

Nurses and MRSA: Stopping the Spread

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Methicillin-resistant *Staphylococcus aureus* (MRSA) may seem like the newest epidemic spreading around communities, long-term care facilities, and hospitals, but in reality it has been lingering around since the 1940's. The first strain of MRSA was discovered over 60 years ago, not long after penicillin was introduced into the medical world. Penicillin was found to be highly effective against infections from the *Staphylococcus* family, but strains of *S. aureus* found a way to beat the antibiotic. The resistant strains of *S. aureus* produce the enzyme beta-lactamase, which destroys the beta-lactam ring that surrounds the penicillin molecule, thus inactivating penicillin (Bissett, 2005). *S. aureus* may sound like a genius bacterium to be able to develop this beta-lactamase and resist antibiotics, but hospitals and healthcare workers lent an unwitting hand by acting like a Petri dish for this organism. The development of MRSA, or the resistant *S. aureus*, is mainly due to several findings in hospitals that are highly common. Researchers believe MRSA has developed due to poor hand hygiene, overcrowded hospitals with sicker patients, and heavier nursing loads (Bissett 2005). Additionally, the increasingly unnecessary use and overuse of antibiotics exacerbated the spread of MRSA (Rao, 1998).

MRSA is probably the most common antibiotic-resistant bacterium found in hospitals throughout the world (Rao, 1998). MRSA is mainly seen in the nasal area of patients, but it is also seen in the groin, axilla, and gut (Sheff, 1999). The risk factors, which are not uncommon findings in patients, include frequent and extensive use of broad-spectrum antibiotics, prolonged hospitalization, and the presence of a decubitus ulcer or prosthetic intravascular device (Rao, 1998). Many patients who are admitted to hospitals arrive with at least one of these risk factors, and once a single patient contracts MRSA, it is easily spread from room to room. These issues make the need for nurses to take action to reduce MRSA cases in hospitals incredibly pertinent.

The following research articles make several suggestions to decrease the spread of MRSA that are realistic to implement in the hospital.

Review of Literature

Although MRSA has numerous causes, one individual is uniquely empowered to stop its spread: the nurse. MRSA most commonly spreads through hand contact (Kilpatrick, 2006). The amount of skin-to-skin contact nurses have with a given number of patients a day makes MRSA spread from one patient to another easily. Good hand hygiene is the single most important measure in preventing the transmission of MRSA and all nosocomial infections (Winter, 2005). With each patient visit, the nurse should wash his or her hands before and after entering the room. This should be common practice, but shockingly, “hand hygiene compliance is low...in health services,” (Knifton, 2005, p. 40). MRSA can live on hands for up to three hours if nurses do not wash their hands or do not wash them properly (Sheff, 1999).

Many hospitals have started to use alcohol-based hand gels and disinfectants as a simple way to disinfect hands without employing soap and water. This speedy solution is also exceedingly effective at eradicating germs and bacteria on hands if they are not visibly soiled. Some are reluctant to abandon soap and water, but a recent three-year study found that alcohol-based disinfectants are just as effective and easier on the staff to use. The study showed that hand hygiene compliance improved from 48% to 66% among health care workers with access to alcohol-based disinfectants. Most importantly, this increase in hand hygiene coincided with a reduction in MRSA’s transmission (Winters, 2005, p. 18). This study highlighted how easily MRSA spreads and how simple it is to decrease it. Everyone that comes into direct contact with patients must practice proper hand washing techniques.

Given MRSA's prevalence, universal MRSA screening is a hotly debated issue in hospitals. Universal screening is tremendously appealing, but can be prohibitively expensive. Routine post-admittance screening is ineffective because colonized patients can become recolonized following treatment within a short amount of time (Bissett, 2005). Screening completed upon admission may prove beneficial.

There are measures nurses can take before they start giving care if they know their patients have MRSA. Interventions such as private rooms and contact isolation precautions are effective methods for decreasing the transmission of MRSA (Bissett, 2005). Keeping all the patients with MRSA in the same area with the same nurse is another successful, but difficult strategy to implement. (Sheff, 1999). A nurse with a single MRSA-infected patient runs the risk of spreading it to the others, especially if they have open wounds, which are easy targets for MRSA. Once placed in a room, a patient with MRSA should never be transferred to a different ward. Patients commonly go from ward to ward as they improve or need additional attention, but sending a MRSA-positive patient around the hospital begs for the infection to spread to even more patients (Rao, 1998).

A huge factor in the increasing cases of MRSA is the overuse and improper use of antibiotics; unfortunately, this is the hardest factor to resolve. When patients use antibiotics for extended periods of time or take their prescriptions improperly, it allows the drug-resistant infections to arise. This happens because "with the improper use of antibiotics, weaker bacteria are killed, but stronger, more resilient ones live on and reproduce" (Stirling, Littlejohn, & Willbond, 2004, p. 19). In today's medical environment, medical personnel commonly treat patients with a disease caused by a virus with an antibiotic. All cases of the antibiotic-resistant bacteria around the world are connected to "indiscriminate antibiotic prescribing practices, poor

compliance and the unregulated availability of these drugs” (Rao, 1998, p. 328). Worse yet, this careless practice cannot be remedied as easily as hand hygiene problems or stricter isolation precautions. The real solutions are developing new antibiotics or looking into alternatives like vaccines (Rao, 1998). If new antibiotics are discovered, extra precautions should be taken to ensure that history does not repeat itself; *S. aureus* has the ability to build-up resistances to even the newest and strongest antibiotics.

Nurses have the ability to help with drug noncompliance by educating their patients about their medications. Many patients will be discharged from the hospital while using antibiotics and nurses need to stress the importance of using them correctly. It is the nurse’s responsibility to ensure that patients leaving the hospital know how to take their prescription properly, on time, and until the end of their prescribed dosage. Drug noncompliance is an enormous factor in the spread of antibiotic-resistant bacteria; patients must be educated on their prescriptions, not just treated for their infection.

Conclusion

MRSA is a growing problem and it is imperative that nurses act immediately to stop it. It is treatable currently with vancomycin, but recently strains of *S. aureus* have even become resistant to this antibiotic. Nurses must remember the importance of hand hygiene, isolation precautions and antibiotic education. These tasks, though simple, will greatly reduce MRSA’s spread.

Without serious interventions implemented in hospitals, it will be nearly impossible to stop this powerful bacterium. For this reason, it is important to remember that, “As known organisms mutate and unfamiliar ones emerge, nurses are the healthcare professional in the best

strategic position to respond” (Stirling et al., 2004, p. 20). The steady incline of MRSA is eye-opening, but nurses are uniquely empowered to confront it.

References

- Bissett, L. (2005). Controlling the risk of MRSA infection: Screening and isolating patients. *British Journal of Nursing, 14*(7), 386-390.
- Kilpatrick, C. (2006). MRSA – superbug or superstar? *Journal of Community Nursing, 20*(8), 25.
- Knifton, , C. (2005). Social work and the rise of the MRSA ‘super bug.’ *Practice, 17*(1), 39-42.
- Rao, G. (1998). Risk factors for the spread of antibiotic-resistant bacteria. *Drugs, 55*(3), 324-330.
- Sheff, B. (1999). VRE & MRSA: Putting bad bugs out of business. *Nursing Management, 30*(6), 40-45.
- Stirling, B., Littlejohn, P., & Willbond, M. (2004). Nurses and the control of infectious disease. *Canadian Nurse, 100*(9), 17-20.
- Winter, G. (2005). A bug’s life. *Nursing Standard, 19*(33), 16-18.