IMPROVING INFECTION CONTROL *in* HOME CARE:

From Ritual to Science-Based Practice

While many home care policies and procedures are developed with the best of intentions, they frequently lack a scientific basis and have been perpetuated over the years. This article discusses infection control rituals in home care and hospice and the importance of making patient care practice decisions based on sound scientific principles.

Home care and hospice nurses have always adapted and applied infection prevention and control strategies to the best of their abilities with few, if any, external resources. Although home care and hospice nurses are knowledgeable in the basics of infection control, they often face a significant challenge when adapting acute care practice to the home care setting. This adaptation has resulted in a wide variation of practices and methods for patient care (e.g., cleaning and disinfecting equipment, using clean versus sterile technique), as well as the development of many ritualistic, arbitrary practices that have been codified in the home care and hospice organization's policies and procedures.

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INFECTION CONTROL CHALLENGES IN HOME CARE

The current body of infection control knowledge and the development of guidelines and recommendations for practice are based primarily on acute care experience. Although there are many published guidelines for infection control practice related to handwashing and environmental control (Garner & Favero, 1986), isolation precautions (Garner, 1996), and control of multi-drug resistant microorganisms (Centers for Disease Control, 1995) as well as other important issues, they are specifically designed for the acute care setting. Many of these recommended practices may not be necessary or appropriate in the home care setting and, if they are, may require significant adaptation to make them feasible. The "way we do it in the hospital" may not be practical or possible in the home care setting.

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For example, many of the items addressed in the Centers for Disease Control's (CDC) Guideline for Isolation Precautions in Hospitals (Garner, 1996) that refer to patient cohorting, restriction of access and traffic flow, and placing patients in rooms with negative air pressure obviously do not apply to the home care setting. In the home setting, isolation precautions focus more on the protection of the home care staff member and family, not other patients.

In addition, there is minimal data on the incidence of home care-acquired infection (Danzig et al., 1995; Kellerman et al., 1996; White & Ragland, 1993) and there are currently no standardized methods or definitions to measure the occurrence of home care-acquired infections. The CDC's definitions for nosocomial infection (Garner et al., 1988) cannot be directly applied to home care because they rely so heavily on laboratory data.

The methods for surveillance of hospital infection are not suitable for home care either (Emori, 1991) because they recommend that a single individual (the infection control practitioner or ICP) perform the surveillance by reviewing laboratory results, visiting clinical areas, interviewing staff, reviewing medical records, and examining patients when appropriate. This approach is not logistically feasible in home care or hospice. The ICP in home care must rely on the professional nursing staff in the field to identify patients with home care-acquired infections.

INFECTION CONTROL RITUALS IN HOME CARE

Although the concept of practicing infection control in the home care setting is fundamental, it is the application of infection control principles that is often a challenge for home care and hospice staff members and sometimes results in ritualistic behavior. Some examples of these rituals follow.

Ritual: Bag Technique

A prime example of a common ritualistic behavior in home care is the handling of the nursing supply bag. Many home care and hospice organizational policies and procedures require the use of a barrier (e.g., newspaper, chux, or wax paper) between the nursing supply bag and the surface upon which it is placed in the home.

It is also common for home care organizations to have a policy requiring that handwashing occur each time the staff member enters and reenters the nursing supply bag.

An additional requirement may be to designate a "clean" and "dirty" side of the bag. These policies and procedures were developed to address a perceived risk (i.e., "contamination" of the nursing bag and its contents).

Science

There are no studies or scientific infection control principles that would lead one to conclude that a barrier placed under a nursing supply bag is necessary or effective against preventing infections. Although microorganisms are a normal contaminant of walls, floors, and other surfaces, these en-

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vironmental surfaces are rarely associated with transmission of infections to patient or personnel (Garner et al., 1986).

- Although there may be items inside the nursing bag that must be maintained as clean or sterile, the outside of the bag generally does not pose a risk for transmission of infection. If an item truly is soiled and cannot be cleaned or disinfected in the home, it should be placed in a separate container for transport back to the office and cleaned. Therefore, a "dirty" side of the bag is not necessary.
- It is also **not** necessary for the hands to be washed multiple times to retrieve items from the nursing supply bag during the course of care. Care *should* be taken not to reenter the bag while wearing soiled gloves. However, entering the nursing supply bag with clean hands to retrieve patient care items does not require repeated handwashing.

1. Most items in the bag are clean, noncritical items (e.g., stethoscope, blood pressure cuff, measuring tape). Clean items may be returned to the nursing supply bag after use provided there is no visible soiling.
2. Items that must be sterile for use (e.g., lancets, needles, and syringes) are protected by wrappers. Sterile items are usually discarded after use.

Figure 1 contains an example of a basic nursing bag technique procedure that may be followed in the home.

Ritual: Routine Foley Catheter Change

Another patient care practice that has become standard, but is contrary to published data and guidelines, is the routine changing of foley catheters every 30 days in the absence of complications.

Science

The CDC Guideline for Prevention of Catheter-Associated Urinary Tract Infections (Wong, 1983) specifically states that indwelling catheters should not be changed at arbitrary fixed intervals in the absence of leaking, malfunctioning, or palpable concretions in the catheter lumen.

The Health Care Finance Administration (HCFA) provides reimbursement for these skilled nursing services and reimbursement guidelines state that absent any complications, foley catheters generally require skilled care once ap-

Bag Technique Procedure

1. Place the supply bag on a clean, dry surface in the patient's home.
2. Wash the hands with soap and running water before direct contact with the patient. If the patient is infected or colonized with multidrug-resistant bacteria (e.g., M.R.S.A or V.R.E), wash the hands with antibacterial soap and running water. If running water is not available, cleanse the hands with a waterless handwashing product.
3. Remove the needed supplies from the supply bag and place on a clean, dry surface.
4. Perform patient care.
5. If an oral thermometer (semicritical equipment) was used, clean and disinfect the thermometer with a 70% isopropyl alcohol prep pad and return to the supply bag.
6. If noncritical equipment (i.e., blood pressure cuff, stethoscope, scale, etc.) was used, clean the supplies if soiled and return to the supply bag. If not soiled, return to the supply bag. If the patient is infected or colonized with multidrug-resistant bacteria, and equipment has not been designated for the patient's individual use, clean and disinfect the equipment with a disinfectant of the home care or hospice organization's choice prior to replacing the noncritical equipment in the supply bag.
7. Remove personal protective equipment (gown and gloves), if worn.
8. Wash the hands with soap and running water. If the patient is infected or colonized with multidrug-resistant bacteria (e.g., M.R.S.A or V.R.E), wash the hands with antibacterial soap and running water. If running water is not available, cleanse the hands again with a waterless handwashing product and wash the hands with soap and running water as soon as possible.

Figure 1. *Bag Technique Procedure. Source: Friedman, M. (1998). Surveillance, Prevention, and Control of Infection.* Home Care Policy and Procedure Manual. *Home Health Systems, Inc., Marietta, GA. Used with permission.*

proximately every 30 days and silicone catheters generally require skilled care once every 60–90 days (HCFA, 1996). As a result, many Medicare-certified home health agencies routinely change catheters and drainage sets every 30 days.

Reconsideration should be given to this practice as data demonstrates that this routine patient care practice is not necessary.

WHY LACK OF KNOWLEDGE PERPETUATES RITUALS

Infection control rituals in home care and hospice occur for several reasons:

1. The initial risk assessment for infection may be invalid. Risk is commonly overestimated and perceived to be greater than it actually is; such is the case with nursing bag technique.
2. The interventions to reduce the perceived risk may be inappropriate, resulting in practices that are unnecessary and waste limited resources. For example, some home care and hospice organizations place all soiled dressing supplies in a "red bag" and dispose of it as medical waste versus household waste (when the items may be considered household waste per state regulations).
3. Staff members dispose of all waste generated throughout the course of obtaining a blood sample (i.e. both sharps and non-sharp items such as sterile wrappers, etc.) in a sharps container when only sharps items need to be placed in the sharps container.

These medical waste-management practices not only are beyond the requirements of the Occupational Safety and Health Administration's requirements in the Bloodborne Pathogen Rule, but add to the organization's costs for additional sharp containers and disposal of medical waste.

Legitimately, home care nurses have had minimal data and little guidance to support patient care practice. Therefore, when unsure how to handle a specific patient care situation, the staff member will frequently err on the side of caution to avoid "doing the wrong thing." This practice is common in the use of personal protective equipment. In home care and hospice organizations, staff have been observed wearing gloves, mask, and gown and using sterile technique (when the physician's order or agency policy did not require it) to clean and dress a noninfected pressure ulcer on a patient's heel.

APPLYING BASIC PRINCIPLES OF INFECTION PREVENTION AND CONTROL

Decisions for infection prevention and control measures should always be based on scientific principles and/or data, if available. To avoid ritualistic infection-control behaviors when practicing in the home care setting, understanding the basic principles of infection prevention and control is essential. These principles are found in two rudimentary models: the epidemiologic triangle (Figure 2) and the chain of infection (Figure 3).

Epidemiologic Triangle

The epidemiologic triangle represents the three essential elements necessary for infection—the host, agent, and environment.

Host. The host factors are critical in determining whether an infection is likely to occur. The patient's risk is dependent upon many variables including their age, immune status, nutritional status, integrity of the skin and mucus membranes, and presence of indwelling devices. In many cases, a home care patient may be immune to a specific microorganism due to active immunity from a previous infection (e.g., chickenpox) or immunization (e.g., hepatitis B). If a patient is not immune, he or she may be considered a "susceptible host."

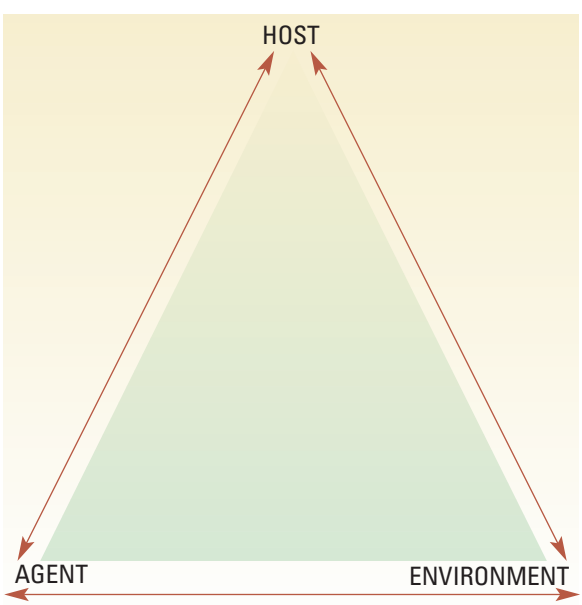

Figure 2. *The Epidemiologic Triangle.*

Agent. The agent of infection is the microorganism that causes an infection. The agent may be a bacterium, virus, yeast, fungi, or some other microorganism that can cause human infection. The mere presence of microorganisms is not necessarily a risk to the patient. Many bacteria are normal flora found in various anatomic sites, such as the normal colonization of the intestinal tract with *E. coli* and other bowel flora.

Mode of Transmission. The mode of transmission is the transfer of the infectious agent from its environment or reservoir to a susceptible host. There are five modes of transmission:

1. Contact (direct and indirect),
2. Droplet,
3. Airborne,
4. Vector-borne (disease spread by insects, such as malaria), and
5. Vehicle (disease spread by a common source such as contaminated water or seafood).

Infection control strategies related to patient care, including isolation precautions, focus on contact transmission, droplet transmission, and airborne transmission.

Chain of Infection

All three elements within the epidemiologic triangle must be present for a patient to become infected; however, an infection will not always occur in the presence of all three elements. Infection depends on the characteristics of the agent and host, as well as the potential for transmission. All of the variables in the chain of infection must be considered in the assessment of infection risk.

First, although there is a reservoir or source of infection, there must be a portal of exit. For example, an individual may be infected with hepatitis B, but they will not transmit the virus unless there is bleeding, excretion of bloody body fluids, or sexual contact. In addition, the susceptible patient must be exposed through a portal of entry. Touching the intact skin of a person with any bloodborne disease does not cause exposure or transmission.

A portal of entry for transmission of hepatitis B might be a needlestick or sharps injury, exposure to blood via nonintact skin, or a splash to mucous membrane. However, even if there is a reservoir of infection and a portal of exit and entry, there still may not be a risk for infection if the patient is not susceptible to the infection. For example, a home care staff member may, through a needle stick, be exposed to a patient infected with hepatitis B. However, if the home care staff member has received the hepatitis B vaccine and is immune, no infection will occur. Thus, all of these factors must be considered when evaluating the risk of infection and determining the appropriate procedures to decrease risk.

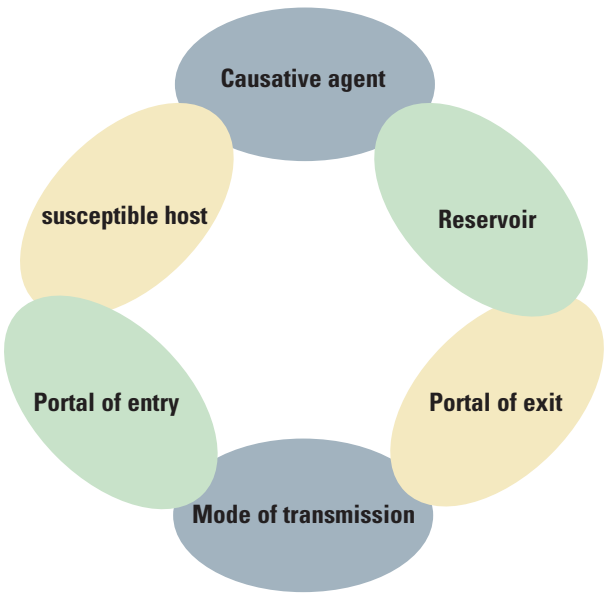

Figure 3. *The Chain of Infection.*

ASSESSING THE RISK OF INFECTION FROM HOME CARE EQUIPMENT

Assessing the risk of person-to-person transmission is frequently more straightforward than assessing the risk and determining the appropriate control measures when inanimate objects or home care equipment are involved. In home care, only a few select items are reused from one patient to another (e.g., stethoscope, sphygmomanometer, thermometer, scale). When determining the potential risk related to reusing equipment on more than one patient, the scheme developed by E. H. Spaulding is most useful (Spaulding, 1968).

Spaulding divided all medical devices into three categories (i.e., noncritical, semicritical, and critical) and provided guidance for the level of cleaning and disinfecting that is necessary after use based on the risk of infection transmission from the object.

SPALDING'S CATEGORIES FOR CLEANING AND DISINFECTING OBJECTS

Noncritical Devices are those that only touch intact skin. These items are considered low risk and only require cleaning or low-level disinfection when visibly soiled. Examples of noncritical devices used in the home setting include blood pressure cuffs, scales, and stethoscopes.

Semicritical Items are those that come into contact with nonintact skin and mucus membrane. These items require intermediate level disinfection before being used on another patient. Examples of semicritical devices used in the home setting include respiratory therapy equipment and oral thermometers.

Critical Items are those that contact sterile body spaces, such as the urinary bladder or the venous system, and should be sterile for use and discarded. Examples of critical devices used in the home setting include indwelling urethral catheters and intravenous catheters.

A common example of ritualistic behavior related to patient equipment is the routine disinfection of noncritical medical devices such as stethoscopes and blood pressure cuffs in between home visits and patient use. Items that do not ordinarily touch the patient (e.g., the nursing supply bag) or touch only intact skin (e.g., a scale) are generally not involved in disease transmission and do not require cleaning or disinfection between every use on different patients. In most cases, these items need only be cleaned when they are visibly soiled. However, the presence of multi-drug resistant microorganisms is an exception.

If a patient is infected or colonized with vancomycin-resistant enterocci (VRE) or other multidrug-resistant microorganism (e.g., Methicillin Resistant *Staph aureus*), the noncritical item should be cleaned with a low-level disinfectant or the item should be assigned to the colonized or infected patient exclusively (CDC, 1995). This recommendation is based upon surveillance data and evidence of transmission of multidrug-resistant microorganisms in the acute care setting.

PRACTICE WITHOUT DATA

With a lack of recommendations for patient care practice specifically addressing home care and little or no data on the incidence of home care-acquired infection, home care nurses must apply scientific principles along with common sense to address these issues and protect their patients. For example, the question regarding the appropriate time frame for use of irrigating solutions is frequently posed.

Should solutions be discarded every 24 hours, 48 hours, or once a week?

Because there is no data on the ideal or necessary time frame for use, an attempt should be made to select a reasonable quantity (e.g., 150 ml. versus 500 ml.) that will be used within a reasonable period of time (e.g., one or two visits or days). To add to the margin of safety, the solution should be stored in a manner that will minimize potential for contamination (Rhinehart & Friedman, 1999).

Another area of uncertainty is the use of sterile versus clean technique. Some patient care practices requiring aseptic technique in the hospital can be provided safely in the home using clean technique, although there may be no reference or data for this practice. For example, experience and anecdotal evidence shows that intermittent urinary catheterization can be safely accomplished as a clean procedure in the home. Tracheostomy care and suctioning are also frequently performed using clean technique in the home but always performed using aseptic technique in a hospital or other institutional setting.

MOVING FORWARD: BASING HOME CARE PRACTICE ON SCIENCE

Unfortunately, some unnecessary infection control practices have been reinforced during home care surveys conducted by state, federal, and/or voluntary accrediting bodies. When the surveyor reviews the care being provided in the home by the home care or hospice staff members, he or she will observe for breaches in applicable state or federal laws and regulations. The surveyor will also note whether the staff follow the home care or hospice's own policies and procedures without necessarily examining the appropriateness of the practice.

For example, if the policies and procedures state that staff must use barriers under the nursing supply bag and this procedure is not followed, a deficiency or recommendation may be cited. It does not necessarily mean that the policy was reasonable in its requirements for infection prevention and control. When infection control procedures are followed in a particular manner with-

out comment from the surveyor, the home care or hospice organization's staff often conclude that they must be following proper procedures because the surveyor said nothing.

Based on anecdotal reports, many home care and hospice organizations continue ritualistic or unnecessary practices because the surveyor told the organization's staff that that was the way a certain technique should be performed. Understandably, a home care staff member may hesitate to challenge a surveyor's recommendation at that time and the surveyor may fail to provide a reference or a scientific basis for his or her comment.

Some home care and hospice organizations are hesitant to abandon the ritualistic practice of nursing bag technique because in certain states "their surveyor wants to see them use barriers." For a surveyor to make a valid citation to a home care or hospice organization for breaches in infection control practice, the finding(s) must be based on standards of practice or scientific data. If surveyors give any direction for infection control practice that does not appear sound, the home care or hospice organization should request more specific information and rationale for the recommendation in an open, nonconfrontational manner.

With a lack of recommendations for patient care practice specifically addressing home care and little or no data on the incidence of home care-acquired infection, home care nurses must apply scientific principles along with common sense to address these issues and protect their patients.

Ritualistic practices should be carefully examined to determine their validity based upon a scientific model (i.e., epidemiologic triangle and chain of infection). Practices that are determined to be unnecessary and do not contribute to reducing infection risk should be eliminated.

Home care and hospice organizations will be unable to base their practice on outcome data until further progress in the surveillance of home care-acquired infection is made. This will be difficult until specific definitions for home care-acquired infections and methods for surveillance are developed and standardized. Without standardized definitions and methods it will be difficult to determine the actual risks for home care-acquired infections and the effectiveness of specific infection control measures.

It is imperative that home care organizations begin to collect data in an organized fashion and share their results through meetings and publications. This will allow home care and hospice organizations to move their patient care practice from ritual to a sound, scientific basis. ■

REFERENCES

Centers for Disease Control and Prevention. (1995). Recommendations for preventing the spread of vancomycin resistance: Recommendations of the hospital infection control practices advisory committee (HICPAC). *American Journal of Infection Control, 23* (2), 87–94.

Danzig, L., Short, L., Collins, K., Mahoney, M., Sepe, S., Bland, L., & Jarvis, W. (1995). Bloodstream infections associated with a needleless intravenous infusion system in patients receiving home infusion therapy. *Journal of the American Medical Association, 273*(23), 1862–1864.

Emori, G., Culver, D., & Horan, T. (1991). National nosocomial infections surveillance system (NNIS): Description of surveillance methods. *American Journal of Infection Control, 19*, 259–267.

Garner, J. S. (1996). Guideline for isolation precautions in hospitals. *Infection Control and Hospital Epidemiology, 17*(1), 53–80.

Garner, J., & Favero, M. (1986). CDC Guideline for handwashing and hospital environmental control, 1985. *American Journal of Infection Control*, *14*(3), 110–129.

Garner, J., Jarvis, W., Emori, T., Horan, T., & Hughes, J. (1988). CDC definitions for nosocomial infection. *American Journal of Infection Control, 16*, 28–40.

Garner, J., & Favero, M. (1986). CDC Guideline for handwashing and hospital environmental control, 1985. *American Journal of Infection Control*, *14*(3), 110–129.

Health Care Finance Administration. (1996, April). *Medicare Home Health Agency Manual.* Revised Material. Transmittal No. 277.

Kellerman, S., Shay. D., Howard, J., Goes, C., Feusner, J., Rosenberg, J., Vugia, D., & Jarvis, W. (1996). Bloodstream infections in home infusion patients: The influence of race and needleless intravascular access devices. *Journal of Pediatrics, 129*(5), 711–717.

Rhinehart, E., & Friedman, M. (1999). *Infection Control in Home Care*. Gaithersburg, MD: Aspen.

Soule, B. (Ed.). (1983). *The APIC Curriculum for Infection Control Practice*. Dubuque, IA: Kendall/Hunt Publishing Co.

Spaulding, E. H. (1968). Chemical disinfection of medical and surgical materials. In C. A. Lawrence, & S. S. Block (Eds.), *Disinfection, Sterilization, and Preservation* (pp. 517–531). Philadelphia: Lea & Febiger.

White, M., & Ragland, K., (1993). Surveillance of intravenous catheter-related infections among home care clients. *American Journal of Infection Control, 21*, 231–235.

Wong, E. S. (1983). Guideline for prevention of catheter-associated urinary tract infections. *American Journal of Infection Control, 11*, 28–31.

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CE Test: Improving Infection Control in Home Care: From Ritual to Science-Based Practice

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General Purpose

To introduce the registered professional nurse to the scientific basis of infection control in the home.

Objectives

After reading this article and taking the following test you will be able to:

1. Identify current infection control practices in home care and hospice.
2. Discuss the effectiveness of current practices.
3. Defend infection control practices that vary from traditional practice.

Questions

1. In general, infection control and prevention strategies in home care have been
a. developed after careful scientific research.
b. identified as rigid and unvaried.
c. reproduced from acute care experiences.
d. constructed with the assistance of numerous external resources.

2. Surveillance of home care infections differs from that of the hospital in which of the following ways?
a. review of laboratory data
b. visiting clinical areas
c. reviewing medical records
d. reliance on professional nursing staff

3. During orientation a home care nurse learns about "bag technique." Which of the following statements regarding this technique is true?
a. Never set the bag directly on the floor.
b. You must wash your hands each and every time you enter the nursing bag.
c. Research supports the designation of a clean and dirty side of the bag.
d. There is no scientific basis for placing a barrier under the nursing bag.

4. Scientific infection control principles indicate that a soiled item that cannot be disinfected in the home
a. can be placed directly inside the nursing bag.
b. can be placed in a separate container for transport to the office.
c. can be left out and hand-carried to the office for cleaning.
d. can be rinsed off immediately in the patient's home, then transported to the office.

5. According to the Centers for Disease Control, how often should Foley catheters be changed?
a. every 30 days
b. every 60 days
c. at fixed intervals upon the request of the client
d. when complications occur

6. Improper disposal of non-sharp items in a sharps container can lead to all of the following *except*
a. increased agency costs for disposal of items.
b. fines to agency for incorrect disposal techniques.
c. waste of agency resources.
d. complaints from contracted medical waste disposal companies.

7. A new nurse at your agency asks you about blood borne pathogen rules. Because you are late for a meeting you refer her to the
a. Health Care Financing Administration (HCFA).
b. Office of Inspector General (OIG).
c. Occupational Safety and Health Administration (OSHA).
d. Department of Health Services (DHS).

8. Elements of the epidemiologic triangle include which three interrelated components?
a. host-agent-environment
b. host-agent-host
c. host-genetic core-environment
d. social environment-host-agent

9. A factor that is not a link in the chain of infection is
a. portal of exit.
b. nonsusceptible host.
c. reservoir.
d. mode of transmission.

10. A susceptible host
a. displays active immunity.
b. causes an infection.
c. receives an immunization.
d. is not immune.

11. E. coli is normally found within which system?
a. Gastrointestinal
b. Respiratory
c. Cardiovascular
d. Endocrine

12. Transmission of an infection by a mosquito is known as
a. vector-borne.
b. droplet.
c. contact.
d. vehicle.

13. Infection control strategies related to patient care usually relate to all of the following *except*
a. contact transmission.
b. droplet transmission.
c. airborne transmission.
d. vehicle transmission.

14. According to E. H. Spaulding, a semicritical device is one that
a. touches only intact skin.
b. contacts mucous membranes.
c. requires low-level disinfection.
d. should be sterile for use.

15. Noncritical medical devices should be assigned for use to one patient exclusively when the client
a. is infected with a multi-drug resistant microorganism.
b. is on intravenous antibiotics.
c. has a history of hepatitis.
d. tests positive for HIV.

16. Which of these statements regarding the storage of solutions in the home is correct?
a. Solutions are to be discarded after 24 hours.
b. Solutions are to be discarded after 48 hours.
c. Length of time solutions may be kept is OSHA regulated.
d. Length varies based on agency policy.

17. A home procedure in which sterility must be maintained is
A. tracheostomy care.
B. intravenous therapy.
C. intermittent urinary catheterization.
D. enteral feedings.

18. During surveys, it is most critical to
a. perform procedures as taught by your preceptor.
b. follow agency policy and procedures.
c. discard soiled dressings in biohazard bags.
d. adapt the procedure to the surveyor's specifications.

19. According to the author, home care infection control practices are based on
a. reliable external resources.
b. rituals.
c. scientific data.
d. past outcomes of care.

20. In order for a surveyor to cite a home care organization for breaches in infection control, the finding must be based on
a. standards of practice.
b. surveyor's practice experiences.
c. theoretical data.
d. nonspecific information.

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B

Test Responses: Darken one for your answer to each question.

1. a☐ b☐ c☐ d☐	11. a☐ b☐ c☐ d☐
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C

1. Did this CE activity's learning objectives relate to its general purpose? ☐ Y ☐ N
2. Was the journal home study format an effective way to present the material? ☐ Y ☐ N
3. Was the content current to nursing practice? ☐ Y ☐ N
4. How long did it take you to complete this CE activity? _____ hours
5. Suggestions for future topics _____