

Infection control



**ASSIGN
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“ Explain And Evaluate Whether Or Not Infection Control Can Ever Be Manageable”

This assignment will explore the importance of infection control within nursing. In order to do this, it is first necessary to determine the term ‘infection’ and ‘infection control’. Then a discussion of the chain of infection will be highlighted, making links and referring back to recent clinical practice. There are six links to the chain of infection; the infectious agent, the reservoir (the altering environment), portals of exit (wounds and bodily fluids), means of transmission (different surfaces and airborne), the portal of entry (wounds) and the susceptible host of infection (Horton & Parker, 2006). If at any stage, the chain of infection is interrupted by an opposing agent such as alcohol hand gel, the chain will become broken.

“ Infection occurs when an infectious agent multiplies within the body tissues causing adverse effects” (Walsh, 1997, p. 102). When an individual has an infection, micro-organisms enter the body through a susceptible host, meaning that the infection will manifest within the body.

“ A pathogen is a disease producing microorganism. These organisms which cause infections in humans include bacteria, viruses, fungi, protozoa and parasitic worms” (Brettell and Thompson, 198, p6).

A human body continuously functions throughout life. Unfortunately, it is often only noticed when it fails. The defences start at the point of contact with our environment through which organisms may invade, for example the skin. Perry states that “ The first line of the immune response is protection against invasion from micro-organisms. This is achieved by the skin, mucous membranes, secretions and excretions” (Perry, 2007, p 33).. These

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microorganisms must overcome any resistance mounted by the host's defences in order for them to multiply and develop. " The human body is protected from infection by an immune system that have non-specific responses, which includes a number of mechanisms that provide general protection against infection" (Perry, 2007, p 32).

Infection control is " evolving rapidly, with the quality as the main focus of the service". (Horton and Parker, 2001, p 6). In light of this, it is also important to understand how " prevention and control of infections are important concerns for all types of healthcare agencies" (Craven & Hirnle, 2009, p 465). As health care professionals, working within environments which are highly prone to infectious diseases makes us highly sustainable to contracting a number of illnesses. Whilst on clinical placements, it is important that all ongoing policies and procedures are adhered to in order to minimise the number of infectious agents contracted by patients and health care workers. With a current epidemic outbreak of the influenza A H1N1 bug, also publically known as ' swine flu', the department of health established a campaign called ' catch it, bin it, kill it'. It is a campaign which aims to prevent the spread of infection by making individuals aware of what to do if they cough or sneeze in public " Always ensure everyone washes their hands regularly with soap and water, clean surfaces regularly to get rid of germs, use tissues to cover your mouth and nose when you cough or sneeze and place used tissues in a bin as soon as possible" (NHS Choices, 2009).

Perry stated that " Standard infection control principles should be applied to the care of all patients, regardless of their infection status. These principles are aimed at preventing infection both to patients and to health care

workers” (Perry, 2007, p66). A way this could be successfully achieved is to use universal precautions within health care settings.

There is a possibility to intervene and break the infection cycle through infection control procedures and lessen the likelihood of a patient’s susceptibility. It is cited that “ a thorough understanding of the chain of infection helps health care professionals to deliver safe care and in turn enables appropriate measures to be taken in order to prevent transmission of infection” (Wilson, 2001, p70).

As previously stated there are six links to the chain of infection. The first two, being the infectious agent and the reservoir (the source of organisms) are closely related to each other because depending on what the environment is like, an infectious agent will always be able to survive in such conditions. The next three stages of the chain of infection can also be grouped together; these are the portals of exit (source of exit for the micro-organisms), the means of transmission (how the organism is carried from the portals of exit) and the portal of entry (gaining entrance into the host). An example of these working together within a hospitalised environment would be if a patient sneezed, the organisms would be transported either on hard surfaces or airborne to a patient who has an open wound. The final stage of the chain of infection is the susceptible host (Horton & Parker, 2006). If at any stage, the chain of infection is interrupted by an opposing agent such as alcohol hand gel, the chain will become broken.

To understand the first stage of the cycle, the infectious agent, it is very important to understand about microorganisms, their microbial virulence,

their transmissibility, their growth requirement and most importantly, their effects on the human body (Wilson 2001). Bacteria are usually unicellular organisms and can survive for long periods of time in certain environments. Their main responsibility is to reproduce and survive as long as possible. “ Viruses are different from any other organisms in that they consist of a core of one type of nucleic acid surrounded by a protein shell called a capsid. Unlike bacteria, they don’t last very long outside of the environment. Once inside the cell, the virus takes over the nuclear control” (Horton & Parker, 2006). Infections develop because microorganisms capable of initiating an infectious reaction have found a favourable host.

After understanding the infectious cycle, the “ reservoir” stage occurs. Hospitals are not the only place where groups of susceptible people congregate to receive care. Individuals in places such as nursing homes are equally compromised. Microbes are able to survive in almost every environment, meaning that these microbes can also live on the human body. This section looks at how people conduct their own hygiene routines, the cleanliness and storage of equipment and finally the water used for cleaning. “ In order to break the reservoir link, routine cleaning is an integral part of hospital practice and helps to maintain a high standard of care. Not only does this mean routine cleaning of the environment, e. g. patients lockers, beds, baths and showers, but the cleaning, disinfection and sterilization of the hospital equipment” (Wright et al, 1995, cited in Horton and Parker, 2006). Relating this to clinical practice, patients should always try to conduct their own hygiene routines and if unable to, the health care professionals will do so for them. An example of this would be a patient who needed to be

shaved. “ Assisting your patient with shaving is an important element of caring for an individual’s personal hygiene needs” (Iggulden, 2009, p134).

If there is still no break in the chain at this stage, the chain will progress on to the ‘ portals of exit’. Clinical waste could be disposed of in yellow bags, with all sharps disposed in the allocated sharps bin. “ Disposal of used sharps in inappropriate places causes risks to others. These sharps should be disposed immediately, without re-sheathing. Once 75% full, these should be closed and secured off “(Wilson, 2001, p42).

The removal of urine, faeces and other bodily fluids also has to be conducted with great care. The use of linen could also cause a potential infection epidemic. Local laundering facilities are often encountered in many community elderly care units and some specialist wards usually for patients own clothes (Horton and Parker, 2006). Relating this to clinical practice, if a patient has a soiled bed, it is important to change and remove all linen appropriately in order to stop the spread of infection. “ Every workplace has written policies on all aspects of waste disposal including special waste, segregation of waste and audit trails. A system of colour coding to identify segregation also exists” (Iggulden, 2009, p66).

The state of transmission (also known as direct contact acquired infections) refers to a susceptible host coming into contact with a person’s body surface or fluids who is infected. Some organisms can be transmitted by more than one route, either directly or indirectly. Direct contact involves proximity between the susceptible host and the infected person or a carrier such as touching, kissing or sexual intercourse. The indirect route requires personal

contact with an intimate object, such as a contaminated instrument.

Contaminated blood, food, water or inanimate objects are vehicle routes of transmission. With the use of alcohol hand gel on entrance into the ward, on walls throughout the hospital, in all of the toilets and shower rooms and at the end of the patients bed, this is one infection control step which most mobile individuals can carry out. There are also posters above every sink demonstrating the appropriate way to wash and dry hands. These posters are also placed throughout the hospital, along with informative leaflets describing all of the different types of infectious diseases that are likely to be contaminated. “ In 2004, the NPSA launched the ‘ clean your hands’ campaign across England and Wales. This campaign helps provide practical support to health care organisations. It also involves education and development of an organisational culture where individuals take personal responsibility for delivery of safe, clean care”. (Iggulden et al, 2009, p65).

“ Hand creams are another way of preventing infection. Frequent hand washing, especially with antiseptic solutions or if hands are not properly dried, can cause damage to the skin. Cracked skin may harbour more bacteria and increase the risk of cross-infection” (Berman et al, 2009, p222).

“ Protective clothing is also a key to preventing the spread of infections. Many excretions and secretions of the body are a major source of pathogenic microorganisms associated with hospital acquired infection (urine, faeces, vomit, sputum, saliva, vaginal secretion, semen, blood, blood stained body fluids, tissues and cerebrospinal fluid)” (Perry, 2007, p33). Aprons or gowns should be worn for procedures anticipated to cause significant contamination of skin or clothing with blood or body fluid. “ This will protect the skin of the

healthcare worker from contamination by potentially infected body fluid and reduce the risk of cross-contamination of microorganisms to other patients on the clothing.” (Wilson, 2001, p142).

Gloves are also vital in order to constrict any infections from spreading. Disposable gloves for direct contact with body fluids and moist body sites provide a reliable method of reducing the acquisition on hands of microorganisms from these sources. “ Gloves should be worn for any activity where body fluid may contaminate the hands”. (Paterson et al, 1991, cited in Walsh 1997, p101). Gloves must always be changed between patients, even if they are being used for routine procedures such as emptying urine drainage bags. “ Washing gloves between patients is also not recommended; the gloves may be damaged by the soap solution and if they become punctured unknowingly, may cause body fluid to remain in direct contact with the skin for prolonged periods of time” (Olsen et al, 1993 cited in Wilson, 2001, p139).

Another preventative step, although commonly not used within the health care setting, is for individuals to wear masks and eye protection. Close fitting masks are recommended for some aspects of care of patients with open tuberculosis. Eye protection and masks should be worn for any activity where there is risk of bodily fluids splashing into the face. Tolkars et al (1995) found that contact between bloods or other infective fluids and the eyes or mouth of surgical staff occurred in 2% of surgical procedures, particularly orthopaedic and gynaecology (cited in Wilson, 2001, p141-42).

In order to avoid these examples being contained by patients, it is sometimes necessary to put the patient into an isolation room. To avoid such contamination, it is absolutely crucial that all equipment is sterilized.

If there is still no break in the chain, the portal of entry stage arises. This is the entry route which organisms find their access into the body. This entrance is often the same as the exit route. Some common entry routes are the urinary, respiratory and gastrointestinal tracts (Taylor et al, p504, 1993).

Intact skin protects tissue from invasion by microorganisms. Damaged skin may become infected superficially by bacteria or fungi and blood borne viruses which may enter the body through damaged skin, hence why cuts on the skins surface need to be covered.

In order to avoid organisms getting into wounds, it is essential that the correct safety equipment is used. (Horton and Parker, 2006). Whilst on a recent placement, a sterile pack including sterilized gloves, scissors and swabs were used to change a head dressing. This was to ensure that no organisms could enter the patient's most vulnerable sight causing infection."

The susceptibility of the host is influenced by various different factors including normal PH levels of gastric secretions, age, sex, race, hereditary factors, immunization, fatigue and high stress levels' (Taylor, Ellis et al, 1992). Wilson added " the sustainable host can essentially be anyone, depending on their health and well being at that one time, whether they are patients, visitors, other health care professionals, friends or family members. It is also essential as a health care professional, to recognise that certain microbes may not be harmful to a healthy individual, but may overwhelm

someone who is unwell and that the susceptibility of the host varies, depending on their immune defences” (Wilson, 2001, p65). When a chemotherapy patients has treatment, their immune system lowers, making them more susceptible to infection. The immune system of a baby would be immature of that compared to an adult; similarly, an elderly patient’s immune system would be significantly lower in efficiency. “ Adequate nutrition is also essential to encourage rapid wound healing and thereby reduce the possibility of wound infection” (Wilson, 2001, p191). Within a clinical placement, assisting a patient with a good nutritional intake would boost their immune system by giving the body all of the additional vitamins needed to recover from its trauma.

To conclude, everything which was touched upon in the introduction was explored throughout the text, with the main focus of the assignment exploring the chain of infection. I discovered how the six stages of the chain of infection may be applied to individuals who are susceptible to infection. In order for me to do this successfully, I related each of the stages back to clinical practice. This allowed me to develop a greater depth of knowledge as to how infection can be eradicated within hospitalised environments. In clinical areas, cross infection will always be an issue for any hospital, regardless of how many policies and procedures there are in place. It is impossible for any trust to ensure that each individual who walks into a clinical area follows the preventative measures to eradicate infection. Wilson summarises “ infection is a common, but largely avoidable complication of healthcare” (Wilson, 2001, p131). With patients, health care workers and domestics all having different levels of knowledge concerning infection

control, the way people conduct themselves in certain environments will always differ. Health care workers can ensure they practice professionally, for example partaking in the NHS campaign “ Bare below the elbow”, and is good practice to make sure that all workers in hospitals use all forms of prevention such washing their hands correctly, and using alcohol gel.

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