



## **Module 9: Healthcare- Associated Infections Across the Spectrum of Care**

### Part 4: Risks of Healthcare-Associated Infections in Ambulatory Care Settings

Susan: Our last topic for the day is to talk about the risks associated with the ambulatory care settings for healthcare infections.

This is a site where there really has been little attention paid in the past; however, changes in care really have made evident that there are many sites outside of acute care hospitals and long-term care settings where patients are getting infections as a consequence of getting healthcare. Classic places that this occurs would be dialysis centers or day hospitals providing care to cancer patients.

Traditionally, ambulatory care settings provide care to otherwise healthy patients, but that's changed, and changed quite markedly. We now know that primary care clinics see their patients an average of about three times a year, more than just one well visit a year.

In addition, ambulatory surgery facilities are doing increasingly complex procedures. About three-quarters of all procedures these days are being done as outpatient surgeries. So ambulatory care is no longer a site where just well patients are gathering.

The prevention of HAIs, or healthcare-associated infections, in ambulatory sites is very similar to strategies we need to adhere to in acute care settings and long-term care facilities. However, in this section, we're going to talk about a couple of specific principles that, again, pertain to the other settings as well. We'll talk a little bit about what standard precautions are and how important it is that we follow them; we'll talk some more about maintaining the healthcare environment; and then finally, recognizing the number of ambulatory surgeries performed, we'll talk a bit about prevention of surgical site infections.

So what are standard precautions? Well, these are simply precautions which should be used in providing care to all patients in all settings. And [indiscernible 02:09] says the fundamental assumption that any blood or body fluid of any patient could carry infectious organisms.

In addition, the standard precautions can guide decisions that all healthcare workers need to make about the use of personal protective equipment and that that needs to be determined by the nature of the clinical interaction with a given patient.

So PPE, or personal protective equipment, that needs to be available and then used would include gloves, gowns, masks, and possibly some sort of goggles or eye protection.

Gloves should be used when there's going to a risk of touching blood or body fluids, contaminated wounds or non-intact skin or mucous membranes.



Gowns should be used to cover clothing or exposed skin of a healthcare worker if there's any chance for contact with blood or body fluids, secretions, or other contaminated material.

And then finally, a mask and goggles or eye protection should be used if there's a risk for a spray or a splash perhaps during a surgical procedure or in a patient with a very vigorous cough who's generating respiratory secretions.

Here's some examples of when we should use what:

A child who's coughing with a very bad runny nose, that's a situation to use a mask to prevent the spray of respiratory secretions and then gloves to protect the hand from the nasal secretions.

When examining a surgical patient and doing a dressing change from a draining wound, that's a situation gloves are essential.

And then finally, when drawing blood on an oncology patient or any patient, gloves are essential.

In an ambulatory care setting, as in any other setting, maintaining the environment is very important. We know that the environment of the ambulatory clinic can become contaminated from the patients that are there, from visitors, or from healthcare workers. Patients who congregate in ambulatory settings, particularly when seeking sick visits, when receiving sub-specialty care, or an emergency room often are ill and don't have great control of their own secretions. These patients often also have a higher rate of carriage of antibiotic-resistant organisms.

The challenges to maintaining an ambulatory care settings environment also can be pretty tough. The pace of care is rapid; the staffing often does not allow for continuous cleaning of the environment. There's some blurring of the lines also between a more home-like setting such as in a waiting room and the setting where the healthcare is being provided, also challenging how to best maintain the environment.

And then finally, maintaining a healthcare environment requires real partnerships between a variety of different members of the healthcare team.

A focus of environmental cleaning, particularly in ambulatory settings, needs to be on high-touch items, places like knobs and monitors, and also on equipment that is used between patients such as glucometers and other measurement devices, toys in pediatric clinics, and the environment examination table. And then things like pulse oximeters and blood pressure cuffs.

Because this is such a fundamental part of maintaining the healthcare setting to be safe and also so difficult to really assess whether or not an adequate job has been done just by looking,



structured observations are really recommended as well as frequent refresher education and assessment of adequacy of practice are recommended for the environmental cleaning staff.

Surgical site infections are a huge cause of morbidity and mortality in patients seeking care in many settings. We know that on average, there are approximately 300,000 surgical site infections each year, and that's when we combine those that happen after inpatient and outpatient surgeries. Again, about three-quarters of all of our surgeries are outpatient surgeries.

Patients who develop SSIs, or surgical site infections, have a higher risk of death. After some types of surgery, that risk of death may be tenfold greater than patients who do not get an infection.

Many surgical site infections can result in long-term disabilities, the need to return to the operating room, or prolonged hospitalization, and depending on the pathogen and the type of procedure which has been performed, surgical site infections may have an attributable cost of up to \$29,000.

So how do surgical site infections arise? First, there can be inoculation of the wound at the time of the surgical procedure, and that can come from the patient's own skin flora or through use of a piece of equipment or prosthetic device which hasn't been adequately sterilized.

Post-operatively, organisms can be introduced into a wound through inadequate care in dressing changes.

And then finally, a surgical wound is at great risk of being seeded or inoculated from a distant site of infection.

Again, going back to our fundamental strategies of preventing transmission from patients and staff, minimizing risk by reducing exposure, and preventing contamination and invasion, we can see some of the targets of SSI prevention efforts as well as what some of the specific interventions might be.

To prevent transmission from staff, we need to think about how to best control the surgical personnel in the environment. So hand hygiene is a critical intervention, and then also restricting traffic around the surgical field during the procedure.

Minimizing the risk by reducing exposure might include strategies to decrease the burden of organisms on the patient such as by using a preoperative antiseptic bath or doing appropriate skin disinfection prior to the surgical incision. Additionally, one could think about how to ensure sterility of the medical devices through improvements in the practices surrounding disinfection and sterilization of medical equipment.



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And then finally, preventing contamination and invasion specifically of the surgical wound through the use of antibiotic prophylaxis during the surgical procedure, and then following the surgical procedure, appropriate care of the wound until full healing has occurred.

A variety of other risk factors have been identified, many of which are actually modifiable and have been the subject of reports describing interventions which have successfully been introduced and associated with reduced rates of SSIs.

These include efforts to reduce excess traffic in an operating room during a surgical procedure; strategies to improve glucose control of the surgical patient; and then finally, ensuring that there's adequate levels of oxygen for a patient during a surgical procedure.

In summary, what we've done today is talk about a variety of different healthcare-associated infections which span virtually all settings in which healthcare is being delivered.

We know that the risk is considerable, but also that we have a lot of knowledge and evidence-based guidelines which can be employed to protect patients from many of the healthcare-associated infections. But to do so, these strategies must be implemented consistently and followed with a high degree of fidelity.

Finally, we've reviewed how some basic principles unite almost all of our HAI strategies, and these, again, are: preventing transmissions from healthcare workers and staff, minimizing risk of healthcare-associated infections by limiting exposure to devices and procedures, and preventing microbial contamination and invasion.

Thank you very much. I hope this has been a helpful overview of healthcare-associated infections.