

What are hospital acquired infections health and social care essay



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Hospital acquired infections are infections that occur in a hospital setting. They are also called nosocomial infection in the terms of medical writings which favour the environment of hospitals and places with a high population density. They are transmitted between patients admitted to hospitals and staff that work in them. The main cause of transmission generally is lack of satisfactory hygiene carried out by staff on a regular basis. Hospital employees are seen as vectors due to the way they convey the infections when moving around the whole hospital population and spreading it to patients. Monitoring of hospital acquired infection has been around since the 1950's and have been in place to monitor rates of hospital acquired infections and provide an effective response to treat them. The sole purpose is to lower the infection rate as much as possible with majority of countries having to regulatory bodies for this. In the US it is reported that almost two million cases of hospital acquired infections occur yearly. With approximately a mortality rate of one hundred thousand a year, this includes a variety of infection caused by a variety of microorganisms. The UK has approximately a nine to ten percent infection rate causing approximately ten thousand deaths a year. These specific infections can be life threatening due to them causing other complications i. e. pneumonia. This can be costly to healthcare system worldwide because initially they have to treat patients that have been admitted to hospital, but the hospital acquired infections cause further complications and cost the healthcare systems more time and money. The most common examples of hospital acquired infections are MRSA (methicillin resistant *Staphylococcus aureus*), tuberculosis, *Clostridium difficile* induced diarrhoea and hospital acquired pneumonia. There are many other infections

also but the mentioned are the most common. The most common overall infection is MRSA which is the most problematic in the US and the UK.

What is MRSA its causes, symptoms and treatments

I will be examining the current situation of MRSA in the UK. This is the most prevalent hospital acquired infection in the UK and has been dubbed as a ‘superbug’. MRSA is an infection caused by a gram positive bacterium called *Staphylococcus aureus* bacteria. This bacterium is no stranger to humans as it is found in certain areas of the body in some people. On the surface of the skin it can cause minor problems like acne once it penetrates the skin it will cause more severe complications. It is thought to colonise one third of people. The most problematic part of MRSA is that it is resistant to the strong antibiotic methicillin. Rather than being a more virulent infection it is just more difficult to treat as the conventional treatments the antibiotics are not effective and require the use of stronger and newer antibiotics. The potential dangers of MRSA infections are that we go back to the days were prior to antibiotic development. The times of early 1940-1950’s were there was not a lot to do when infections occurred. Although there is a reliance on antibiotics and the dangers of resistance is apparent where medical developments may go back to the situation sixty to seventy years ago. Healthcare systems around the world are trying to lower rates of MRSA with this infection being top of the list to be reduced. There are many factors that create antibiotic resistance. Mutations in the DNA of the bacteria can cause survival advantages and resistance. Another factor is bacteria that are useful to the host can be eradicated when treated with antibiotics. This enables an optimum breeding ground for resistance bacteria to colonise. Another but

key factor is abuse of antibiotic which there many examples. On case is the patient is not completing a course of antibiotic which can create resistance. Another is using antibiotics when the body can fight the infection itself so overusing the antibiotic for minor infections. The *S. aureus* bacterium naturally resides within the nose in humans. It usually causes skin infections as it resides on the skins surface. Common signs are red painful bumps called boils caused by bacteria entering a hair follicle. Another sign of infection is a pus filled abscess which is pus gathered under the skin. Other signs include cellulitis which is infection deep into layers of the skin and fat. Subsequently causing small red bumps that are very painful and swollen very often. MRSA gets particularly dangerous when penetrating the skin this could be via open wounds or intravenous drips generally during hospital admission these are invasive infections. Once in the bloodstream or within the body it can lead to pneumonia, blood poisoning, urinary tract infections, endocarditis and many other complications. Signs of the invasive infection are high temperatures, confusion, dizziness, muscular pains and aches and lethargy. People that are generally at risk are in a hospital environment. This form of MRSA is called hospital acquired MRSA (HA-MRSA) and the other type community acquired MRSA (CA-MRSA) which occurs outside hospitals and likely to occur in communal living areas that are generally densely populated i. e. army barracks. Risk factors increase in hospitals as human host is generally ideal candidates for the bacterium to colonise. This being because people are generally ill, are likely to be the elderly or very young infants that have weakened immune systems. People with a weakened immune system are high likely to be at risk i. e. HIV suffers. This is because there immune system may not be able to deal with an invasive bacterium. People who have

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open wounds or grazes, on drips or during surgery are also at risk. Treatment varies on whether it is a skin infection or whether it is an invasive infection. Skin infections are either a drainage procedure or admission of antibiotics depending on tests and strains. The invasive infections require isolation to prevent further outbreaks and a combination of antibiotics.

Current situation of MRSA in the UK and preventative measures

Initially the penicillin antibiotic could kill *S. aureus* when it was first developed. After twenty years the *S. aureus* became resistant to penicillin. The rise of MRSA was due to methicillin being used to treat penicillin resistant *S. aureus* initially. But after a year this bacteria also became resistant to methicillin thus the name MRSA. But this problem worsened due to MRSA being resistance to many other antibiotics. Other problems are that in the UK there are many strains over 15 with certain strain being at epidemic level especially in the early nineties. The office for national statistics records show that from 2006 to 2010 overall each year for MRSA and *S. aureus* levels of infections were down each year [Office for national statistics, 2011]. From 2006 this year had the highest deaths recorded in the four year period this is terms of officially recorded on death certificates. The year 2010 was the lowest in the terms of deaths in this time period. Majority of these deaths were caused by MRSA that were recorded over the course of the four years at around 70 percent a year whereas *S. aureus* had a lower overall percentage compare to MRSA. Official statistics say that in 2006 the MRSA deaths were 1652. This then dropped in 2007 to 1593 deaths. In 2008 the death rate also decreased to 1230. In 2009 and 2010 the death rates

dropped to 781 and then to 485 which both are fairly proportionate drop in death rates to previous years. The death rates dropped fairly significantly at 2009 and 2010 which accounts to largest drops in deaths over the four year period [Office for national statistics, 2011]. Year on year the statistics shows that in the UK levels of MRSA associated deaths decreased. In a four year period over 1500 reductions in deaths of people have occurred compared to the start which is credible progress. A significant amount of these deaths occur in older patients with the highest rate in the over in the eighties demographic. Although this would not be unexpected as elder people are generally more likely to be in hospital with illnesses and have weaker immune systems. Age groups under forties had the lowest death rates as expected. Males generally had a higher death rate approximately double the female's death rate with regards to overall statistics. One suggestion for this is males generally have more hair follicles than females which the bacteria can penetrate. The rates of deaths overall declined in both genders from 2006 leading to 2010. Also the majority of these MRSA deaths were in a hospital environment. MRSA related deaths are generally declining each year with some NHS trust cutting infection rates by eighty percent [Gill Hitchcock, 2012]. This hospital was in fact the Royal Liverpool and Broadgreen University hospitals NHS this used inspiration from a US hospital that lowered its infection rate by using a vapour system to kill germs. Although this was not what they implemented they cleaned the rooms intensively and administered fluid after they decontaminated skin to reduce infections. In Scotland statistic show that MRSA outbreaks are reducing with thirty percent decline according to Health protection Scotland. By looking at reports

published by the HPA (health protection agency) in the later quarter of 2010
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to the third quarter of 2012 the overall reduced. This is by thirty two percent from 2. 51 to 1. 71 cases of MRSA per hundred thousand people overall. It is also reported that a total overall number of MRSA cases reported had dropped to approximately fifteen percent in the years of 2011 to 2012. The NHS has reported that in recent years the MSRA cases and mortalities along with C. difficile have reduced from 2006 to 2012. Although these particular hospital acquired infections are reducing other hospital acquired infections are increasing like Escherichia coliHealth organisations worldwide are trying to prevent MRSA and other hospital associated diseases as it is a worldwide problem. The preventative measures are there to overall reduce mortality rates and to maintain a high standard of patient care. Also this will help to reduce cost as hospital acquired infections put extra pressure on health care systems. The bacterium causing MRSA thrives on dry surfaces and once this has been touched by someone it can be easily transferred to another surface. This is why hospital staff are required to wash their hands regularly, especially when in contact with patients. Hand hygiene is one of the key preventative matters not only for staff for patients and visitors. Staffs are required to protect themselves by using gloves and aprons. Cleaning of rooms and equipment is vital as dry surfaces which are common in a hospital environment to kill the bacteria. Once MRSA has been confirmed in patients they are then isolated to prevent further spread of MRSA. Also another key point is that antibiotics are used but respectfully this can prevent MRSA and resistance to antibiotics. Visitors are also required to maintain a certain hygiene level as they can vector in infections. They are generally advised to keep hands clean during the visit and prevent over contact with patient and their beds. There is a guideline by staff to follow and they must advice both <https://assignbuster.com/what-are-hospital-acquired-infections-health-and-social-care-essay/>

patients and visitors to meet these guidelines. These preventative matters will also prevent the infection from spreading to the outside environment. These preventative matters have shown that infection and death rates are falling via simple and basic hygiene actions. Although health organisations have acknowledged the reduction they also understand that they must continue to reduce levels to prevent endemics from occurring. Although some preventative measures mentioned are decreasing rates one particular one is causing other complications. Theoretically isolating patients would work as it would prevent further infections but it appears that there are new strains of MRSA emerging from this preventative technique. Also another flaw in this technique is that isolating people that MRSA may cause hotspots of people infected with MRSA and certain patients may transmit the infection heavily. This will create areas where staff and other people are more likely to go in and get infected at a higher rate. Overcrowding in hospitals can cause higher rates of nosocomial infections along with cost cutting. Senior hospital figures will have to deal with staff to patient ratio, levels of admission of patients, levels of infections and balance this to keep costs within budget. This maybe why initially the MRSA levels where indeed very high as it was not a priority and hospital policies were short sighted to the levels of MRSA. Another preventative measure that is being used before patients enters hospital wards they are screened for the MRSA bacteria by swabbing common area where it resides on humans. This means that patients with the bacteria already colonising them can be treated before they can be introduced to the hospital wards. The reason the UK has improved statistics the year by year is that the disease itself has been taken seriously by senior official in healthcare, thus trickling down to hospital staff. Although the <https://assignbuster.com/what-are-hospital-acquired-infections-health-and-social-care-essay/>

disease itself is preventable compared to other infections fairly simply, awareness of the infection has arisen over the years with successful campaigns like 'clean your hands' from the NHS. This has resulted in more preventative measure being in place in the hospital like the sanitizing gels on walls of the wards in hospitals and the previously mentioned procedures. Due to it being a hospital acquired infection rather than a conventional infection like malaria, there was not too much emphasis on treating cases up until recent decade where it was taken a lot seriously with quite a lot of media interest also. Future problem is that MRSA is easily prevented but can be difficult to treat especially if it continues to be resistance to other antibiotics. The evolution of the *S. aureus* should also be closely monitored as it was this in forty to fifty years ago that caused the development of MRSA. In the research field the current situation is they have initially identified the gene that caused methicillin resistance *mecA* gene [Deurenberg RH, 2008]. Although, there are numerous prophylaxis in place to prevent MRSA and treatments in the terms of antibiotics. Only time will tell on whether *S. aureus* will evolve to become resistant to the currently effective antibiotics. This must be taken seriously because as mentioned previously within a year of exposure to methicillin, *S. aureus* became resistant. This is why research is using pre existing antibiotic but modifying them. They are also looking at other chemical molecules that target the mechanisms of action within the bacteria. These are currently being developed but are still in the pipelines of development. The private sector is stopping excluding the larger firms development of antibiotics because of monetary values therefore the educational intuitions are at the forefront of new MRSA drugs. Current media publications have mentioned that there are <https://assignbuster.com/what-are-hospital-acquired-infections-health-and-social-care-essay/>

new drugs against MRSA. One such publication describes anti-cancer agents being used to fight MRSA [David Crawford, 2012]. Overall I believe that good progress has been made in UK with reducing the number of cases and deaths. But saying this I believe that maintaining high standards of hygiene in the hospital and following guidelines is vital to keeping future death rates down. I also believe that as this bacterium has a history to evolve and resist antibiotics new treatments must be ready if the bacteria mutates and becomes resistance to the current set of antibiotics. I also believe that there should not be an over reliance on antibiotics and other type of drugs should also be developed to treat MRSA.