

Infection Prevention and Control at Home*¹

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Introduction

Infections have always been a problem for health workers. As for infection prevention and control in welfare facilities and medical facilities including hospitals and clinics, such institutions prepare infection control manuals and endeavor to adequately implement control measures as specified in them. However, infection control at home presents a different set of challenges. The situation may well be that many people are at a loss as to how to take infection control measures because the environment and situations vary from one home to another. Given the importance of this issue, the present article focuses on infection prevention and control at home, with the ultimate goal of allowing all physicians to provide home care with assurance.

Basics of Infection Management at Home

Similar to the situation in medical or welfare facilities, the first priority of infection management at home is the implementation of standard precautions. Among these practices, “hand hygiene” and “use of personal protective equipment” play the central roles.

Hand hygiene (hand washing)

Hand washing is regarded as the most important measure among the various protective measures applied against infection. It is necessary to implement this practice without fail to protect both patients and care providers. In the home care practice setting, it is recommended that the hands be washed after examining a patient in

their home whenever possible. In this case, the hands should be washed with running water for at least 15 seconds, rather than with pooled water in a wash bowl, a common practice for doctors providing visiting care in past times, as seen in TV programs, etc. The use of liquid soap is desirable, because it is likely that various bacterial organisms will be growing in the soap plate or in the soap itself at home. After washing, the hands should be wiped completely dry with a paper towel, which is then discarded hygienically. Finally, the doctor should keep the hands dry when traveling to the home of the next patient.

However, if there are no obvious contaminants (blood, body fluid, secretions, excretions, etc.) on the hands, a quick-drying rubbing alcohol preparation can be used instead. In actuality, when a doctor sees patients serially within an institution such as a group home or a nursing home, this method is recommended because it is difficult to wash the hands with running water before seeing each patient. Hand cleaning employing this procedure is feasible when it is difficult to access tap water at the patient’s home because the sink is not nearby, because there is a shortage of time, or because various other circumstances are present. The bottles of rubbing alcohol preparations are portable and can be placed at any site; therefore, this procedure can be practiced more easily than hand washing which is not always convenient. In practice, a small, portable bottle of antiseptic may be suspended from the waist, put in a pocket, or prepared in the visiting vehicle.

“Hand-rubbing with an antiseptic in the absence of contamination” is strongly recommended by the 2002 update of the Guideline for

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Hand Hygiene by the US Centers for Disease Control and Prevention (CDC). The reasons for this recommendation are explained as follows: alcohol causes a more prominent decrease in bacterial counts, and is effective in a shorter period of time than the use of soap and running water when there is no macroscopic contamination of the fingers. It is also noted that alcohol preparations containing skin protective components are less likely to cause the hands to become rough and dry.

Wearing gloves

Gloves should be worn when contact with the patient's blood, body fluid, secretions, or excretions is inevitable or presumable, for instance in the case of blood sampling, oral care, or wound treatment. From a different perspective, however, the doctor should also wear gloves when there is a wound on his or her own hand. Hand washing should always be conducted after removing the gloves.

Wearing a mask and apron

Masks and aprons are not always necessary. In fact, the occasions for wearing such equipment are not particularly common. However, the care provider should wear a mask when the face is likely to come into contact with the patient's blood, body fluid, secretions, or excretions, and should wear an apron when the body is likely to come into contact with these biological materials.

Infection Specifics

Influenza

Influenza is a prevalent disease virtually every winter. Home-bound patients often become infected with influenza when they go out to use ambulatory services such as day services or day care, or with their families.

Elderly people infected with influenza are apt to be dehydrated because of high fever, and are characteristically prone to developing pneumonia as a complication. Even if they remain free of pneumonia, it is not rare for general condition to worsen rapidly and become life-threatening in patients who have had a disease of the lung or heart before being infected with the influenza virus. In fact, many elderly people die every winter because of influenza or pneumonia associated with influenza. If influenza spreads in wel-

fare institutions where numerous elderly people reside, there is a high risk of severe or life-threatening illness. Therefore, influenza is a very important infection for which aggressive preventive measures should be in place.

For prevention of influenza, vaccination is significant and effective. Once vaccination has been conducted, disease onset might be inhibited even when the vaccinated person is infected, or worsening of the disease and the occurrence of complications may be prevented even after the onset of this disease. Therefore, vaccination prior to the beginning of the influenza season is currently considered to be one of the most effective methods of preventing influenza outbreaks among home-bound patients and residents of institutions. As mentioned previously, infection with influenza in home-bound patients often occurs when they go out in order to use ambulatory services or with their families. Therefore, it is necessary to encourage others, who may carry such infections, i.e., health workers, nursing care providers, and family members, to receive the vaccine every year. In welfare facilities, epidemics within the institution can be prevented by recommending vaccination for institution staff members.

However, unfortunately, the efficacy rate of vaccination is not 100%. Therefore, the rapid diagnosis kit should be used promptly when influenza infection is clinically suspected, and anti-influenza drug therapy should be promptly initiated whenever the test result is positive.

Tuberculosis

The incidence of tuberculosis remains high in Japan as compared to other major industrialized countries. In particular, increased disease onset in people of advanced age has recently been attracting considerable attention. It is said that secondary tuberculosis is now occurring in patients over age 70 years who were previously infected when tuberculosis was more prevalent in Japan. Tuberculosis may manifest in elderly people who have decreased immunity even if they were immunized due to previous infection with the tuberculosis organism. Tuberculosis is clearly an infection that requires particular attention in the practice of home care that involves many elderly patients.

Clinical diagnosis of tuberculosis is difficult. Diagnosing tuberculosis by general examination,

while providing home care, is especially challenging. Tuberculosis should first be suspected in patients who have symptoms such as prolonged coughing (particularly that persisting for more than 2 weeks), sputum, and fever. Doctors practicing in the age when tuberculosis was prevalent probably had extensive experience, but modern-day doctors seldom see patients with tuberculosis. It should again be underscored that initially suspecting tuberculosis infection is the most important step in diagnosing this disease. For home-care patients in whom it is difficult to perform chest radiography, conducting sputum examination aggressively is recommended.

If active tuberculosis is identified by sputum examination, etc., the major task that home-care doctors must carry out is to promptly refer the patient to an appropriate medical facility for hospitalization. Chest radiography and the tuberculin test should be performed on the patient's family members, residents of the same facility, and medical and nursing care providers who had contact with the patient. These steps should be carried out in consultation with the local health department.

Methicillin-resistant *Staphylococcus aureus* (MRSA)

Carrier tests for MRSA were strictly conducted in home-care patients or residents of institutions until a decade ago. Restrictions and limitations were set for receiving various services by persons in whom MRSA was detected. This situation was derived from the misunderstanding that MRSA infection might manifest in healthy elderly carriers, although this disease manifests in people with weak defenses such as postoperative inpatients who have undergone major surgery. Basically, MRSA carriers who live at home or in an institution usually reach the ends of their lives without disease onset. Currently, MRSA carriers are not subject to isolation or bacterial eradication, but basic procedures including hand washing are still necessary.

Scabies

The major symptom of scabies is itching. However, many elderly people also complain of itching from other causes. Scabies is often mistaken for eczema, if the skin is not observed closely. Basically, it is very important to examine the skin meticulously on a routine basis. In actual

clinical practice, prolonged use of steroids for intractable eczema without careful consideration should be avoided. Instead, it is desirable to refer the patient to a dermatologist in an early stage (transmitting images to the specialist by email via the Internet is a recent, efficient method) to facilitate early diagnosis and early treatment. For this purpose, care should be regularly coordinated with dermatologists in the local medical association.

Viral gastroenteritis

Viral gastroenteritis is a type of gastroenteritis that often becomes widespread in welfare institutions and similar facilities in winter. Most cases are caused by norovirus or rotavirus. To prevent epidemics in institutions, those institution residents in whom infection is suspected should be dealt with in a private room if possible, with strict adherence to procedures for washing hands and wearing gloves, in accordance with standard precautions. If the floor is contaminated with vomitus or bodily excretions, 0.1% sodium hypochlorite should be used for disinfection. If viral gastroenteritis is prevalent in the community and if one or more family members have become infected, it is important that visits to the institution by the family are suspended, to the maximum extent possible, until the outbreak has fully subsided.

Blood-mediated infections

Prevention of needle-stick accidents, among other inadvertent events, is important for preventing blood-mediated infections including hepatitis B and hepatitis C. Basically, the most important procedures involve absolute avoidance of recapping the needle tip and also discarding needles appropriately.

Conclusion

Although some devices are necessary in individual homes, infection control and prevention measures in home care are basically similar to those in medical and welfare facilities; it is the standard precautions that truly matter the most. Because people who are involved in home care of patients are not restricted to healthcare providers, it is important for a variety of workers to strictly adhere to the established standard precautions.

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