The Important Role of Infection Control in Operating Rooms and the Active Nursing Roles in Infection Control

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Abstract- The current study investigated the important role of infection control in operating rooms and the active roles of nursing in infection control in terms of assessing the patient's condition, collecting data from the patient and his relatives, documenting and analyzing it. · Determining the patient's care needs and priorities for medical interventions. · Preparing the nursing care plan, following up on its implementation and evaluating its results. · Evaluation after providing nursing care and evaluating patient safety during the implementation of interventions with documentation.

Keywords: Infection Control -Operating Rooms - Active Nursing Roles - Infection Control.

INTRODUCTION:

Infection control refers to the policy and procedures implemented to control and minimize the dissemination of infections in hospitals and other healthcare settings with the main purpose of reducing infection rates. Infection control as a formal entity was established in the early 1950s in the United States. By the late 1950s and 1960s, a small number of hospitals began to recognize healthcare-associated infections (HAIs) and implemented some of the infection control concepts. The primary purpose of infection control programs was to focus on the

surveillance for HAIs and in-cooperate the basic understandings of epidemiology to elucidate risk factors for HAIs [1].

However, most of the infection control programs were organized and managed by large academic centers rather than public health agencies which lead to sporadic efficiency and suboptimal outcomes. It was not until the late 19th and early 20th century when the new era in infection control was started through three pivotal events. These events included the Institute of Medicine's 1999 report on errors in health care [2], the 2002 Chicago Tribune representation on HAIs [3], and the 2004/2006 publications of the significant reductions in bloodstream infection rate through the standardization of central venous catheter insertion process [4]. This new era in healthcare epidemiology is characterized by consumer demands for more transparency and accountability, increasing scrutiny and regulation, and expectations for rapid reductions in HAIs rates [5]. The role of infection control is to prevent and reduce the risk for hospital-acquired infections. This can be achieved by implementing infection control programs in the forms of surveillance, isolation, outbreak management, environmental hygiene, employee health, education, and infections prevention policies and management.

Infection Control:

Indications:

Infection control program has the main purpose of preventing and stopping the transmission of infections. Specific precautions are needed to prevent infection transmission depending on the microorganism.

The following are examples of indications for transmission-based precautions:

- Standard precautions: Used for all patient care. It includes hand hygiene, personal protective equipment, appropriate patient placement, clean and disinfects patient care equipment, textiles and laundry management, safe injection practices, proper disposal of needles and other sharp objects.
- Contact precaution: Used for patients with known or suspected infections that can be transmitted through contact. For those patients, standard precautions are needed, plus limit transport and movement of patients, use disposable patient care equipment, and thorough cleaning and disinfection strategies. Patients with acute infectious diarrhea such as Clostridium difficile, vesicular rash, respiratory tract infection with a multidrug-resistant organism, abscess or draining wound that cannot be covered need to be under contact precautions.
- Droplet precautions: Used for patients with known or suspected infections that can transmit by air droplets through the mechanism of a cough, sneeze, or by talking. In such cases, it is vital to control the source by placing a mask on the patient, use standard precautions plus limitation on transport and movement. Patients with respiratory tract infection in infants and young children, petechial or ecchymotic rash with fever, and meningitis are placed under droplet precautions.
- Airborne precautions: Use for patients with known or suspected infections that can be transmitted by the airborne route. Those patients require to be in an airborne infection isolation room with all the previously mentioned protections. The most important pathogens that need airborne precautions are tuberculosis, measles, chickenpox, and disseminated herpes zoster. Patients with suspected vesicular rash, cough/fever with pulmonary infiltrate, maculopapular rash with cough/coryza/fever need to be under airborne precaution.

Multiple of those indications might require more than one precaution to ensure efficient standard and transmission-based precautions. For example, patients with suspected C. difficile need to be under contract and standard precautions, tuberculosis need to be under airborne, contact, and standard precautions.

Equipment:

Healthcare facilities must have the necessary equipment to implement the standard precautions for all patient. The most significant precaution that is effective in preventing infection transmission is hand hygiene. This is achieved by washing hands with soap and warm water and/or by hand rubbing with alcohol or nonalcohol based hand sanitizer. Gloves can also be used as a standard precaution, new gloves have to be used for each patient and must be disposed of after each patient interaction. Other personal protective equipment includes facial protection (procedure/surgical masks, goggles, face shield) and gown before entering the patient's room. Infection control equipment also includes the housekeeping tools where adequate and routine disinfection of surfaces and floors are implemented. Also, linens have to be handled and transported in a manner which prevents skin and mucous exposure by using the appropriate personal protective equipment.

Figure1

Personnel:

Hospitals need to attain hospital epidemiologists, infection preventionists, and an infection control committee to organize a well-structured and implemented infection control program. The hospital epidemiologist is required to interface with many of the hospital departments and administrators to discuss their responsibilities, expectations, and available resources. The epidemiologist generally oversees the infection prevention program and in some cases the quality improvement program. A physician with a subspecialty in infectious disease usually holds the position [6]. A registered nurse with a background in clinical practice, epidemiology, and basic microbiology typically hold the infection preventionist title. Hospitals can have multiple infection preventionists depending on the number of beds available, mix of patients, and the Center for Disease Contol and Prevention (CDC) recommendations [7].

The last aspect of a functioning infection control program is the infection control committee, which consists of an interprofessional group of clinicians, nurses, administrators, epidemiologist, infection preventionists and other representatives from the laboratory, pharmacy, operating rooms, and central services. The responsibilities of this committee are to generate, implement, and maintain policies related to infection control [7].

Technique or Treatment:

To achieve a successful and functioning infection control program, a hospital can implement the following measures:

Surveillance:

The primary aim of surveillance programs is to assess the rate of infections and endemic likelihood. Generally, hospitals target surveillance for HAIs in areas where the highest rate of infection is, including intensive care units (ICUs), hematology/oncology, and surgery units. However, surveillance has expanded in the recent years to include a hospital-wide based surveillance as it is becoming a mandatory requirement by the public health authorities in multiple states [8].

This change has also been empowered by the wide implementation of the electronic health records in most hospitals in the United States, and now it is easy for any medical provider to access the electronic records at patients' bedside and assess risks and surveillance data for each patient. Most hospitals have developed sophisticated algorithms in their electronic health systems that could streamline surveillance and identify patients at highest risk for HAIs. Hence, a hospital-wide surveillance targeting a specific infection could be implemented relatively easily. Public health agencies require that hospitals report some specific infections to strengthen the public health surveillance system [9].

Isolation:

The main purpose of isolation is to prevent the transmission of microorganisms from infected patients to others. Isolation is an expensive and time-consuming process, therefore, should only be utilized if necessary. On the other hand, if isolation is not implemented then we risk the increase in morbidity and mortality, henceforth, increasing overall healthcare cost. Hospitals that operate based on single-patient per room can implement isolation efficiently, however, significant facilities still have a substantial number of double-patient rooms which is challenging for isolation. [10]. The CDC and the Healthcare Infection Control Practice Advisory Committee have issued a guideline to outline the approaches to enhance isolation. These guidelines are based on standard and transmission-based precautions. The standard precaution refers to the assumption that all patients are possibly colonized or infected with microorganisms, therefore, precautions are applied to all patients, at all times and all departments.

Figure2

The main elements for standard precautions include hand hygiene (before and after patient contact), personal protective equipment (for contact with any body fluid, mucous membrane, or nonintact skin), and safe needle practices (use one needle per single dose medication per single time, then dispose of it is a safe container) [11].

Other countries such as the United Kingdom have also adopted the bare below the elbows initiative that requires all healthcare providers to wear short-sleeved garments with no accessories including rings, bracelets, and wrist watches.

As for the transmission-based precautions, a cohort of patients is selected based on their clinical presentations, diagnostic criteria, or confirmatory tests with specific indication of infection or colonization of microorganisms to be isolated. In these cases, a requirement for airborne/droplet/contact precautions is necessary. These precautions are designed to prevent the transmission of disease based on the type of microorganism [12].

Figure3

Outbreak Investigation and Management:

Microorganisms outbreaks can be identified through the surveillance system. Once a particular infection monthly rate crosses the 95% confidence interval threshold, an investigation is warranted for a possible outbreak. Also, clusters of infections can be reported by the healthcare providers of laboratory staff which should be followed by an initial investigation to assess if this cluster is indeed an outbreak. Usually, clusters of infections involve a common microorganism which can be identified by using the pulsed-field gel electrophoresis or the whole-genome sequencing which provides a more detailed tracking of the microorganism. Most outbreaks are a result of direct or indirect contact involving multidrug-resistant organism. Infected patients have to be separated, isolated if needed, and implementation of the necessary contact precautions, depending on what the suspected cause of infection is, have to be enforced to control such outbreaks [13].

Education:

Healthcare professionals need to be educated and periodically reinforce their knowledge through seminars and workshops to ensure high understanding of how to prevent communicable diseases transmission. The hospital might develop infection prevention liaison program by appointing a healthcare professional who could reach out and disseminate the infection prevention information to all members of the hospital.

Employee Health:

It is essential for the infection control program to work closely with employee health service. Both teams need to address important topics related to the well-being of employees and infection prevention, including management of exposure to bloodborne communicable diseases and other communicable infections.

Generally, all new employees undergo a screening by the employee health service to ensure that they are up-to-date with their vaccinations and have adequate immunity against some of the common communicable infections such as hepatitis B, rubella, mumps, measles, tetanus, pertussis, and varicella. Moreover, healthcare employees should always be encouraged to take the annual influenza vaccination.

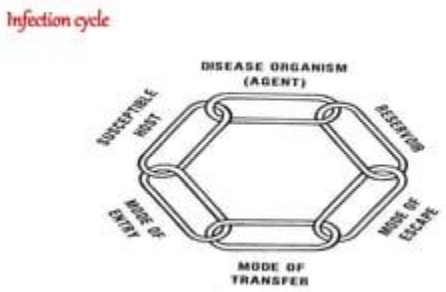
Also, periodic test for latent tuberculosis should be performed assess for any new exposure. Employ health service should develop proactive campaigns and policies to engage employees in their wellbeing and prevent infections.

Antimicrobial Stewardship:

Antimicrobials are widely used in the inpatient and outpatient settings. Antimicrobial usage widely varies between hospitals, commonly, a high percentage of patients admitted to hospitals are administered with antibiotics. Increasingly, hospitals are adapting antimicrobial stewardship programs to control antimicrobial resistance, improve outcomes, and reduce healthcare costs. Antimicrobial stewardship should be programmed to monitor antimicrobial susceptibility profiles to anticipate and assess any new antimicrobial resistance patterns. These trends need to be correlated with the antimicrobial agents used to evaluate susceptibility [14]. Antimicrobial stewardship programs can be designed to be active and/or passive and can target pre-prescription or post-prescription periods. In the pre-prescription period, an active program includes prescriptions restrictions and preauthorization, while passive initiative includes education, guidelines, and antimicrobial susceptibility reports. On the other hand, an active post-prescription program would focus on a real-time feedback provision to physicians regarding antibiotic usage, dose, bioavailability, and susceptibility with automatic conversion of intravenous to oral formulations, while passive post-prescription involves the integration of the

electronic medical records to generate alerts for prolonged prescriptions and antibiotic-microorganism mismatch [15].

Figure4



Policy and Interventions:

The main purpose of the infection control program is to develop, implement, and evaluate policies and interventions to minimize the risk for HAIs. Policies are usually developed by the hospital's infections control committee to enforce procedures that are generalizable to the hospital or certain departments. These policies are developed based on the hospital's needs and evidence-based practice. Interventions that impact infection control can be categorized into two categories; vertical and horizontal interventions.

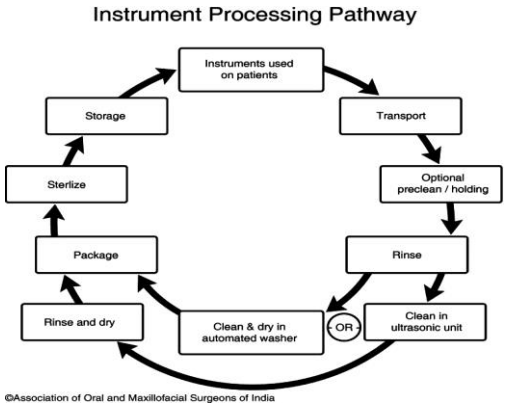
The vertical intervention involves the reduction of risk from a single pathogen. For example, the surveillance cultures and subsequent isolation of patients infected with Methicillin-resistant Staphylococcus aureus (MRSA). Whereas, horizontal intervention targets multiple different pathogens that are transmitted in the same mechanism such as the handwashing hygiene, where clinicians are required to wash their hands before and after any patient contact which will prevent the transmission of multiple different pathogens. Vertical and horizontal interventions can be implemented simultaneously and are not mutually exclusive. However, vertical interventions might be more expensive and would not impact the other drug-resistant pathogens, while horizontal intervention might be a more affordable option with more impactful results if implemented appropriately [16].

Environmental Hygiene: As the inpatient population becomes more susceptible to infections the emphasize on environmental hygiene has increased. Hospital decontamination through the traditional cleaning methods is notoriously inefficient. Newer methods including steam, antimicrobial surfaces, automated dispersal systems, sterilization techniques and disinfectants have a better effect in limiting transmission of pathogens through the surrounding environment [17]. The CDC has published guidelines that emphasize the collaboration between federal agencies and hospital engineers, architectures, public health and medical professionals to manage a safe and clean environment within hospitals which include air handling, water supply, and construction [18].

Clinical Significance:

Infection control clinically translates to identifying and containing infections to minimize its dissemination. Clinicians play a significant role in infection control by identifying patients' signs and symptoms suspicious for a transmissible infection such as tuberculosis. Precaution orders have to be placed and implemented even before a confirmatory diagnosis is reached to avoid the possible transmission of the infectious pathogen. Clinically, an efficient infection control program results into fewer infection rates and lower risk for the development of multidrug-resistant pathogens. Hospital-acquired infections are one of the most common healthcare complications. Therefore simple standard precautions such as hand hygiene can prove to be highly effective. In fact, the most effective and least expensive way for clinicians to also apply infection control principles is by washing hands before and after any patient interaction [19]. Hence, hospitals need to promote and enable handwashing by providing reminders at all bedsides and having sinks or hand sanitizer stations available at the entrance to each room in the hospital. Another simple measure can be to educate patient always to try to use their forearm to block their cough or sneeze to avoid the transmission of droplets and the direct contamination of their hands by which pathogens can be transferred to other surfaces.

Figure5

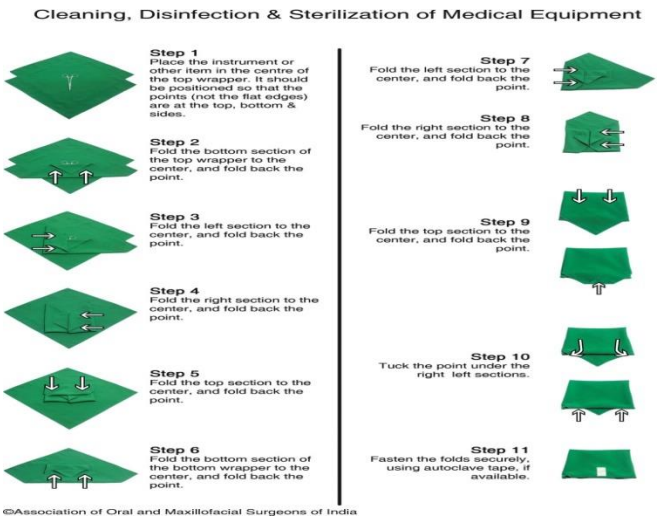


Important Interventions in the Operating Room to Prevent Bacterial Contamination and Surgical Site Infections:

Terminology:

To establish surgical protocols, it is important to understand the basic concepts of sterilization, asepsis, and infection control. In this respect, the following terminologies are very commonly used:

Figure6



Antibiotics:

These agents are a by-product of certain microorganisms, which either have the capacity to destroy or inhibit the growth of other microorganisms at low concentrations.

Anti-Infective:

A substance (or drug) capable of killing microorganisms or inhibiting their growth, in particular, pathogenic microorganisms. This is a general term used to encompass those drugs that specifically act on certain types of microorganisms, including antibacterial (antibiotics), antifungal, antiviral, and antiprotozoal agents.

Antimicrobial Agent:

Any agent synthetically or naturally obtained that can destroy or attenuate the microorganisms.

Antisepsis:

It is the process in which microbial agents on a living surface are either killed or their growth is arrested.

Antiseptic:

These are the substances applied on the living tissues to reduce the possibility of infection, sepsis, and putrefaction by inhibiting the activity or growth of the microorganisms.

Asepsis:

The state of being free from living pathogenic organisms.

Aseptic:

Free of or using methods to keep free from microorganisms.

Aseptic Processing:

It is defined as the processing and packaging of a sterile product into sterilized containers followed by proper sealing with a sterilized closure in a manner to control microbiological recontamination.

Bactericide:

It is an antimicrobial agent that has the capacity to destroy both nonpathogenic and pathogenic organisms but may not destroy bacteria in spore form.

Figure7

Bacteriostatic:

It is an antimicrobial agent that inhibits the growth of microorganisms but is not capable of killing them.

Bioburden:

The occurrence of viable microorganisms on a surface or object before the sterilization procedure.

Biologic Indicator (BI):

A standardized test preparation of bacterial spores used to demonstrate effective sterilizing conditions by providing a defined resistance to a specific sterilization process.

Chemical Indicator:

These are agents or devices used to monitor or confirm the attainment of one or more of the parameters required for a satisfactory sterilization process or used in a specific test of the sterilization equipment.

Chemisterilant:

It is an agent, chemical in nature with properties that kills all forms of microbial agents, including spores.

Cleaning:

It is the process of removing all forms of foreign materials (from objects using detergents & water, soaps, and enzymes) by employing the mechanical action of washing or scrubbing the object.

Contamination:

It is the process of entry of microbial agents into tissues or any aseptic environment.

Crossinfection:

The spread of infection from one person, object or place to another.

Decontamination:

The process by which a person or a surface is made free from all the agents that contaminate the surface and lead to the spread of infections. [5]

Detergent:

It is a chemical agent with cleansing actions in dilute solutions, which, on combining with impurities and dirt, make them more soluble.

Disease:

Disruption of the normal performance of the vital functions of a plant or animal by an infection.

Disinfectant:

This is an agent, usually a chemical, applied on inanimate objects that destroys microorganism in the vegetative form but not the spores.

Chemical disinfectant agents are categorized into low level, intermediate, and high level (depending on the product claims and regulatory requirements in different parts of the world).

- High-level disinfection (HLD): It is a process in which a small number of spores or certain bacteria are killed by the use of certain antimicrobial agents at a specific temperature and appropriate concentration.
- Intermediate-level disinfection (ILD): It is a process in which vegetative forms of all microorganisms are destroyed but affect the activity of spores of certain bacteria.
- Low-level disinfection (LLD): It is a process in which vegetative forms of all microorganisms are destroyed having no activity on spores of bacteria at very low concentrations.

Disinfection:

Antimicrobial process to remove, destroy, or deactivate microorganisms on surfaces or in liquids. Disinfection is often

considered as a reduction of the numbers and types of viable microorganisms (or "bioburden") but may not be assumed to render the surface or liquid free from viable microbial contamination (in contrast to sterilization).

Droplet Nuclei:

These are those particles of 1–10 μm that are implicated in the spread of airborne infections.

Exogenous Infection

The infecting microorganism comes from an external source.

Fomites:

Any inanimate object that is capable of absorbing or transmitting infectious microorganisms from one person to the other.

Fumigation:

The process of disinfecting or purifying an area or object with the fumes of certain chemical agents.

Germicide:

Agents that are designed to kill and destroy pathogenic organisms on the surface of different things.

Infection:

It is the process of invasion of the tissues by microorganisms and their multiplication in the body of the host to produce disease.

Microorganisms or Microbe:

Microscopic organisms, which may exist in its single-celled form or in a colony of cells.

Minimum Effective Concentration (MEC):

The lowest concentration of a chemical or product, used in a specified process that achieves a claimed activity.

Minimum Recommended Concentration (MRC):

The lowest concentration of a chemical or product specified by the equipment manufacturer to be used in a process.

Nosocomial:

This comes from two Greek words, i.e., "nosus" meaning "disease" and "komeion" meaning "to take care of." Also known as "hospital-acquired infections." These are the infections originating or taking place in a hospital.

Operating Room (OR):

The operating room or operating theater is a facility within a hospital where surgical procedures are carried out in an aseptic environment.

Pathogen:

A pathogen is a tiny living organism, such as a bacterium or virus that is capable of producing disease in an individual.

Resistance:

It is the natural ability of the agent to oppose the effects of any harmful agents.

Soil:

Natural or artificial contamination on a device or surface following its use or simulated use.

Sterile Barrier System:

Packaging that prevents the ingress of microorganisms following a sterilization process, thereby preserving the sterile state.

Sterilizer:

Equipment designed to achieve sterilization.

Sterilizing Agent:

Physical or chemical agent (or combination of agents) that has sufficient microbicidal activity to achieve sterility under defined conditions.

Septic:

Contaminated or infected.

Spores:

These are the reproductive forms of some microorganisms that can survive harsh environmental factors and have the capability of developing into new viable microbes.

Sterilization:

Sterilization is a process that destroys or removes all microbial life completely, including spores by means of certain chemical or physical processes.

Sterile:

Free from living microorganisms.

Sterilize:

Total destruction of all living forms.

Vector:

It is an organism that does not cause disease itself but which spreads infection by conveying pathogens from one host to another.

Virulence:

It is a pathogen's ability to infect, sustain, or spread infection in a living a host. Historical background of present day protocols is enumerated in Table 1.

Table 1

Historical background leading to proper sterilization and disinfection protocols

Year	Event
• First century BC.	Varo and Columella postulated that diseases were caused by invisible beings, "animals minutia," inhaled or ingested
• 500 AD	Sushruta instructed operating team members to clean and fumigate the operating theater with vapors of certain disinfectants prior to all surgical procedures
• 1493–1541	Paracelsus, called the father of medicine, reformed pharmacopeia and introduced compositions of lead, copper, sulfur, iron, and mercury
• 1546	Fracastorious proposed a "contagion vivum," as the possible cause of infectious diseases.
• 1827–1912	Joseph Lister, "father of modern surgery," demonstrated that antisepsis could prevent infections; also known as "Listerian era"
• 1889	William Stewart Halsted introduced rubber gloves for his scrub nurse
• 1882	Robert Koch introduced the use of mercuric bichloride as antiseptic agents and isolated the bacilli of tuberculosis
• 1880s and 1890s.	Sterilization of instruments, hand washing, and the wearing of masks, caps, gloves, and gowns was introduced

Surgical Site Infections:

Approximately 2–5% of all surgical patients tend to acquire surgical site infections (SSIs) [4]. In developed & high-income countries (HICs), SSIs are the second most common cause of healthcare-associated infections [6], whereas in Low- & Middle-Income Countries (LMICs) or underdeveloped & developing countries these infections are the most common ones. Thus, to reduce the risk of surgical site infections, a more systematic approach has to be adopted, based on proper knowledge regarding the status of the patient, type, & time of the operation, personnel involved and the health care facilities available during a surgical procedure. The main pathogenic source of surgical site infections is the endogenous flora (usually aerobic gram positive cocci) of the patient present in the skin, the mucous membranes, or the hollow viscera.

The exogenous sources of infection include members of the surgical team, environment of the operating theater and tools, materials & instruments brought to the sterile zones during the surgical procedure. Various strategies employed to prevent or control the occurrence of surgical site infections include reducing the contamination by microorganisms on the sterile surgical instruments as well as the body of the patient, prophylactic preoperative antibiotic coverage, carrying out the surgical procedure carefully, proper handling of the operating room.

The Active Nursing Roles in Infection Control:

Hospital-acquired infections (HAIs) have been shown to be expensive, extend patients stay and increase mortality.1 Trusts have an obligation to do their reasonable best to reduce HAIs to an absolute minimum.2 All healthcare workers need to ensure that effective infection control practices are implemented in the care of patients to achieve this. It is important for wards and directorates to develop 'ownership' of infection control. One way of assisting this is by the use of infection control link nurses (ICLNs) who have been implemented by infection control teams (ICTs) as a method of improving practice at a clinical level.3

ICLNs are a link or intermediary between the clinical areas/wards and ICTs. A key part of their role is to provide information to assist in the early detection of outbreaks of infection and to help increase awareness of infection control

issues in their ward. They should draw the attention of the infection control nurses (ICNs) to changes in practice or equipment, which could have implications for infection control.4., 5. In some trusts they have been trained to collect surveillance data on HAIs for the ICT.6 It is essential that they have sufficient clinical experience and standing to have authority with managers and colleagues.5 ICLNs should not be seen as a substitute for the ICN, they are ward-based staff who act under the supervision of the ICN as a resource and role model for colleagues.4., 5.

The ideal ICLN should be a keen, enthusiastic, motivated volunteer,7 with a special interest in infection control. It is essential that they are ward-based and directly involved with patient care,8 as this places them in a position to observe and influence colleagues practice.3., 8. Good teaching and presentation skills are necessary, as is a charismatic approach in order to encourage ward staff to practice up to date, research-based skills.7 The ICLN should preferably be someone who can act as an 'opinion leader' as they have been shown to be effective in educating colleagues9 and implementing change at ward level.

The concept of link nurses (LNs) has been used throughout hospitals, and not just by the infection control department. LNs have been used for the specialities of tissue viability10., 11. nutrition,12 continence care,13 palliative care14 and pressure sore care.15 They have also been used to enhance research and development in clinical areas throughout hospitals.16

The ICLN concept has been developed by ICTs in acute hospital trusts. It can also be promoted in a community setting, for example, staff in nursing homes may have a link person for infection control17 or district nurses can be recruited.18 Other professionals allied to medicine have been advocated to take on the role.19 In the Mid-Essex trust there are link 'nurses' in other departments such as pharmacy, X-ray and physiotherapy.6 Ayliffe et al.20 consider that in some hospitals a link doctor could be useful, although this type of post has yet to be developed in the UK.

The ICLN system is used in other countries as well as the UK, for example, in the Netherlands21 and also Portugal22 which also has link doctors in a few hospitals.

It has been recognized that ICLNs can play an important role in their clinical area to facilitate liaison with the ICT and to act as a resource for colleagues. A Department of Health/Public Health Laboratory Service working party has suggested that their duties and responsibilities should be included as part of their job description.4 This has been endorsed by the Mid-Essex Trust where they have been awarded formal appointments.6

The recent UK audit of infection control practices in 219 acute NHS Trusts in England by the National Audit Office (NAO)5 found that 128 Trusts (59%) use a ICLN system. At least half of these found it was fairly successful and a fifth thought it was very successful. However, 18% considered it to be fairly unsuccessful or not successful at all. In addition 16 NHS Trusts (7%) have tried the ICLN system and abandoned it, reasons given were: high staff turnover and because wards nominated junior nurses to act as ICLNs who lacked authority with other members of staff.5.

Section snippets:

The role of the ICLN:

ICLNs have only relatively recently been introduced into hospitals by ICTs and are still a developing concept.23 They act as a link between the ICT, their clinical area and managers. A job description has been proposed covering the various responsibilities that can be expected from an ICLN such as clinical liaison, dealing with policies and infection control practice and their role as an educator.4 This can act as a basis for ICTs and directorates to develop ICLN groups, although throughout the

The value of ICLNs

There are advantages to using a ICLN scheme for both the ICT and trust. These included a higher profile for infection control,5., 6., 24. improved communication with staff working in the clinical areas—including the community and enhanced standards for infection control practice.23 Perry25 considers ICLN systems that use clinically based practitioners should be encouraged to enable infection control to be recognized as an issue of maximum importance in all areas of clinical care. They may be

Education of ICLNs:

An effective educational programme must be developed for the ICLNs to ensure their competence.3., 33. There should be a training programme under the direction of an ICN, as a part of the ICLNs continuing professional development.4 Cooper suggested that it should provide knowledge and skills in an acceptable manner that generates debate and critical appraisal.3

Hill et al.23 discovered that a variety of training models, including short courses, have been developed within the UK and there are

Operational difficulties of ICLN groups

However, not all ICTs and Trusts consider ICLNs are effective and a worthwhile investment. A recent national audit office survey found 16 (7%) trusts have tried ICLN groups and abandoned them.5 Several problems have been highlighted as operational difficulties for ICLN Scheme and include high turnover of staff, the need for adequate training time, recognition and monitoring of the link programme and the sustained effort required to achieve an enthusiastic and informed link team.5., 33.

Conclusion:

Preventing and controlling infections is the key factor in improving care and ensuring safety of both the patient and the health care worker. Infection control addresses factors related to the spread of infections within the operation theater complex (whether patient-to-patient, from patients to staff and from staff to patient, or among staff), including prevention (via hand hygiene/hand washing, cleaning/disinfection/sterilization, vaccination, monitoring).

Integrated infection control in the operation theater has various aspects, ranging from its designing ,environmental cleaning , management of biomedical waste and adherence to theatre attire. Use of Personal Protective Equipment (PPE) including gloves, gowns, face masks ,respirators and full face visors are essential to minimize risks of occupational infections. Whether in developed or developing country, where resources are limited, thorough knowledge about the principles of infection control and a little ingenuity will suffice to solve the problem of hospital-acquired infections.

Surgical site infections are a result of microbial invasion in a sterile atmosphere. The main sources of microbial invasion in the operating theater include the atmosphere of the operating theater, the medical and the paramedical staff present at the time of the procedure, surgical instruments, and the patient at times also. Proper designing of operation theater, appropriate microbiological monitoring, proper sterilization, and strict adherence to barrier techniques form the basis to prevent infections in an operating environment.

The role of ICLNs is one that is still evolving. Many Trusts have used them with success and they have been of particular value in the light of controls assurance and clinical governance.23 It is important for infection control to become the responsibility of directorates and the use of ICLNs at ward level can assist with this.

The NAO found that departments consider they are effective when there is a relatively stable workforce, the hospital is on a small number of sites, nurses have recognized

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