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A newsletter from Kimberly-Clark

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In this issue:

Reducing the risk of hospital-acquired infection p1

What “bugs” us all now? p1

Standard & Additional Precautions for PPE p5

Reducing the risk of hospital-acquired infection



Eighty percent of hospitals in the US use single-use gowns and drapes. Why? Clinical users are satisfied with the performance of single use gowns and drapes in terms of barrier properties, safety, consistency, and comfort. Safety issues, especially those related to adequate protection of professional staff and patients, are of paramount importance.

Necessity of Barrier Protection

The necessity of barrier protection and the adherence to regulations and professional guidelines make single-use gowns and drapes the ideal choice.



Barrier properties are of great importance with the shift from user comfort and cost to user and patient protection. Dual protection for HCWs (Health Care Workers) and patients is paramount. Issues of safety and infection control are now being quantified by risk managers; these issues must be in the total equation when choosing between reusable and single-use gowns and drapes. Gowns and drapes act as barriers to prevent transmission of microorganisms from nonsterile to sterile areas. The ability to prevent fluid penetrating (preventing “strike-through”) is a critical factor in choosing materials for gowns and drapes.

Protection of HCWs from coagulase-negative *Staphylococcus aureus*, methicillin-resistant *Staphylococcus aureus* (MRSA) and other resistant organisms and bloodborne pathogens is necessary for safe practices; choices are made on safety issues as well as cost. Exposure to blood has for years been recognised as a risk for infection, so barriers are needed.

As stated in the recently published *Infection Control Guidelines* published by the Australian Government Department of Health & Aging, “It is the responsibility of all health care establishments to have PPE that complies with relevant Australian Standards readily available for all HCWs”. Personal Protective Equipment (PPE) or clothing, such as gowns, are required in situations where blood or other potentially infectious materials

continued over page

What “bugs” us all now? Avian influenza: bird flu H5N1

There has been much discussion on the potential for the Avian Bird Flu making its way to Australia in a similar pattern to the SARS outbreak experienced in 2003. This article aims to raise your awareness of how to recognise the symptoms, how the disease is spread and how to prevent infection.

Signs and symptoms

Avian influenza viruses are complex with a number of subtypes and strains that vary considerably from one another. In the broadest terms however, the viruses are classified as having a low or high chance of causing disease (low or high pathogenicity).

Although the exact incubation period for bird flu in humans isn't clear, illness seems to develop within one to five days of exposure to the virus. Sometimes the only indication of the disease is a relatively mild eye infection (conjunctivitis). But more often, signs and symptoms of bird flu resemble those of conventional influenza, including:

- Cough
- Sore throat
- Fever
- Muscle aches

People with the most virulent type of bird flu virus – (A) H5N1 – may develop life-threatening complications, particularly viral

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Reducing the risk of hospital-acquired infection continued

(OPIM) may pass through and reach the HCW's clothes, skin, eyes, or mouth. The type of gown required is dependent on the task and the degree of exposure anticipated.

Clearly, an informed and prudent choice between reusable and single-use gowns and drapes requires more than a simplistic cost comparison; more facilities are choosing single-use products to meet mandatory standards.

The Association of periOperative Registered Nurses (AORN) states that barrier materials should prevent penetration of microorganisms, particulates, and fluids. The protective barrier ability is of primary concern when evaluating materials (e.g. can withstand tears, punctures, fibre strains and abrasions that could allow passage of fluids and microbes from nonsterile to sterile areas, exposing HCWs to bloodborne pathogens). Liquid-resistant aprons, gowns and shoe covers are worn when exposure to blood or other potentially infectious materials is anticipated.



AORN notes that reusable fabrics (woven materials) should maintain a protective barrier through multiple launderings and sterilisations. The Centers for Disease Control and Prevention (CDC) states that gowns and drapes are used to create a barrier between the surgical field and potential sources of bacteria. Both should prevent strike-through of liquids and viruses. Gowns and drapes should be effective barriers when wet (i.e. consist of materials that resist liquid penetration).

At present, there is no universally adopted method for counting the number of uses of a reusable gown or drape. Reusable gown users

have the dilemma of not knowing if a used and relaundered gown retains the liquid resistance claimed for it and they may not know the number of recyclings that each gown has undergone. One U.S. study reported informal queries of hospital central supply and commercial hospital laundry personnel in the U.S. and found that many were not aware of the grid marking system* or were using it incorrectly. As long as the gowns looked serviceable, they said, they would probably be used.

Without proper education, this may allow widespread use of gowns with reduced protective value. For reusable products, one must consider not only the

characteristics of the purchased items, but also the characteristics of the laundered products. Maintaining manufacturers' specifications is easier for single-use items. Therefore, potential problems with reusables can be:

- Perception of less barrier protection
- Actual loss of barrier properties as a result of wear, abrasions, and breakdown of fabric during laundering and sterilisation
- Uneven consistency of product with multiple reprocessings
- Lack of confidence in laundering and sterilisation of reusables
- Warnings from manufacturers regarding lack of guarantees of performance or results
- Limited mandatory quality standards for laundries.

The importance of protection

Years of proven clinical performance, protection of the patient from infection and protection of the staff from bloodborne diseases, is the reason that a large majority of the surgical market chooses single-use surgical drapes and gowns.

In both Australia and the U.S., it is recommended that HCWs assume that all patients are seropositive for bloodborne diseases and always employ Standard Precautions. Additional precautions, for example a protective gown, are to be worn whenever there is a potential for blood contact.

At least seven cases of job-related HIV seroconversion reported in the U.S. in 2002 were tentatively attributed to mucous membrane or skin splashes with contaminated blood. Blood strike-through, absorbed by a scrubsuit, directly contaminated a surgeon's skin. Even small amounts of contaminated "strike-through" blood can have sufficient inoculum to possibly infect HCWs. When protective garments are penetrated by infectious body liquids, micro-organisms from the patient can infect the medical staff.

Even though the risk is low, reports of HCW seroconversion to positive after contamination by infected blood have been noted. HBV, HCV, and HIV can be acquired via contact of contaminated body fluids with non-intact skin or mucous membranes. These recommendations were made to minimise HCWs' risk of acquiring bloodborne pathogen diseases. Potentially fatal diseases such as HBV and HIV can be transmitted

to medical personnel through body fluids from the patient. Although skin is an efficient barrier, its barrier qualities may be compromised when exposed to patients' body fluids for prolonged periods of time,



“Despite vigorous attempts at eradication over the last 20 years MRSA continues to be the major nosocomial pathogen in Australian acute care institutions. MRSA is endemic in most Australian teaching hospitals.”

Royal Australian College of Surgeons, Policies – *Infection Control in Surgery*

or when the barrier qualities have been compromised by abrasions or areas of inflammation.

Summary

Against any standard, the choice is clear: Single-use items offer substantial benefits. The reasons are sound: Single-use gowns and drapes provide optimum barrier protection, consistent quality, and dependability each time they are used. The result is peace of mind; there is... satisfaction in using single-use items with their proven positive properties.

The following factors should be carefully considered in decisions to use single-use vs. reusable gowns and drapes:

- **Dual protection for both healthcare professionals and patients.** Prevention of fluid penetration (“strike-through”) is a significant criterion in choosing appropriate gowns and drapes. Also, adherence to regulations and professional guidelines is critical, e.g. the Guidelines for Infection Control published by the Australian Government Department for Health & Aging.
- **Placing high importance on protection.** Garment and draping materials that allow penetration of infectious body fluids and microorganisms can lead to “strike-through,” contamination and disease.
- **Wisely selecting gowns and drapes.** Assurance of asepsis, barrier effectiveness, comfort, economics, and environmental issues must be given priority in the selection process. Gowns and drapes are to be effective barriers when wet. For reusable materials, the ability to maintain barrier qualities through multiple washings is critical but also has been questioned.
- **Correctly assessing reusable materials.** The ability of reusable gowns to resist strike-through varies with the number of uses, washings and sterilisation cycles. There are no universally adopted methods for counting numbers of uses of a reusable gown or drape. Laundry workers can risk exposure to bloodborne pathogens from contaminated gowns and drapes.
- **Analysing environmental issues.** Single-use items are often falsely implicated for certain costs of waste disposal. Improper waste segregation, rather than use of single-use gowns and drapes, is usually the cause of increased amounts of regulated medical waste. There are advantages and disadvantages to both reusable and single-use systems.
- **Reviewing costs.** Accurate assessments of costs are difficult at best. A comprehensive evaluation of costs requires a review of all related costs, some of which may initially not be apparent. Credible conclusions of costs have not been published.
- **Single-use items provide excellent barrier properties, consistent and reliable quality, and remarkable positive benefits to hospital staff and patients.**

Information sourced from the 2002 article “Taking Cover; Single-Use vs Reusable Gowns and Drapes”, published by “Infection Control Today” and written by Barbara J. Gruendemann. The article is available in its entirety at www.infectioncontrolday.com

Barbara J. Gruendemann, RN, MS, FAAN, CNOR, is a project director and educator for G4 Productions, Dallas, and a past president of AORIN. The author acknowledges William A. Rutala, PhD, MPH, for reviewing the manuscript.

* a method used to monitor the number of washes for reusable products.

“It is the responsibility of all health care establishments to have PPE that complies with relevant Australian Standards readily available for all HCWs.”

Infection control guidelines for the prevention of transmission of infectious diseases in the health care setting

Published by the Australian Govt. Dept of Health & Aging; 2004

What “bugs” us all now?

Avian influenza: H5N1

pneumonia and acute respiratory distress, the most common cause of bird flu-related deaths.

The ABCs of avian influenza viruses

All influenza viruses are divided into three types – A, B or C – depending on the virus structure.

Type A is responsible for lethal influenza pandemics. Type A influenza infects both people and animals, including birds, pigs, horses, whales and seals.

Type B* causes smaller, localised outbreaks. Less common and more stable than other strains.

Type C* has milder symptoms.

* Influenza B and C are usually found only in humans.

How humans get avian influenza

Migratory waterfowl, and ducks in particular, carry the viruses that cause bird flu. Often unaffected themselves, the host birds can spread the infection to susceptible species, especially domesticated chickens, turkeys and geese, resulting in severe epidemics that sicken and kill large numbers of birds – sometimes in a single day.

Avian viruses generally don’t affect humans, but in 1997, an outbreak of bird flu in Hong Kong infected 18 people, six of whom died. Since then, human cases of bird flu have been reported in the Netherlands, Canada and throughout Asia. Most were traced to contact with infected poultry or surfaces contaminated by sick birds.

The genetic scrambling that occurs in antigenic shift explains how a disease that normally affects a bird or animal can suddenly turn up in humans. Often, flu viruses that cross the species barrier originate in areas where people live in close proximity to chickens and pigs. That’s because pigs are susceptible to infection with both avian and human viruses and so are an ideal “mixing bowl” for genes.

But at least some avian influenza viruses don’t need a third party. Instead, they shuffle and rearrange their genetic material directly in humans. That seems to be the case in most instances of human-acquired bird flu: People become sick after direct contact with infected birds or bird-contaminated surfaces, not from contact with other animals.

Direct bird-to-human transmission works like this:

Wild birds shed the virus. Infected migratory waterfowl, the natural carriers of avian influenza viruses, shed the virus in their droppings, saliva and nasal secretions.

The virus spreads to domesticated birds. Domestic poultry become infected from contact with these birds or with contaminated water, feed or soil. They may also catch the disease the same way humans contract conventional flu – by inhaling the airborne virus. Bird flu spreads quickly and lethally within a flock and is inadvertently transported from farm to farm on tractors and other equipment, on cages, and on workers’ shoes and clothing. Heat destroys the virus, but it can survive for extended periods in cool temperatures.

Markets provide pathways to humans. Open-air markets, where eggs and birds are often sold in crowded and unsanitary conditions, are hotbeds of infection and spread the disease into the wider community. Cock fighting, rampant throughout much of Asia, has also been implicated in the spread of bird flu – fighting roosters are often trucked long distances and smuggled across borders.



Bird flu

At any point along the way, humans may pick up the virus through close contact with sick birds or contaminated surfaces. An ailing bird can shed the virus in its feathers as well as in droppings, and some people have contracted bird flu simply by touching an infected chicken or fighting rooster.

The ease of worldwide travel has the potential to spread avian flu around the globe, although that hasn't happened yet. Scientists don't think that migratory birds are carrying the virus from continent to continent because outbreaks haven't followed traditional flyways. Instead, outbreaks seem much more likely to spread locally through "wet markets", contaminated clothing and equipment, and smuggled birds.

Direct transmission

H5N1 became the first known bird flu strain to jump directly from birds to people when it surfaced in Hong Kong in 1997. It has since infected people in other Southeast Asian countries, including Vietnam and Thailand. Two other strains have caused illness in humans, but neither is as severe as H5N1.

Virulence

The virus is especially lethal, killing close to 100 percent of susceptible birds and more than half of infected people. Birds who do survive can shed the virus for at least 10 days, greatly increasing the flu's spread.

Rapid spread

Since 2003, hundreds of millions of birds have died, a loss that's ecologically and economically devastating. It's also alarming from a public health standpoint – widespread infections among birds may lead to more human disease.

The pattern of human transmission remains mysterious. Young children seem especially vulnerable to the virus. Some scientists speculate they may simply be more likely to breathe infected dust or faeces. On the other hand, tens of thousands of unprotected Asian workers involved in culling chickens haven't developed the disease. At this point, too few people have been infected to know all the possible risk factors for bird flu.

When to seek medical advice

See your doctor immediately if you develop flu symptoms, including a fever, cough and body aches, and have recently travelled to a part of the world where bird flu occurs. Be sure to let your doctor know when and where you were travelling and whether you visited any farms or open-air markets.

Most people with bird flu have signs and symptoms of conventional influenza. Some also develop life-threatening complications such as viral pneumonia and acute respiratory distress syndrome, which causes the alveola in your lungs to fill with fluid rather than with air, leading to severe breathing difficulties.

But the greatest complication of bird flu is still hypothetical – the emergence of a new viral strain that spreads easily from person to person. If a person were simultaneously infected with human and bird flu viruses, the re-assortment of genetic material could produce an entirely new subtype with a preponderance of human genes. This could make the virus highly contagious and, with no natural immunity among the world population, especially lethal.

So far this hasn't happened. A few cases of person-to-person transmission have occurred, but they were limited in scale. Still, some health officials fear it's just a matter of time before avian viruses figure out a way to spread easily among people.

Prevention

The international effort to prevent the spread of bird flu is multifaceted, focusing on the health of both birds and humans. Measures to help control the virus among domestic poultry include:

Culling. Since 1997, when the first human cases of bird flu appeared, hundreds of millions of sick or exposed birds – primarily chickens – have been destroyed. In many cases, affected farms were also quarantined. Although some have questioned the wisdom of such wholesale slaughter as well as the methods used to cull birds, the WHO considers this approach the first-line defence against avian viruses.

Surveillance programs. Some nations have instituted strict vaccination and surveillance programs for poultry farms and markets, taken steps to prevent bird smuggling, and put in place programs that quarantine new birds until they're proved healthy and that require poultry farmers to disinfect boots and tyres.



Banned birds. Many countries have banned or restricted the importation of birds and hatching eggs from regions with bird flu epidemics. In February 2004, the Centers for Disease Control and Prevention (CDC) banned the importation of poultry into the United States from most Asian nations.

continued p5



Recommendations for travellers

If you're travelling to Southeast Asia or to any region with bird flu outbreaks, consider these public health recommendations:

Avoid domesticated birds. If possible, avoid rural areas, small farms and especially any close contact with domesticated fowl.

Avoid open-air markets. These can be colourful or dreadful, depending on your tolerance level, but no matter how you see them, they're often breeding grounds for disease.

Wash your hands. Hand washing is one of the simplest, best ways to prevent infections of all kinds. When you're traveling, alcohol-based hand sanitisers, which don't require the use of water, are an excellent choice. They're actually more effective than hand washing in killing bacteria and viruses that cause disease. Commercially prepared hand sanitisers contain ingredients that help prevent skin dryness. In fact, use of these products can result in less skin dryness and irritation than hand washing. Not all hand sanitisers are created equal, however. Some "waterless" hand sanitisers don't contain alcohol. Use only the alcohol-based products.

Watch your kids. Keep a careful eye on young children, who are likely to put their hands in their mouths and who may not wash thoroughly.

Steer clear of raw eggs. Because eggshells are often contaminated with bird droppings, avoid mayonnaise, hollandaise sauce, ice cream, and any other foods containing raw or undercooked eggs.

Ask about a flu shot. Before traveling, ask your doctor about a flu shot. It won't protect you from bird flu, but it may help reduce the risk of simultaneous infection with bird and human flu viruses.

Preparing poultry

No human cases of bird flu have been linked to eating poultry, although in at least one instance, the H5N1 virus was found in a package of frozen duck. As heat destroys avian viruses, World Health Organisation officials don't consider cooked poultry a health threat. Even so, it's best to take precautions when handling and preparing poultry, which is often contaminated with salmonella or other harmful bacteria.

Wash well. Carefully wash cutting boards, utensils and all surfaces that have come into contact with raw poultry in hot,

soapy water. Wash your hands thoroughly before and after handling poultry and dry them with a disposable towel.

Cook thoroughly. Cook chicken until the juices run clear and it reaches an internal temperature of 180°F (82.2°C). Avoid eating raw or undercooked eggs or any products containing them, as previously mentioned.

Avoid contact with feathers, faeces and other products from chickens, ducks or other poultry unless absolutely necessary. This applies to adults and children.

Check the following websites for updated information: CDC www.cdc.gov WHO www.who.int/en and Kimberly-Clark Health Services www.kchealthcare.com

Do not transport live or dead chickens, ducks or other poultry from one place to another even if you think your birds are healthy.

What to do if.....

If you unintentionally come into contact with poultry in an affected area, such as touching the bird's body, touching its faeces or other animal dirt, or walking on soil contaminated with poultry faeces:

- Wash your hands well with soap and water after each contact.
- Remove your shoes outside the house and clean them of all dirt.
- If you develop a temperature (>38°C or 100.5°F), within 7 days after contact with birds, visit a doctor or the nearest health care facility immediately.

Basic guidelines:

- Avoid contact with any birds
- Do not keep birds as pets
- Wash hands with soap and water after any contact with poultry or poultry products
- Do not to sleep near poultry
- Wash hands thoroughly with soap and water:
 - when they entering the work place
 - before and after using the toilet
 - before and after eating
 - before and after using gloves
- If hand-washing facilities are unavailable, use an alcohol-based, waterless sanitiser.

Information sourced from Mayo Foundation for Medical Education and Research (MFMER). © All rights reserved.

Standard & Additional Precautions for Personal Protective Equipment (PPE)

There is raised awareness of the risk to both the health care worker (HCW) and patient in hospitals, day surgeries, aged care facilities and office practices. Identifying the hazards and assessing the associated risks is key to successful infection control management. In response to the changing dynamics of the market, Standard and Additional Precautions have been developed to combat the ever evolving challenges facing the HCW.

The following is an introduction to both Standard and Additional Precautions as recommended by the Communicable Diseases Network of Australia in the recently published *Infection Control Guidelines for the Prevention of Transmission of Infectious Diseases in the Health Care Setting* (2004).

Standard Precautions

Standard precautions are operating procedures that apply to the care and treatment of all patients regardless of their perceived infectious risk. The primary strategy for the introduction of standard precautions is to minimise the transmission of hospital-acquired infections. Following are standard precautions for infection control in health care settings:

continued back page

Standard & Additional Precautions for PPE continued

Standard Precautions: Work Practice

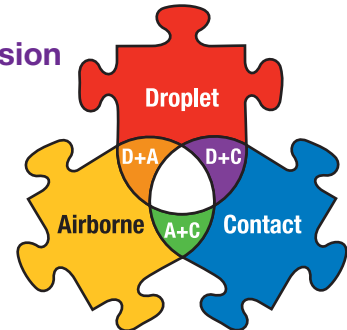
- Aseptic technique, including appropriate use of skin disinfectants
- Personal hygiene practices, particularly hand washing before and after all significant patient contacts
- Use of personal protective equipment, which may include gloves, fluid repellent gowns, plastic aprons, masks/face-shields and eye protection
- Appropriate handling and disposing of sharps and other clinical waste
- Appropriate reprocessing of reusable equipment and instruments, including appropriate use of disinfectants
- Environmental controls, including design and maintenance of premises, cleaning and spills management
- Appropriate provision of support services, such as laundry and food services

All of the above should incorporate safe systems for controlling blood (includes dried blood) body fluid, secretions, excretions, non-intact skin and mucous membranes.

Additional precautions

Additional precautions are required when standard precautions are not enough to prevent the transmission of infectious agents, for example Pulmonary TB. Additional precautions are tailored to the specific infectious agent and may include measures to prevent airborne, droplet or contact transmission.

Transmission methods



Adhering to Standard & Additional Precautions for PPE is key to successful infection control management.

Information sourced from *Infection control guidelines for the prevention of transmission of infectious diseases in the health care setting* – published by the Australian Govt. Dept of Health & Aging; 2004 – endorsed by the Communicable Diseases Network Australia, the National Public Health Partnership and the Australian Health Ministers' Advisory Council. © Commonwealth of Australia. Reproduced by permission.



Yours free: Standard & Additional Precaution Posters

Kimberly-Clark Health Care Australia is developing a series of informative posters to assist health care establishments with the implementation of Standard & Additional Precautions for the use of Personal Protective Equipment. To request your complimentary set of posters*, please email mfortune@kcc.com with your name, department and full postal address details. Please allow approximately 4 weeks for delivery.

* Offer available while stocks last.

Diary Dates:

May

- 9–13: RACS Annual Scientific Congress, WA
- 9–13: International Nurses Week, NSW

June

- 4–5: SA Perioperative Nurses Association, SA
- 10–11: FNQ Perioperative Nurses Association, Qld

July

- 10–13: 2nd Australasian Conference in Safety & Quality, SA
- 22–23: Day Surgery Special Interest Group, Vic
- 23–27: Infection Control Nurses, Auckland, NZ

August

- 5–6: SRACA, Vic
- 24–26: 24th Annual Infection Control Conference, NZ

September

- 1–2: Victorian Perioperative Nurses Group, Vic
- 1–3: Perioperative Nurses – Palmerston, NZ
- 21–23: Australian Infection Control Association, NSW
- 21–23: Patient Care Technology Group, NSW
- 22–24: SRACA, Qld



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