

NINETEEN

MANAGEMENT OF AN INFECTION PREVENTION PROGRAM

KEY CONCEPTS you will learn in this chapter include:

- What the organizing principles for managing infection prevention programs are
- Who should be involved in managing the program
- What the purpose of the infection prevention working group is
- What the decision-making process involves
- What types of issues and problems are commonly encountered

BACKGROUND

Successful programs for preventing the spread of infectious diseases by any route (blood, body fluids, air, droplet or contact) in healthcare facilities are based on understanding the scope of the problem, prioritizing activities and effectively using available resources. Because available resources are invariably limited, careful planning, implementing and monitoring activities on a regular basis, whether in a small clinic or a busy district hospital, are all essential.

In many countries, functioning infection surveillance systems are lacking, laboratory backup to identify the cause of nosocomial (hospital-acquired) infections is inadequate, and treatment options are limited. Thus, not only is infection prevention the most cost-effective option, but often it is the only realistic one available to limit the spread of disease within healthcare facilities. Unfortunately, it is the hardest of the three elements (surveillance, control and prevention) to implement because it requires staff at all levels to take an active role in preventing the spread of infections to patients, fellow workers and themselves.

Fortunately, most nosocomial infections in healthcare facilities can be prevented with readily available, relatively inexpensive strategies. And for some of the most serious infections, namely, AIDS, hepatitis C and multidrug-resistant tuberculosis, prevention is all we can do. To make this happen, however, healthcare administrators, clinic managers and staff at all levels must be totally committed to supporting and using recommended infection prevention guidelines and practices.

DEVELOPING SUCCESSFUL PROGRAMS

Helping hospitals and clinics become safer places in which to work or be cared for is largely about changing behavior. Education is not enough. To change unsatisfactory performance by staff (e.g., lack of compliance with handwashing guidelines) requires management reinforcement if the behavior change is going to be sustained (Lynch et al 1997). It is the responsibility of administrators and clinic managers, working in conjunction with key staff serving on operating room safety or infection prevention committees, to:

- set standards for performance, mentor staff and regularly monitor staff performance; and
- help staff at all levels “buy in” to using common sense when performing their assigned duties, as well as using appropriate personal protective equipment at all times.

In addition, there needs to be:

- Consistent support by hospital administrators and managers of safety efforts (e.g., identified deficiencies corrected, dangerous practices eliminated and staff actively encouraged to seek inexpensive, doable solutions).
- Supervisors who regularly provide feedback and reward appropriate behavior (e.g., handwashing between patient contacts).
- Role models, especially physicians and other senior staff and faculty, who actively support recommended infection prevention practices and demonstrate appropriate behavior (Lipscomb and Rosenstock 1997).

ORGANIZING PRINCIPLES FOR MANAGING INFECTION PREVENTION PROGRAMS

According to Lynch et al (1997), the three organizing principles for managing programs are:

1. establishing the relative importance of problems using the Spaulding categories of potential infection risk—critical, semicritical and noncritical;
2. identifying and analyzing the reasons for poor or incorrect performance; and
3. costing the issues (i.e., estimating the cost and benefits of activities).

As presented in **Chapter 1**, the Spaulding categories of potential risk provide a good basis for determining relative importance and setting priorities (e.g., the most serious and frequent problems and infections involve management in the critical area and, therefore, deserve the most attention and resources). The second principle, correctly identifying why

performance is not up to standard, usually comes down to three possible reasons. Staff:

1. do not know how to do the task correctly, or why they need to do it;
2. do not have the correct (adequate) protective equipment; or
3. lack motivation.

In most cases, more than one reason is involved. Understanding how these reasons contribute to performance deficits increases the potential for corrective action to be successful. The third and final principle is estimating the cost-benefit of corrective actions. In many countries, this is the most difficult of the three to implement because data on which to base estimates are often lacking.

WHO SHOULD BE INVOLVED IN MANAGING THE PROGRAM

As mentioned above, it is important to identify and bring together key hospital staff to form an infection prevention working group or committee if one has not been established. The purpose of the working group is to guide and support the use of recommended practices and to review and resolve related problems that may arise. This working group or committee should include representatives from a variety of patient care areas (e.g., surgery, central services, housekeeping, laboratory, purchasing and administration) and include one or more health professionals. In clinics where these functions often overlap, however, the group may consist of only two or three individuals.

Although the risk of infection cannot be completely eliminated, it can be minimized. Based on an analysis of the problems or issues, the working group will need to make and implement recommendations that are consistent with the relative importance, type of corrective action needed and cost.

Basic guidelines and activities that help managers implement successful programs include:

- Have written policies and procedures established to handle situations in which patients or staff are exposed to the risk of infection.
- Conduct staff orientation before new policies, recommendations or procedures are started and provide followup training when management reinforcement is needed.
- Be sure adequate supplies, equipment and facilities are available before start-up to ensure compliance.
- Conduct regular reviews to ensure the adequacy of the recommended changes or practices, to solve any new problems and to address staff concerns.

Remember: Include all staff members in what you are doing, share ideas and materials with them and be ready to listen to their points of view.

Finally, effective and regular communication at all levels is the key to developing the support needed for a successful program.

MAKING MANAGEMENT DECISIONS

With infection prevention, as with any clinical area, numerous situations arise where tough decisions have to be made, weighing the advantages of a certain procedure against the possible risks to the patient or healthcare worker. These decisions must be practical and consistent and, as much as possible, should be based on scientific evidence. Throughout this manual, evidence is presented to help managers make better, more informed decisions and recommendations regarding frequently encountered problems, such as:

- Recommendations for improving compliance with hand hygiene guidelines (**Chapter 2**).
- Appropriate selection and use of gloves for various healthcare tasks (**Chapter 4**).
- Selecting the most appropriate antiseptic agents or chemical disinfectants, ones that are affordable and usually locally available (**Chapters 6 and 12 and Appendixes B and E**).
- Decisions regarding the appropriate reuse of disposable (single-use) items (**Chapter 14**).
- Use of personal protective equipment (PPE), especially gloves and other items (**Chapters 4 and 5**). (These items should be provided based on available resources and be made available in areas of the healthcare facility where they are most needed and will be used.)
- How to design safer surgical operations (**Chapter 7**).
- How to use safety checklists for making the operating room safer for patients and staff (**Appendix I**).
- Recommendations for waste management, a particularly difficult problem (**Chapter 8**).
- Guidelines for management of accidental exposure to HBV, HIV and HCV (**Chapter 7**).

In making these decisions, managers often must strike a balance between the importance of the problem and providing acceptable levels of safety for specific healthcare tasks. Two examples of situations frequently encountered by hospital managers in most developing countries are discussed in the following sections.

So-Called “Prophylactic Use” of Antibiotics

This issue warrants special consideration because it represents an inappropriate and costly misuse of valuable resources and also contributes to the growing problem of antibiotic resistance. For example, many service providers feel that because clients and patients have poor hygiene and/or

they are poorly nourished, giving a 5- to 7-day course of antibiotics—usually a tetracycline—will prevent infections following elective surgery. Not only have numerous articles documented that this does not work, but by definition this is not prophylactic antibiotic use.¹

This is a management issue in which the education of professional staff (physicians and nurses) is extremely important and should include:

- Reviewing existing literature documenting that routine use of postoperative antibiotics in healthy patients undergoing elective surgery does not prevent infections (Ladipo et al 1991).
- Pointing out that the inappropriate use of antibiotics increases the prevalence of antibiotic resistance in the community and wastes precious resources.
- Reminding staff that when recommended infection prevention practices are conscientiously followed, routine postoperative antibiotics are not necessary (see **Chapter 7**).

Myths and Misconceptions about HIV/AIDS

The decisions and actions of healthcare staff are largely influenced by personal feelings, attitudes and beliefs, and their level of knowledge. For example, with the rapid emergence of the HIV/AIDS epidemic, especially in sub-Saharan Africa, parts of South Asia and the Caribbean, healthcare staff have become increasingly concerned about their own safety and about working in places where they come in contact with people who may be HIV-infected. This is a particularly difficult issue, especially when the risk to staff is associated with providing elective surgical procedures for health-related reasons, such as for family planning (e.g., voluntary sterilization, IUDs and Norplant implants), as opposed to medical-related services. These concerns can lead to either:

- adopting unnecessary and often expensive and excessive precautions; or
- taking unnecessary risks in the mistaken belief that for a given situation, there is little risk or that nothing can be done to minimize the risk (Flexner 1991; Klouda 1991).

Examples of unnecessary or excessive use of preventive practices include washing hands after shaking hands with people believed to be HIV-infected, and wearing examination gloves for any type of contact with patients known or believed to be HIV-infected. As a consequence, adequate supplies of valuable equipment (e.g., examination gloves) may not be available for situations where they are needed, such as for minor surgical procedures or vaginal exams for women in labor.

¹ Prophylactic antibiotic use is the provision of an antibiotic 30–60 minutes prior to starting a surgical procedure and ending not more than 6–12 hours postoperatively.

In some cases, however, health workers go to the other extreme and disregard proven protective practices, such as picking up suture needles with their gloved hand rather than with a forceps or recapping hypodermic needles. When recommended protective actions are not followed, healthcare workers place themselves, their patients and their fellow workers at risk, and the result is a management problem.

As mentioned above, preventing infections primarily involves education linked to behavior change interventions. Staff not only need to have correct information regarding risks and know how to avoid risks, but also they need to have appropriate risk-averting behavior demonstrated. In addition, personal concerns linked to the risk-taking behavior need to be addressed. For example, studies have shown that healthcare workers are often willing to change bad attitudes and work habits when they understand the reason for and importance of a new safety procedure (Raven and Haley 1982; Seto et al 1990). Unfortunately, it was also noted in these same studies that while positive behavioral changes may occur following training, such compliance often decreases again in a few days or weeks. Thus, in order to ensure continued compliance, management reinforcement is needed, as well as a monitoring system that ties results to overall performance indicators.

STAFF TRAINING

Initially, all levels of healthcare workers (e.g., nurses, physicians, housekeepers and cleaners) need to know why infection prevention is important. Key topics to be taught should include:

- The disease transmission cycle, routes of infection and how to break the cycle (see **Chapter 1** and **Figures 1-1** and **1-2**).
- Use of Standard Precautions when dealing with all patients, not just those who appear or are known to be infected (**Chapter 2**).
- Methods of minimizing disease transmission (i.e., hand hygiene, gloves and other PPE) as well as “hands-on” demonstrations covering, for example:
 - Handwashing and using a waterless, alcohol-based antiseptic handrub
 - Cleaning up a blood or body fluid spill
 - Giving an injection and disposing of sharps
 - Learning to suture with blunt-tipped needles

To have long-term effects, the initial training should be followed up, and monitoring should be targeted toward identifying and solving specific problems related to introducing the new process or procedure. General reminders regarding the importance of maintaining an infection-free environment for safer delivery of services also should be repeatedly emphasized.

MONITORING THE EFFECTIVENESS OF TRAINING

Regular monitoring of infection prevention practices and processes is important, not only to assess their effectiveness but also to determine the topics about which staff may need more training or review. To monitor effectiveness:

- Spot check how staff are performing any new procedures.
- Assess whether recommended practices are being followed.
- Note whether the necessary equipment and supplies are available and being used properly.

Based on the findings, future topics for training can be identified. **Table 19-1** is a sample checklist that managers can use to see whether recommended infection prevention practices are being followed.

Table 19-1. Checklist to Assess Whether Infection Prevention Guidelines Are Being Followed				
Health facility: hospital:	clinic:	other:	Date:	
Type of health worker::			Evaluator:	
(e.g., matron, sister, midwife, nursing assistant, etc.)				
OBSERVATION		RESPONSE (Circle one) [N/A = Not applicable]		
OBSERVATION DURING FAMILY PLANNING PROCEDURES				
1.	● High-level disinfected or examination gloves are worn for each vaginal examination	YES	NO	N/A
	● Sterile (or high-level disinfected) gloves are used for voluntary sterilization or Norplant implants insertion	YES	NO	N/A
	● High-level disinfected or examination gloves are worn for IUD insertion	YES	NO	N/A
2.	Hands are thoroughly washed immediately:			
	● Before putting on gloves	YES	NO	N/A
	● After handling objects which might be contaminated	YES	NO	N/A
	● After contact with blood or mucous membranes	YES	NO	N/A
	● After removing gloves	YES	NO	N/A
3.	Waste is disposed of by burning or burying	YES	NO	N/A
OBSERVATION OF SINGLE-USE NEEDLES, SCALPEL BLADES AND OTHER SHARP OBJECTS				
1.	Needles, scalpel blades and other sharp objects are disposed of immediately after use	YES	NO	N/A
2.	Needles, scalpel blades and other sharp objects are disposed of in a puncture-resistant container	YES	NO	N/A
Any other comments or observations?				
Any problems with implementation?				

Management of an Infection Prevention Program

OBSERVATION	RESPONSE (Circle one) [N/A = Not applicable]		
DECONTAMINATION AND CLEANING			
1. Waste items are disposed of according to guidelines	YES	NO	N/A
2. Blood spills are flooded with disinfectant and then wiped up	YES	NO	N/A
3. Instruments are decontaminated in a 0.5% chlorine solution immediately after use	YES	NO	N/A
4. Instruments are thoroughly cleaned and rinsed before sterilization or HLD	YES	NO	N/A
STERILIZATION			
5. What method of sterilization is used?	YES	NO	N/A
• High-pressure steam (if YES , go to #6)	YES	NO	N/A
• Dry heat (if YES , go to #7)	YES	NO	N/A
6. When steam sterilizing, is the high-pressure steamer operating:	YES	NO	N/A
• at 121°C (250°F)	YES	NO	N/A
• at a pressure of 106 kPa, 15 lb/in ² (1 atmosphere)	YES	NO	N/A
• for at least 20 minutes for unwrapped items; 30 minutes for wrapped items	YES	NO	N/A
7. When using dry heat, are the instruments kept:	YES	NO	N/A
• at 170°C (340°F) or 160°C (320°F) for sharps,	YES	NO	N/A
• at the required temperature (170°) for at least 1 hour, or	YES	NO	N/A
• at 160°C for 2 hours	YES	NO	N/A
HIGH-LEVEL DISINFECTION			
8. What method of high-level disinfection is used?	YES	NO	N/A
• Boiling (if YES , go to #9)	YES	NO	N/A
• Steaming (if YES , go to #10)	YES	NO	N/A
• Chemical disinfectants (if YES , go to #11)	YES	NO	N/A
9. When boiling, are the instruments:	YES	NO	N/A
• boiled for at least 20 minutes once boiling begins, and	YES	NO	N/A
• nothing is added after timing begins	YES	NO	N/A
10. When steaming, are the instruments:	YES	NO	N/A
• steamed for at least 20 minutes once boiling begins, and	YES	NO	N/A
• nothing is added after timing begins	YES	NO	N/A
11. When chemical high-level disinfectants are used:	YES	NO	N/A
• is an appropriate chemical used	YES	NO	N/A
• are items completely submerged	YES	NO	N/A
• are instruments soaked for at least 20 minutes	YES	NO	N/A
• are instruments rinsed with sterile/boiled water	YES	NO	N/A
Any other comments or observations?			
Any problems with implementation?			

MONITORING INFECTION PREVENTION PRACTICES

Keeping records of infections that occur in hospitals and clinics is a time-honored way of monitoring the effectiveness of infection prevention practices. In particular, keeping records on postoperative infections can help to identify breaks in recommended infection prevention practices. For example, when a series of similar infections occurs over a short time period, “trouble-shooting” should be done to identify the possible

cause(s). Assume a number of surgical wound infections occur in patients undergoing elective cesarean section. Trouble-shooting questions to consider include:

- Are recommended infection prevention practices being followed in the operating rooms? On the wards? (**Chapter 7**)
- Is the operative site (incision area) being cleaned preoperatively, especially if client hygiene is poor? (**Chapter 6**)
- Is an approved antiseptic at the correct concentration being used to prepare the operative site? (**Chapter 6**)
- Do any members of the surgical team have long fingernails? Wear colored nail polish? (**Chapter 3**)
- Are reused disposable surgical gloves being used? (**Chapter 14**)
- Are the infections linked to any particular surgical team? Or person? (**Chapters 3 and 7**)
- Are instruments and equipment being thoroughly cleaned prior to sterilization or high-level disinfection? (**Chapters 11 and 12**)
- Is the sterilizer (autoclave) working correctly? (**Chapter 11**)
- Is sterilization or high-level disinfection being timed correctly? (**Chapters 11 and 12**)

If the answer to any of these questions is “no,” further information about the identified area(s) should be collected and the problem identified before deciding whether training, better equipment or management reinforcement is the corrective action needed. (This topic and the rationale and methods for investigating outbreaks are discussed further in **Chapter 28**.)

REFERENCES

- Flexner C. 1991. Management of occupational exposures to HIV: An update. *AIDS Med Report* 4(2): 13–24.
- Klouda A. 1991. Personal reference. International Planned Parenthood Federation. AIDS Prevention Unit: London.
- Ladipo OA et al. 1991. Prevention of IUD-related pelvic infection: The efficacy of prophylactic doxycycline at IUD insertion. *Adv Contracept* 7(1): 43–54.
- Lipscomb J and L Rosenstock. 1997. Health care workers: Protecting those who protect our health. *Infect Control Hosp Epidemiol* 18(6): 397–399.
- Lynch P et al. 1997. *Infection Prevention with Limited Resources*. ETNA Communications: Chicago, pp 2–9.

Raven BH and RW Haley. 1982. Social influence and compliance of hospital nurses with infection control policies, in *Social Psychology and Behavioral Medicine*. Eiser RJ (ed). John Wiley & Sons, Inc.: New York, pp 413–438.

Seto WH et al. 1990. Brief report: The utilization of influencing tactics for the implementation of infection control policies. *Infect Control Hosp Epidemiol* 11(3): 144–150.