

Review

Risk Management & Priority Setting

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Key points

- It is the responsibility of the Infection Control Team to identify infection control practices which are unsafe and hazardous.
 - Unsafe practices must be assessed for their likely severity and frequency.
 - Priority must be given to hazardous practices that have high adverse effects, occur more frequently and have low cost to prevent.
 - Effectiveness of these measures should be monitored by regular audit and/or surveillance and the information must be fed back to front-line clinical staff and relevant managers.
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Introduction

The delivery of an effective infection control service requires trained and motivated infection control practitioners whose job, amongst other things, is to identify unsafe and hazardous infection control practices, recommend cost effective preventive measures and help healthcare facilities set priorities. These objectives can be achieved by applying the concepts of risk management.

Unfortunately patterns of risk behaviour are not taught in the medical or nursing curricula, which perhaps explain why healthcare workers do not always consider the consequences of errors and mistakes in their practice.

Risk management

Risk is defined as the *possibility of incurring misfortune and loss*. Risk management is a *proactive* approach and its aim is to prevent or minimize harm. Potential problems are identified and the potential for harm is assessed. Actions are then planned to reduce the likelihood of the problem arising or to limit the harm caused. In infection control

the risks are typically biological agents that have the potential to cause infection or a mechanism that allows the transmission of an infectious agent to occur.

The risk management process can be divided into four key stages (See Figure 1):

1. Risk identification
2. Risk analysis
3. Risk control
4. Risk monitoring

1. Risk identification

The process of risk management starts with risk identification and involves:

- Identifying the activities and tasks that put patients, healthcare workers and visitors at risk;
- Identifying the infectious agent involved; and
- Identifying the mode of transmission.

The aim is to identify common problems/practices that impact a large number of patients or rarer problems

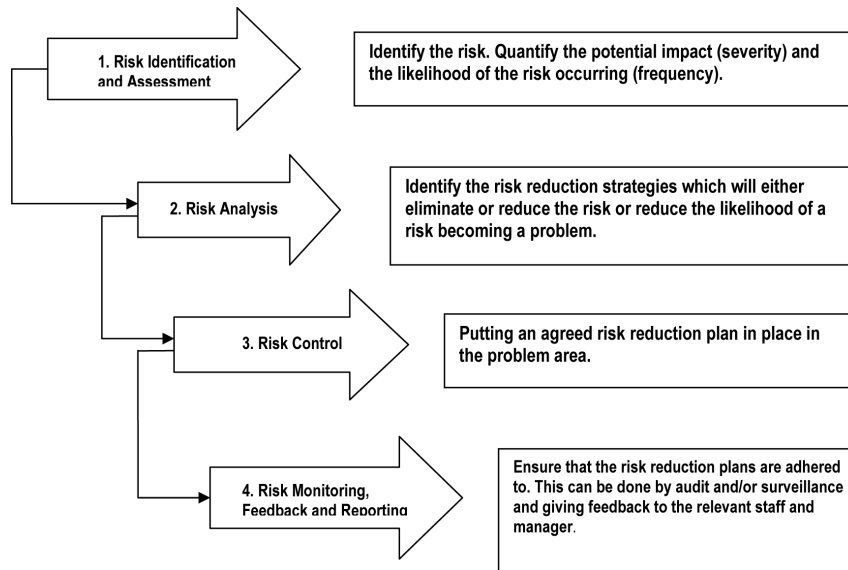


Figure 1: Risk management processes

which cause severe infection or death. Once a problem is identified, it is essential to obtain evidence to confirm that the infection is spreading by a particular route. This usually requires the expert knowledge of the Infection Control Team and can be achieved by observational or experimental studies.

2. Risk analysis

Once the risk has been identified, it is important to estimate the likely consequences.

This can be achieved by analysing four key questions:

- a. Why are infections happening?
- b. How frequently are they happening?
- c. What are the likely consequences if the appropriate actions are not taken?
- d. How much will it cost to prevent it?

a. Why are infections happening?

A range of system failures can result in patients developing healthcare associated infections. It is important to analyse these factors in detail.

Type I error: These errors occur due to an act of *omission*, e.g., failure to comply with current professionally accepted practice. One basic cause of Type I error is lack of knowledge and it is typically common in healthcare institutions where there is an inadequate provision of education, training and supervision. In developing countries a scarcity of goods can also contribute to this type of error. Regular education and training, good communication and availability, and regular supplies of goods are necessary to address this type of error.

Type II error: These are acts of *commission*, i.e., an act should *not* have been committed. These may be due to education deficits or lack of commitment or consideration for others. This error is more complex and amongst other things may also require management reinforcement.

Type III error: This error mainly occurs where management of service fails to understand the true nature of the problem. Real solutions are adopted to deal with the wrong problem. This is often due to lack of communication or misinterpretation of information as a result of inadequate research or information.

b. How frequently are these errors happening?

This information is quantitative and can be obtained by ongoing surveillance data (if available) or by performing a point prevalence study. The information can be gathered from other sources, e.g., an outbreak investigation, local prevalence data, data published in the literature and clinical evidence. Frequency can be measured as the percentage or rate of persons who developed infection following either a clinical procedure or exposure to a pathogen (See Figure 2). If surveillance data are not available, probability can be used instead (See Table 1).

Table 1: Risk probability

Rating	Probability	Comments
4	1:10	Almost certain or very likely to occur
3	1:100	Highly probably that they will occur.
2	1:1000	It is possible that they may occasionally occur.
1	≥ 1:10000	They are rare and not expected to occur.



Table 2: Severity rating

Rating	Description		Comments
20-30	High or major	Major impact on patient which may lead to death or long term consequences	Urgent action is required
10-19	Moderate	Moderate impact which may lead to short term consequences.	Action required
1-9	Low risk or minor	Minimum impact with no or minor consequences	Keep under review

c. What are the likely consequences?

Severity of the consequences can be measured in terms of morbidity (disability or increased length of stay in hospital) or mortality experienced by persons who had a procedure or exposure. Severity of the adverse effects can be ranked as in Table 2.

d. What is the cost of prevention?

It is important to estimate the cost of prevention of each risk. Estimated costs are acceptable, as the exact cost may be difficult to obtain. The cost of prevention of infections is important because it helps us to target resources where they will deliver the greatest advantage in terms of preventing harm to patients (See Table 3).

3. Risk Control

Once the risk analysis has been completed, look at the possible solutions. Ideally, the risk should be completely eliminated; if this is impossible then the risk should be reduced to an acceptable level. In some situations, it may be more cost effective to transfer the risk to a third party, such as a private contractor. For example, if there is a problem with the supply of sterile goods it may be more cost effective to purchase these directly from a contractor than to correct an expensive problem due to inadequate equipment.

Table 3: Cost

Cost rating	Description
20-30	Very expensive to implement
10-19	Expensive to implement
1-9	Cheap to implement

If resources are severely constrained, then it may be possible to accept the risk in both the short and possibly long term. Willingness to tolerate known risks in a healthcare institution is different in different parts of the world and is based on knowledge of the consequences of the risk, the availability of resources to correct it, and the fear of litigation.

4. Risk monitoring and feed back

Once the appropriate measures are in place to reduce the risk, it is essential to monitor their effectiveness. This can be performed through audit or by surveillance of infection or both, depending on the availability of resources. Feedback must be provided to front line healthcare workers and senior management of the health care facility.

Priorities for action

Studies have shown that approximately 10% of patients at any one time have developed an HAI. It is thought that about 30% of hospital acquired infections could be prevented by the better application of existing knowledge and implementation of realistic infection control policies. Once there is information available on the severity, frequency of occurrence and cost of prevention, priorities for action can be made by calculating risk rating as follows:

$$\text{Risk rating} = \text{Severity} \times \text{Frequency (probability) of disease} \times \text{Cost of prevention}$$

A risk rating with the highest score would merit immediate attention (See Figure 3). Calculation of the risk rating helps us to understand the true consequences of adverse events and helps the Infection Control Team set priorities in the most effective way.

High severity	2. High severity Low frequency (blood stream infections caused by contamination of IV feed in NNU)	1. High severity High frequency (blood-borne Infections from re-use of syringes & needles)
Low Severity	4. Low severity Low frequency (infections from hospital linen)	3. Low severity High frequency (urinary tract infections)
	Low Frequency	High frequency

Figure 2: Frequency and Severity

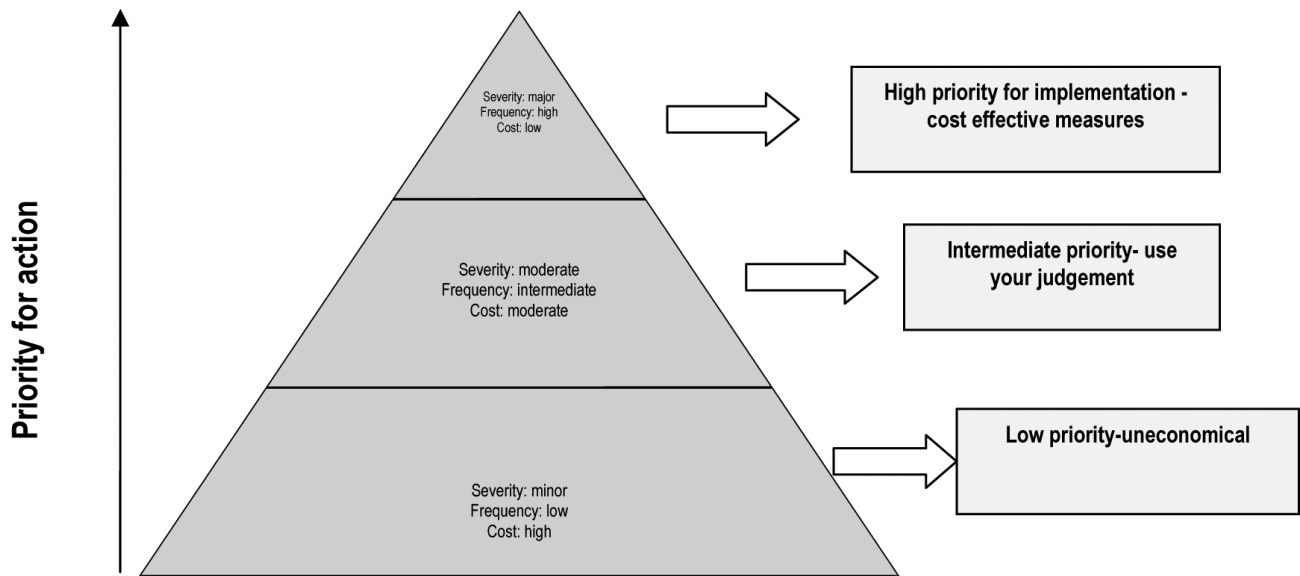


Figure 3: Priorities

References and further reading

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