, based on the depth and breadth of the analysis. Incidents **resulting in none, mild, moderate, severe patient harm, and/or death** may undergo a **Comprehensive Event Analysis.**

Concise incident analysis is defined as an analysis by a person(s) with knowledge of the incident analysis process, human factors, and effective solutions development in health care, with input gathered from patients, family members, staff, and physicians local to the event as well as organizational or external experts. The process is often completed within hours or days due to the less intensive approach. Incidents **with none, mild, and moderate patient harm** may undergo a **Concise Incident Analysis.**

****Please note**:** This tool should **only** be used by a facilitator (analyst/reviewer) with knowledge, skills, and experience in incident analysis, human factors, systems approach, and effective solution development. Several resources for incident analysis training are available online.[5,6]

Why would you want to use the concise method?

Concise analysis is a less resource intensive approach to incident analysis that can contribute important knowledge regarding a larger number of incidents. This analysis method involves a conscious and deliberate decision to focus primarily on four aspects: the agreed-upon facts, key contributing factors and findings, actions for improvement (if any), and evaluation. Learning at the local level can then flow into the higher organizational level for prioritization of risks and integration into a systematic quality improvement approach to improve patient safety. A concise incident analysis uses a systems approach and considers human factors.

Who should use the concise incident analysis tool?

This tool should be used by a facilitator (analyst/reviewer) with knowledge and skills in incident analysis, human factors, systems approach (explained on Chapter 2 section C), and effective solution development. The facilitator usually gains this expertise through a formal education program, and/or mentored experience. Several resources for incident analysis training are available online.[5,6] The facilitator may be a health care provider or other professional, such as a process improvement expert; this individual does not have to be a risk manager or quality improvement consultant.

Note: incident analysis should comply with all local policies and legislation. A concise analysis approach will not be suitable for all types of reviews. It may be useful to transition from a concise approach to another type of analysis as new information is made available.

CHAPTER 2: OVERVIEW OF CONCISE INCIDENT ANALYSIS METHOD

A. Case Selection

- Determine if incident analysis is appropriate.
- Determine if concise incident analysis is appropriate.

B. Understand What Happened

Obtain sufficient information to understand the incident.

- Identify a facilitator to conduct analysis.
- Gather facts
    - From records and other applicable documents.
    - If applicable, gather and examine the equipment, product, or environment.
    - Have informal discussions (interviews) with patient/family, provider(s), manager(s), attending physician, and/or expert(s) in the specific circumstance, equipment, and/or product.
- Develop a high-level timeline or narrative description.
- If applicable, transition to comprehensive analysis

C. Determine How and Why It Happened

Analyze information to identify key contributing factors and the relationships among them. Use a systems approach and human factors.

Identify key contributing factors

- Use guiding questions to BRIEFLY explore all the domains of contributing factors.
- Select some specific guiding questions that are relevant to the incident to further focus the analysis.

- Identify the relationships between contributing factors using a diagram
- Prioritize and summarize findings
- Develop statement of findings.

D. Develop Recommended Actions for Improvement

If there is sufficient evidence, formulate actions for improvement to reduce the risk of recurrence and make care safer.

- Develop recommended actions
    - List actions for improvement (evidence-based and always striving to select the most rigorous action possible on the Hierarchy of Effectiveness,).
    - Include proposed persons accountable for implementation, timeline, and an evaluation strategy for each action.
- Discuss recommended actions with leadership/ administration
    - If no new lessons are identified, report the ongoing patient risk as part of broader organizational risk management processes

E. Evaluate the Effect of the Actions for Improvement

Once the action is fully implemented, evaluate its effect based on the strategy identified in the previous phase. The general lessons and findings should be disseminated within and, when applicable, outside the organization to prevent a recurrence of the incident.

CHAPTER 3: THE CONCISE INCIDENT ANALYSIS METHOD

A. Case Selection

Determine if incident analysis is appropriate

A systems-based approach is looking beyond the contribution of individuals to consider how complex interacting elements of the entire healthcare system influence care. It uses a standardized methodology to minimize hind sight bias and ensure that applicable contributing factors are objectively determined.

Because the concise analysis method is not suitable for all incident types, the first step is to determine if a systems-based incident analysis is appropriate (see workbook A). The following types of incidents are not recommended for a systems-based analysis:

1. Events thought to result from a criminal act.
2. Purposefully unsafe acts (an act where care providers intended to cause harm by their actions).
3. Acts related to substance abuse by provider or staff.
4. Events involving suspected patient abuse of any kind.

These situations should be referred to the appropriate police, administrative, professional, or regulatory bodies for investigation and resolution.

Determine if concise incident analysis is appropriate.

If a systems-based incident analysis is suitable, the second step is to determine if a concise incident analysis is appropriate for that case. The following attributes can guide this decision (see workbook A):

- Incidents that resulted in **no** or **low harm** to the patient.
- Incidents primarily limited to **one work area, division, or department**.
- New incidents for which a comprehensive analysis was recently completed.
- Initial review to determine whether a comprehensive incident analysis is appropriate.

Note: not all information regarding the incident may be available during the case selection process; therefore, the facilitator selects the optimal method and anticipates the potential for changing the method as new information emerges.

Table 2.1: Characteristics of Concise and Comprehensive Incident Analysis[3]

Characteristic	Concise	Comprehensive?
Should include person(s) with knowledge of incident analysis, human factors, systems approach, and effective solutions development	Yes	Yes
Often facilitated by an individual with input gathered from a few other individuals, such as the patient, family members, staff, and/or physicians local to the incident as well as organizational or external experts	Yes	No
Conducted by an interdisciplinary medium-to-large ad hoc group (may include patients, family members, staff, and physicians local to the incident as well as operational/medical leadership and recognized independent internal or external experts/consultants not involved in the incident)	No	Yes
Time taken for analysis	Short timeframe (hours to days)	Long timeframe (up to 90 days)
Identifies contributing factors as well as remedial actions(s) taken (if any)	Focus on key factors	Yes
Recommendations for improvement	Yes (if applicable)	Yes
Principles of incident analysis (begins as soon as possible, includes all involved in the incident [including patient/family] and leadership of the organization, is objective and impartial, is thorough, and considers reporting systems and alerts, relevant literature and expert evidence)	Reflects the intent, but may not address all	Incorporates all principles
Evaluation strategy to determine what impact was achieved	Yes (if applicable)	Yes

B. Understand What Happened

Identify a facilitator

A facilitator (analyst/reviewer) with knowledge and skills in incident analysis, human factors, systems approach, and effective solution development performs the concise analysis. The facilitator usually gains this expertise through a formal education program and/or mentored experience. Several resources for incident analysis training are available online.[5,6] The individual may be a health care provider or other professional, such as a process improvement expert; this individual does not necessarily have to be a risk manager or quality improvement consultant. Generally speaking, a single facilitator can perform a concise incident analysis; however, some organizations may find benefit in using a team.

**** Please note**:** This tool should **only** be used by a facilitator (analyst/reviewer) with knowledge, skills, and experience in incident analysis, human factors, systems approach, and effective solution development. Several resources for incident analysis training are available online.[5,6]

Gather facts

The facilitator should gather facts from different sources to understand what happened and to develop a high-level timeline or narrative of the incident from:

- Records (health record, incident report) and other documents
- Discussions (interviews) with a few the individuals directly involved in the incident.[4] They may include the healthcare providers, managers, experts, patients, and/or family members directly involved in the incident.[4] Patients and/or family members bring a perspective that no one else has therefore their input is important. Expert(s) in the specific circumstance, equipment, and/or product may also be consulted. See workbook B.
- Equipment/ products/ environment examination (if applicable)
- Other techniques that might be employed include: direct observation of practice, recreating the events by "walking the process," group meetings with involved members, etc…

Interview principles

- Interviews should be conducted as soon as reasonably possible after the incident for two reasons. First, memories fade quickly and important details may be lost over time. Second, as individuals involved in the incident discuss their recollections with one another, versions may blur together and the opportunity to obtain unique perspectives and details may be missed.
- Informal interviews should be conducted one person at a time so that individual perspectives about the incident are well understood.
- A cooperative interview approach is encouraged, using open-ended questions. Individuals should be asked to "tell their story" and possibly re-enact the incident or portions of the incident. Ask individuals if there are any factors that contributed to the incident as well as factors that mitigated the outcome of the incident (what went well?).

- Sincerely thank people for helping and ensure that their questions about the process are answered.

Gathering equipment, products, and other items

Gather materials used during or close to the time of the incident that may have directly or indirectly contributed to the circumstances (such as the equipment and any product/care items). These materials can be secured for testing and review. Materials may include, but are not limited to, biomedical equipment, IV solutions, medications, packaging, and garments. Photographs of the items and workspace are often helpful.

Develop a timeline or narrative description

Document key factual information in the form of a high-level timeline or narrative description. It is common to provide this information in a narrative chronological descriptive format. This understanding will collate information from various sources, including the health record and informal interviews with key individuals. It is important that the timeline include only the actual events or processes as they occurred, and not what was supposed to happen.
See workbook C.

Transition to Comprehensive Analysis

If during the step of understanding what happened there is some indication that a concise incident analysis may not be appropriate, consult with local or hospital leadership to decide if a comprehensive approach to the analysis is needed. If yes, the facts collected so far can be used for the comprehensive analysis. Factors that may be considered:

- Deviations from Case Selection criteria (Chapter 2, Section A)
- Increased need of institutional resources for investigation to effectively identify contributing factors and/or develop high leverage interventions
- Involvement of several department/units
- Significant risk to institution (for example, reputation, liability)
- Patterns of similar incidents in other work areas

Tips for transitioning to a Comprehensive Analysis

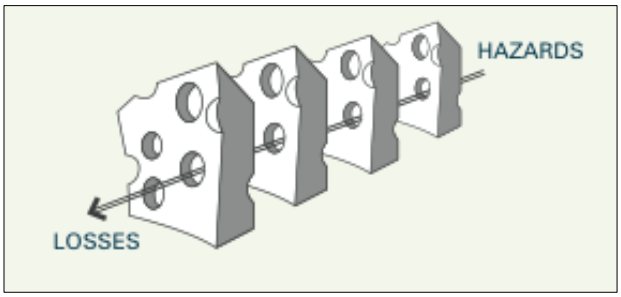
- Document findings arising from the Concise Incident Analysis and identify key additional sources of information to fully understand what happened.
- Formalize a team for the comprehensive analysis (if not already established).
- Determine how and why the incident occurred.
- Refer to Table 2.1 for the characteristics of a Comprehensive Incident Analysis.

C. Determine How and Why It Happened

Concepts

There are two key concepts to consider to ensure the analysis reflects the complexities of the health care system while remaining practical: the systems approach (as illustrated by the Swiss Cheese Model in Figure 2.1) and the domain of human factors. These concepts support a deeper understanding of how and why incidents occur in health care, including the identification of specific contributing factors.

Figure 2.1: The Swiss Cheese Model[3]



James Reason's Swiss Cheese Model[3] provides a framework for understanding and analyzing the complex and dynamic nature of patient care from a systems perspective. The model explains how the defenses, barriers, and safeguards that exist in a system are not impermeable and can be penetrated. This occurs when active failures (unsafe acts) and latent conditions (dormant system conditions) align and create the opportunity for an incident. Latent conditions can be identified and corrected. Targeted strategies can also mitigate the frequency and severity of unsafe acts. It also points to the fact that humans are fallible and errors will occur even in the best organizations because people are incapable of perfect performance every time.

The questions to ask when an incident happens are how and why the defenses in the system failed and, in the case of a near miss, how did they succeed? In other words, look at the system as a whole, rather than just at the actions of individuals.

At its core, the science of human factors examines how humans interact with the world around them. This specialized knowledge is used to help determine how and why incidents occur as well as help design efficient, human-centered processes to improve reliability and safety.

Historically when an incident occurred, the tendency was to look for the most obvious explanation of what happened and why. In most cases, individual human error was identified as the cause, primarily because it was obvious (frequently referred to as the "sharp end" of the system) and seemed easy to fix. Patient safety experts perceive that human error is a symptom of broader issues in a poorly designed system (often referred to as the "blunt end" of the system), such as an adverse physical or organizational environment. A deeper inquiry into the circumstances will yield system-based contributing factors. Recommended actions for improvement will vary significantly and may range from physically changing the design of a software

interface, sign, form, or medical device to redesigning a room (for example, operating suite) in a facility to optimize safety and efficiency.

Identify key contributing factors

Use the information gathered to identify key factors that contributed to the incident. Two key questions that will help this process are: "how did this happen?" and "what else influenced the circumstances?" The facilitator should continue to ask "how" and "what influenced it" questions until no further information can be generated for the key contributing factors.

Use the guiding questions (workbook D) to briefly explore each domain (task, equipment, work environment, patient characteristics, care team, organization, other) of factors that may have contributed to this incident. For domains that are relevant to the incident, further explore each specific question.

Table 2.2: Domains of Factors in Guiding Questions

Patient(s) characteristics: (Considered in the context of how well the system identified, understood, and acted upon these factors. It should not be the only factor considered.)
Task (care/work process)
Care team – Caregiver(s)
Care team – Supporting team (all involved in care process)
Equipment (including materials, fixtures, information and communication systems)
Work environment
Organization – Policies and priorities
Organization – Culture
Organization – Capacity (resources)
Other (including Mitigating or Preventative Factors or Actions)

Identify the relationship between contributing factors using a diagram

Diagramming is a helpful exercise in understanding the relationship between contributing factors. The Tree (Figure 2.2) and Constellation Diagrams (Figure 2.3) are two potential tools for diagramming.

The benefits of the constellation diagram include a visual description of the non-linear cascading aspects of each contributing factor. Use the collected incident information to determine if there are any actions or conditions that may be related to one or more of the seven domains. If so, use the guiding questions and other queries in an effort to describe what occurred in the blunt end of the system that contributed to the incident. A chain of actions and/or conditions will be identified and can be illustrated on the diagram. Expect that many of the actions or conditions from different chains will be interrelated and influence each other, known as a cluster. At the conclusion, the diagram will clearly show the relationship between contributing factors (horizontal and vertical integration) and identify clusters of factors where they directly impact one another. The clusters on the diagram may assist in determining what actions will impact more than one contributing factor and why. See Workbook E for reference to Excel and Word

templates for constellation diagramming.

Following completion of either the Tree or Constellation Diagram, formalize the findings in writing. These findings are most often the basis for recommended actions. The overall goal is to determine if an action or a small number of actions can be taken to address all key contributing factors identified."

Figure 2.2 Tree diagram[3]

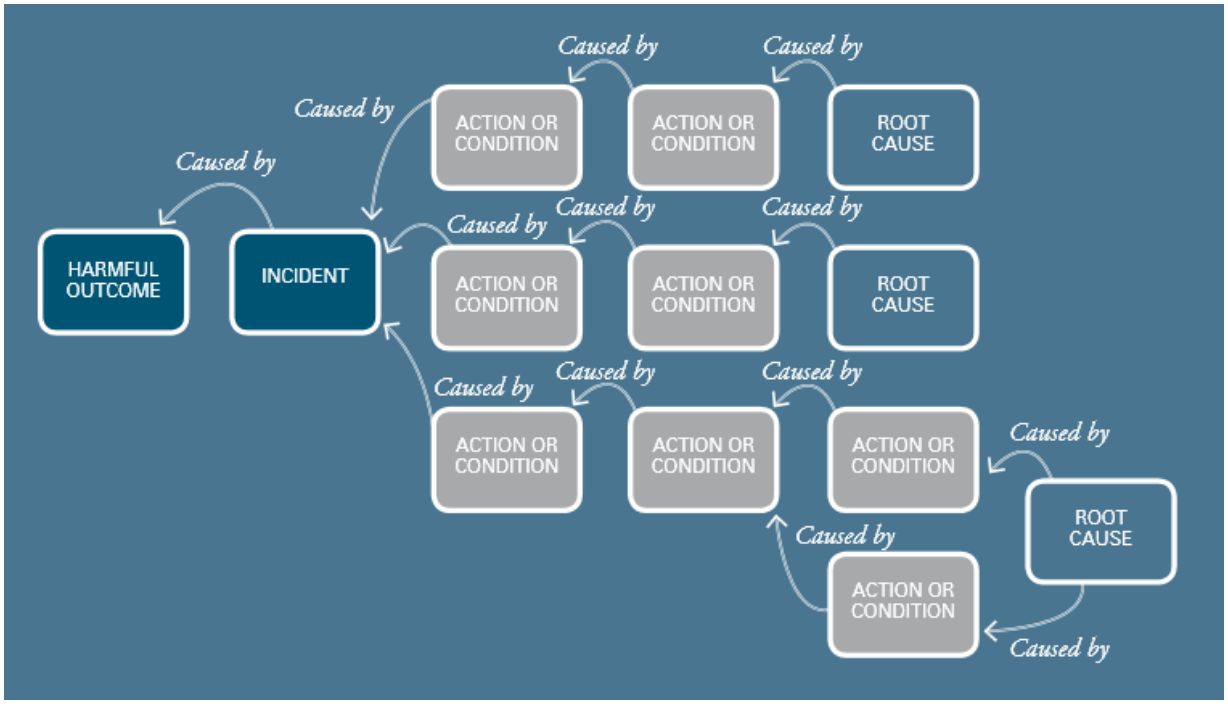
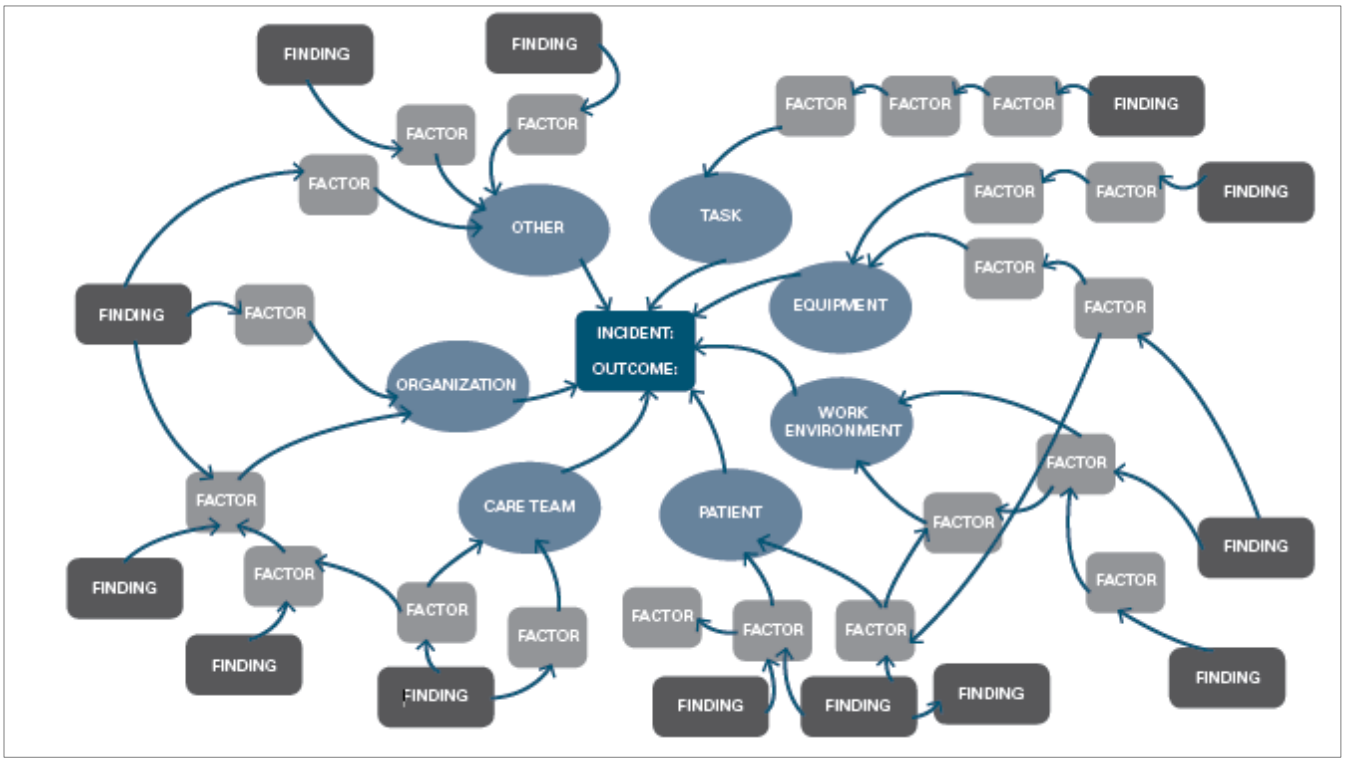


Figure 2.3 Constellation Diagram[3]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Prioritize and Summarize Findings

Once the team has completed the analysis, the contributing factors should be prioritized by importance (Table F, page 21). Several attributes could help in prioritizing:

How important is this factor in contributing to this incident?[7]
Factors that, if corrected, would likely have prevented the incident.[6]
Factors that, if corrected, would likely have mitigated the harm.
Factors that if corrected, would not have prevented the incident or mitigated the harm, but are important for patient/staff safety or safe patient care in general.
Factors that didn't allow the incident to have more serious consequences and represent solid safeguards that should be kept in place.
How important is this factor in contributing to future incidents?[6]

Statement of Findings

Prepare a summary of the findings to clearly articulate the contributing factors related to the incident and provide the backbone to develop recommended actions. This summary should be formatted as a series of statements of findings (sometimes referred to as causal statements). The statements of findings describe the relationships between the contributing factors and the incident and/or outcome. The statement of findings should have the following characteristics:[8]

- Clearly shows the contributing factor (actions / conditions) and effect relationship.
- Uses specific and accurate descriptions of what occurred rather than negative and vague words.
- Identifies the preceding system contributing factor of the error and NOT the human error.
- Identifies the preceding cause of procedure violations (if applicable).

The suggested statement has three parts and uses the following format: the contributing factor ("This happened…"), the effect ("… which led to something else happening…"), and the event ("… which caused this undesirable outcome.")[9]

Statement of findings examples:

"Lack of an explicit and formalized hand over communication protocol between the daytime and nighttime on-call physicians increased the likelihood that key patient care information would not be effectively transferred and that follow up medical assessments would not occur."

"Lack of an electronic prescriber order entry system increased the likelihood of medication transcribing errors related to the illegibility of prescriber handwriting."

"Lack of pharmacy support on the weekend resulted in a lack of specialized pharmaceutical expertise for medical and nursing questions at these times and increased the likelihood that a drug interaction could occur and/or be perpetuated."

"Medication reconciliation without using at least two independent sources of medication information increased the likelihood of errors related to inaccurate and/or incomplete best possible medication histories."

D. Develop Recommended Actions

After summarizing the findings, the facilitator should determine what can be done to reduce the risk of a recurrence of the incident. Note that in some instances, analyses may not generate any new recommended actions but could substantiate the need for those previously identified. A few well thought out high-leverage recommendations may ultimately be more effective than a lengthy list of low impact actions. The recommended actions should address the risks and contributing factors identified during the analysis.

Develop recommended actions

In order to develop robust, credible, and more precise actions, use a consistent approach and strive to incorporate the steps below (see workbook G).

Review the literature for evidence-based actions. Aim for the highest level of evidence available (Table 2.3, Levels of Evidence). Consider "best practices" or practice guidelines that are recommended by professional organizations. Several resources for practice guidelines are available online.[10-12] In the absence of evidence-based recommendations, consider best practices within your organization or at other reputable health care organizations.

Table 2.3. Levels of Evidence[11]

Randomized controlled trial (highest)
Cohort Studies
Cohort Studies
Case-Control Studies
Case Series
Expert opinion
(Non-expert) Peer opinion (lowest)

- Utilize the most effective solution on the Hierarchy of Effectiveness (see Table 2.4 and 2.5).
- Offer a long-term solution to the problem.
- Actions should have a greater positive than negative impact on other processes, resources, and schedules. Balancing measures should be in place to ensure that unintended consequences are known and understood.
- Provide enough context (explanation and facts) to ensure that if the action is implemented, those responsible for implementing it will understand the rationale behind it.
- Write out actions using the "SMART" format:
    - Specific – tackle a clearly defined issue and have a clear scope;
    - Measurable – can demonstrate impact on process and outcomes;
    - Assignable – can be allocated to one individual to be accountable for implementation;

- Realistic – ensure that the action is possible; and
- Timely – have a timeframe for implementation.

Where possible, consult with providers in the area where the incident occurred, with experts, and in some cases with patients/families. This step helps ensure that the recommendations are appropriate and the identified risks have been addressed, and ensures there is a high probability that the reoccurrence of this or similar incidents has been reduced (workbook G).

Table 2.4 Hierarchy of effectiveness[13]

Type of Intervention	Effectiveness
Forcing Function and Constraints (e.g., different connectors for oxygen and air)	High leverage – Most effective
Automation/Computerization (e.g., automated alerts for drug allergies)	
Simplification/Standardization (e.g., standard dosing of antibiotics)	Medium leverage
Reminders, Checklists, Double-Checks (e.g., central venous catheter insertion checklist)	
Rules and Policies (e.g., policy on patient rounding to assess fall risk)	Low leverage – Least effective (while these are important, they will not result in sustained practice change when used alone)
Education and Information (e.g., educate staff on high-alert medications)	

Discuss recommended actions with leadership/administration

The facilitator discusses the recommended actions with key local decision makers and experts. They should assess the risk, benefits, costs, and logistics of implementing the recommended actions. This is an opportunity to consider the potential for introducing unintended consequences to current processes (e.g., creating unnecessary steps or added workload, possibly leading to unsafe workarounds). At this time, they also confirm the individual assigned to ensure implementation of each recommended action. If no new lessons are identified, report the ongoing patient risk as part of the broader organizational risk management processes.

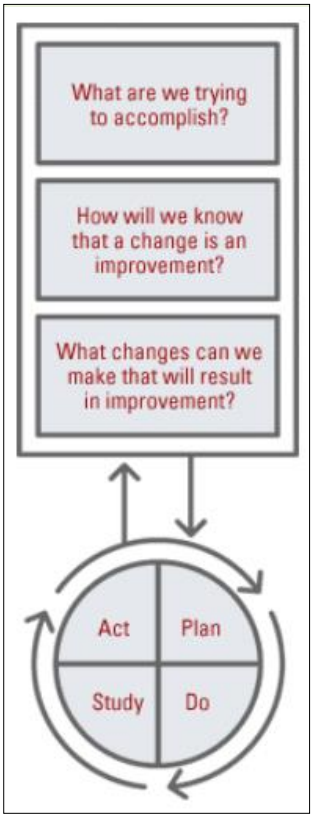
The recommended actions that are accepted by organizational leadership will become action items for implementation.

Table 2.5 Examples of Solutions in Health Care and other industries

Concept	Examples
Eliminate a task or part	• Removal of meperidine from hospital stock to prevent side-effects. • Recall of some infant cribs to prevent suffocation. • Eliminate the need to transpose vital signs from physiologic monitor to chart through direct communication between the two devices.
Engineer the task or part so that mistakes are harder to make	• Use different connectors for different electronic components to prevent incorrect connections. • "Dead man's switch" – a switch that automatically stops a process when the human operator is incapacitated. Seen on treadmills, lawnmowers, trains, etc… • Locking-cabinets that prevent multiple drawers from being opened at the same time to prevent cabinets from toppling over.
Replace the task or part with a more reliable task or part	• Replace simple medication infusion pumps that require calculation of drip rates with "smart" pumps that automatically calculate and control rates. • Replace mattress material with flame-resistant materials. • Use a checklist to complete a vital sequence of events instead of relying on memory.
Facilitate the process to make the work easier to perform correctly	• Breslow tapes/resuscitation bags to help with dosing of pediatric medications • TALLman lettering to differentiate look-alike, sound-alike medications
Detection strategies that make the mistakes more visible	• Physiologic monitor alarms; ventilator alarms that detect out of range parameters. • Smoke detectors • Color-coding of abnormal vital signs to make them more visible. • Highlight/asterisks next to abnormal laboratory findings to make them more visible.
Mitigate/minimize the effects of errors	• Airbags to minimize harm in the event of vehicle crashes • Cushioned-side rails to minimize harm in the event of seizures.

E. Implement and Evaluate the Effect of Actions Items

Figure 2.4.
Improvement Model



Implement the action items

The facilitator, or other person(s) designated by the organization, oversees the implementation status of each action item. Since this is the output of the concise incident analysis, it is important to implement action items exactly as intended. It is important to clearly state who will be responsible for the implementation and the process of action item implementation.

Evaluate the effect of action items

At times, monitoring the effect of action items on patient safety might seem like "just more work." Some action items, though well intentioned and planned, may not have the desired effect in practice. Thus, the effect of the implemented action items should be monitored. This will determine if the changes helped make the system safer, had no or limited impact on the system, or actually made the system less safe.

Use of a change management[14] or improvement tool[7] can help facilitate implementation of action items in a way that supports success.[15,16] The Improvement Model (Figure 2.4) is a commonly used and effective tool that can provide guidance for establishing measures and tracking progress.

Share learning

The general lessons and findings should be disseminated within, and where applicable, outside the organization to prevent harm recurrence. Possibilities for sharing the lessons learned include local staff/team members, local quality and patient safety committees, senior leadership, other units with similar patient populations, and affiliated organizations. This is the final objective of the analysis. Without learning and sharing, the organization and/or external organizations, remain vulnerable because the same or similar incidents could happen again in another area. Results of the analysis should roll up into an organization-wide reporting and learning system and be shared with the senior leadership and Board of Trustees. This learning may also be shared with the public and the global community (e.g., by contributing to the Global Patient Safety Alerts).[12]

CHAPTER 4: WORKBOOK

(All elements of the workbook can be adapted to fit the incident and the organization to ensure ease of use and remove duplication of effort.)

A. Case Selection Criteria

Determine if an incident analysis framework is appropriate.

	Yes/No
Is the event thought to be the result of a criminal act?	
Was the event a purposefully unsafe act?	
Was the event related to substance abuse by any provider/staff?	
Did the event involve suspected patient abuse?	

If the answer to any of these is clearly yes, do not proceed with an incident analysis framework. Instead, refer the case to the suitable administrative, professional, or regulatory bodies for resolution.

Determine if a concise incident analysis is appropriate.

	Yes/No
Did the incident result in no or low harm to the patient?	
Is the incident primarily limited to one work area, division, or department?	
Is this a new incident for which a comprehensive analysis was recently completed?	
Is this an incident where you have insufficient information to decide whether to perform a comprehensive or concise incident analysis?	

If the answer to any of these questions is yes, consider using the concise incident analysis tool.

B. Interview Sheet

Interviewee:	Date of Interview

What happened?

Factors that may have contributed to the incident.

Factors that may have mitigated severity of the incident.

How might an incident like this be prevented in the future?

C. Timeline

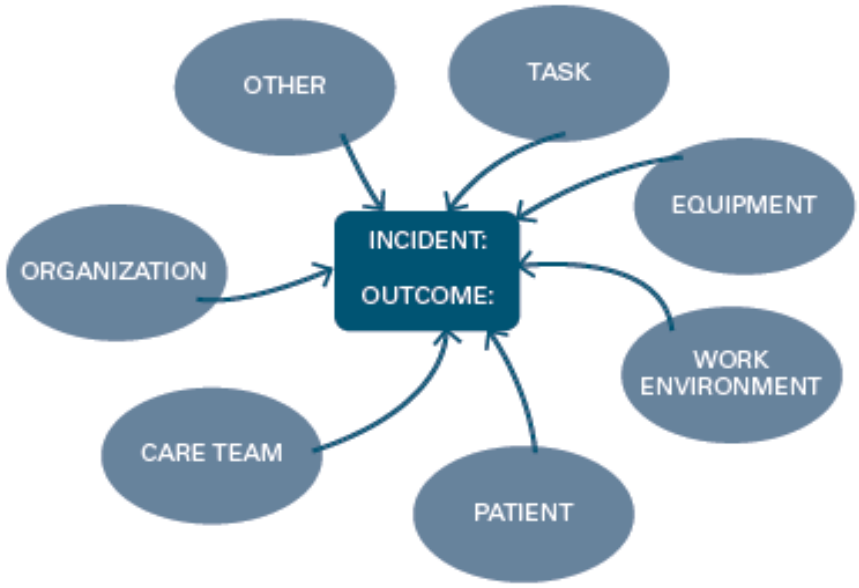
Date/Time	Information	Source/Comment

D. Guiding Questions

Domain/ category of contributing factors	Relevant?
Patient(s) characteristics: (Considered in the context of how well the system identified, understood, and acted upon these factors. It should not be the only factor considered)	
Did the patient(s) have the information to assist in avoiding the incident?	
If not, what would have supported the patient in assisting their care team?	
Did factors like age, sex, medications, allergies, diagnosis, other medical conditions, contribute to the incident? How did they contribute?	
Did any social or cultural factors contribute to the incident?	
What factors? In which way?	
Was language a barrier?	
Other?	
Task (care/work process):	
Were there previous or predicted failures for this task or process?	
Were specialized skills required to perform the task?	
Was a fixed process or sequence of steps required (e.g. order sets, checklists)?	
If a fixed process existed, was it followed?	
Was a protocol available, was it up-to-date, and was it followed in this case?	
Were there constraints or pressures (e.g., time, resources) when performing the task?	
Was the information required to make care decisions available and up-to-date (e.g., test results, documentation, patient identification)?	
Was there a risk assessment/audit/quality control program in place for the task/process?	
Other?	
Care team – Caregiver(s):	
Were the education, experience, training and skill level appropriate?	
Was fatigue, stressors, health or other factors an issue?	
Was the workload appropriate?	
Was appropriate and timely help or supervision available? Other?	
Care team – Supporting team (all involved in care process):	
Was there a clear understanding of roles and responsibilities?	
Was the quality and quantity of communication (verbal and/or written) between team members appropriate (clear, accurate, free of jargon, relevant, complete, and timely)?	
Were there regular team briefings/debriefings about important care issues?	
Was team morale good? Did team members support each other?	
Were the communication channels available and appropriate to support the needs of the team (e.g., email, pager, and phone)?	
Other?	
Equipment (including materials, fixtures, information and communication systems):	
Were the displays and controls understandable?	
Did the equipment automatically detect and display problems?	
Was the display functional?	
Were the warning labels, reference guide, and safety mechanisms functional and readily visible/accessible?	

Were the maintenance and upgrades up-to-date?	
Was the equipment standardized?	
Would the users describe this equipment as “easy to use?”	
Were the communication systems (phone, pager, software, hardware, etc.) available and operational?	
Other?	
Work environment:	
Did noise levels interfere with the alarms?	
Was the lighting adequate for the task?	
Was the work area adequate for the task(s) being performed (e.g., space, layout, location and accessibility of resources)?	
Other?	
Organization – Policies and priorities:	
Were the relevant policies and procedures available, known, and accessible, and did they meet the needs of users?	
Were there workarounds to the documented policy/procedure?	
Was there a mechanism in place to identify and resolve gaps between policy and practice?	
Were the strategic priorities of the organization clear to all?	
Other?	
Organization – Culture:	
Was everyone (patients, clinicians, other staff) comfortable to speak-up about safety concerns?	
Was there visible support from leadership and the board for safe patient care?	
Was communication between staff and management supportive of day-to-day safe patient care?	
"Were incidents viewed as system failures with a mechanism/transparent process for fair and just review of actions by individuals where indicated?"	
Other?	
Organization – Capacity (resources):	
Did scheduling influence the staffing level, or cause stress, or fatigue?	
Was there sufficient capacity in the system to perform effectively (e.g., access to resources)?	
Were formal and/or incentives appropriate?	
Other?	
Other – consider:	
Are there any factors that prevented this event from happening on a more regular basis?	
Where there any factors or actions taken that mitigated the severity of the event?	
Were there any local conditions or circumstances that may have influenced the incident and/or an outcome?	
Were there any other contextual conditions or circumstances that may have influenced the incident and/or outcome?	
Other?	

E. Diagramming Contributing Factors and Their Interconnection Around Domains (categories of contributing factors)



Excel and Word template for constellation mapping available at:
http://www.patientsafetyinstitute.ca/English/toolsResources/IncidentAnalysis/LearningOpportunities/Pages/The-constellation-diagram---a-deep-dive.aspx

The diagram can also be illustrated using a word template:

Task:	**Equipment:**	**Work Environment:**
	Outcome: **Incident:**	**Patient:**
Other:	**Organization**	**Care Team:**
Notes on connections among factors:		

For a learning session on how to develop the constellation diagram in Excel click here:
http://www.patientsafetyinstitute.ca/English/toolsresources/IncidentAnalysis/LearningOpportunities/Pages/The-constellation-diagram---a-deep-dive.aspx

F. Prioritize and Summarize Findings:

Priority #	Domain (task, equipment, etc.)	Contributing factor	Comment

G. Develop Action Items

Priority #	Contributing Factor	Recommended Action	Hierarchy of Effectiveness (see Table 2.4)	Level of Evidence (see Table 2.3)	Estimated Costs

H. Oversee Implementation of Action Items

Priority #	Action Item	Measure of effectiveness	Responsible Person	Target Completion Date	Status

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