**CBIC Practice Test Questions**

**1. A large community hospital’s tumor registry reports a marked decrease in cases of hepatocellular carcinoma over a 20-year period. Which of the following is LEAST likely to account for this occurrence?**

A. Improved serologic screening of transfusion donors  
B. Higher vaccination rates for hepatitis A  
C. Higher community vaccination rates for hepatitis B  
D. Decreased prevalence of seropositivity for hepatitis C over same period

**2. Match the following elements of outbreak case definitions with the appropriate examples:**

1) Person  
2) Place  
3) Time  
4) Clinical features  
5) Laboratory features

A. Onset during winter months December through March, 2008  
B. Sputum positive for acid-fast bacilli  
C. Day-shift medical technologists at tertiary-care hospital  
D. Allcare Rehabilitation, Yuma, Arizona  
E. Morbilliform rash

**3. World Health Organization 2009 published guidelines for hand hygiene include all of the following EXCEPT:**

A. After cleansing and rinsing, use a towel to turn off spigot and do not re-use.  
B. Use of warm or hot water for rinsing to kill off any remaining bacteria  
C. Hand hygiene is needed after removing gloves used for wound dressings.  
D. Use of soap and water if alcohol-based hand rubs are not available.

**4. What percentage of nosocomial infections is believed to be caused by bacterial contamination carried by hands of caregivers and health care workers?**

A. 50%  
B. 33%  
C. 25%  
D. 15%

**5. An intensive care unit (ICU) patient in a metropolitan hospital is diagnosed with culture-positive non-acid-fast multidrug resistant bacteria (MDR). This occurs 1 week after admission to the same ICU of a homeless 46-year-old man with pneumonia and underlying COPD who was also diagnosed with MDR. Infection control surveillance should include all of the following EXCEPT:**

A. Masks for patient and all caregivers  
B. Strict handwashing precautions  
C. Decontamination procedures for all portable chest radiography  
D. Surface culture samples of shared diagnostic or invasive equipment

**CBIC Answers and Explanations**

**1. B:** The greatest risk factor for the development of hepatocellular carcinoma (hepatoma) worldwide is infectious. Hepatitis B is a viral infection endemic in much of the non-Western world for which an effective vaccine has been available since the 1980s. Hepatitis A, for which there is also an effective vaccine delivered in two doses spaced 6 to 12 months apart, does not show strong statistical correlation with development of hepatocellular carcinoma, in contrast to data involving hepatitis B and C viruses. Twinrix, a vaccination against both hepatitis A and B, is administered in three doses, similar to that given against hepatitis B alone. Increased rates of hepatocellular carcinoma in Western countries has paralleled increased rates of hepatitis C, and appear likely due to increased use of blood products, growing populations of intravenous drug users, and chronicity of infections caused by hepatitis C-tainted blood products administered in the past. Serologic screening improvements have helped decrease the number of transfusion-associated nosocomial infections caused by these viruses.

**2. 1-C, 2-D, 3-A, 4-E, 5-B.** Essential data that must be collected during the investigation of an outbreak reference person, place, time of event, and its clinical and laboratory features. In this match, the person can represent a defined group as in the day-shift technologists of choice C. The place is the facility in Arizona. The time can be a reference period, as in the winter months of choice A. Clinical features include signs and symptoms, as in the morbilliform rash of choice E, and other clinical findings or comments regarding disease transmission. Laboratory features include those diagnostic findings such as results of cultures, special serology, or specialized testing as in polymerase chain reaction (PCR), immunofixation, or other techniques that specify the nature of the infection.

**3. B:** Hand hygiene remains an opportunity area for increased compliance and improved technique. Warm or hot water is not recommended for rinsing off soap or other disinfectant materials because of the increased risk for skin irritation or dermatitis that may be caused by higher water temperatures combined with topical chemicals. Rather, use of a towel or disposable napkin is recommended following cleansing before handling spigots or other community-soiled areas with prompt disposal of said item, not to be reused again. Even use of gloves is not fail-safe. In fact, hand washing is recommended after gloves are removed as in the wound-dressing example here. Alcohol-based hand rubs are effective when used around all surfaces of hands and fingers until dry; however, soap and water can be effective when such agents are not available.

**4. D:** Many studies attribute about 15% of nosocomial infections to contamination caused by hand carriage of pathogens by health care workers. These incidents may occur via direct patient-to-patient contact or with intermediary static objects that may be contact-contaminated, from computer keyboards, pens, or even radiologic equipment. The latter is a common occurrence in ICU settings where portable radiography is employed. Many health care workers erroneously believe (or become complacent through years of clinical practice) that the use of gloves trumps the need for meticulous hand hygiene, or do not understand or follow the need for proper hand washing even after gloves are removed. Particularly in settings where gloved health care workers come into contact with potentially devastating pathogens (e.g., C. difficile, antibiotic-resistant strains, MRSA), it is imperative that hand washing and other infection-control strategies be ingrained in staff, with appropriate reminders, surveillance, and continuing education as necessary.

**5. A:** Cross-contamination or cross-colonization may occur even with strict infection control precautions in place. Laxity in adhering to IC guidelines increases the likelihood of breaching IC standards, which may be especially hazardous with multidrug resistant organisms, particularly those that require long periods of complex antimicrobial therapy, as in multidrug-resistant tuberculosis (MDR-TB). With isolation of a non-acid-fast organism, contact transmission appears more likely than airborne transmission that would indicate mask precautions for patient and caregivers. Surface cultures of shared equipment may help isolate the infectious culprit while rigorous decontamination procedures may halt the spread of infection to new unit admissions. As in any outbreak occurrence, increased vigilance to hand washing techniques should be enforced because suboptimal compliance by health care workers in multiple settings is frequently reported.