Infection-control measures for health care of patients with acute respiratory diseases in community settings

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Acknowledgements

The World Health Organization (WHO) wishes to thank the United States Agency for International Development (USAID) for its generous financial support for the development and production of this document.

This document is the product of collaborative efforts across WHO, led by the Department of Human Resources for Health (HQ/HSS/HRH/HPN) and the Department of Global Alert and Response (HQ/HSE/GAR/BDP).

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Design and layout by Engage Write & Design. www.engage-geneva.ch

Editing assistance from Heidi Mattock

Printed by the WHO Document Production Services, Geneva, Switzerland
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LIST OF ABBREVIATIONS

ARDs  acute respiratory diseases
CHW  community health worker
HCW  health-care worker
HIV/AIDS  human immunodeficiency virus/acquired immunodeficiency syndrome
ILI  influenza-like illness
PPE  personal protective equipment
SARS  severe acute respiratory syndrome

GLOSSARY

Cohorting – placing patients infected or colonized with the same known pathogen in the same designated unit (same space and same staff in the unit) to which patients without the pathogen are not admitted.

Community health worker (CHW) – a member of the community who has received basic training in health promotion and disease prevention at the community level.

Droplets – respiratory aerosols that are expelled when people talk, cough or sneeze. These droplets are propelled a short distance (usually < 1 metre) from the person who generates them. Droplets generated by infected persons may contain infectious particles.

Immune system – the biological processes that protect the body from disease.

Incubation period – the time between exposure to a disease and the development of symptoms.

Infectious particles – for this training document, “infectious particles” refers to the microorganisms that cause acute respiratory diseases.

Health-care worker (HCW) – includes a variety of professionals (doctors, medical practitioners, nurses, physical and occupational therapists, social workers, pharmacists, spiritual counsellors) who are involved in providing health care for ill people.

Microorganisms – germs that can cause disease.

Respiratory tract – lungs and breathing passages.

NOTE TO THE READER

This document aims to give basic summary information that is adequate for training purposes, but for further details, please refer to Infection prevention and control of epidemic- and pandemic-prone acute respiratory diseases in health care – WHO Interim Guidelines, 2007. Available at: http://www.who.int/csr/resources/publications/WHO_CD_EPR_2007_6/en/
INTRODUCTION

TRAINEE’S OBJECTIVES

Upon completion of training, community health workers (CHWs) and health-care workers (HCWs) should be able to:

1. Recognize patients with symptoms of acute respiratory diseases (ARDs) and those who are at the greatest risk of acquiring a severe ARD; and understand how these diseases are transmitted.

2. Raise community awareness of ARDs of potential international concern that may cause epidemics and pandemics, such as SARS and cases of avian influenza in humans.

3. Demonstrate safe techniques for caring for a patient with an ARD at home and in community clinics, including safe care for patients with pandemic influenza and patients with ARDs of potential international concern, such as severe acute respiratory syndrome (SARS) and avian influenza.

4. Identify measures to use to provide safe health care in a clinic setting on a regular basis and in an epidemic or pandemic situation.

5. Describe methods to enhance the safety of CHWs and other HCWs.

Acute respiratory diseases (ARDs) are among the leading causes of morbidity and mortality from infectious disease in the world. ARDs are also among the most frequent reasons for visiting a health-care worker (HCW) or being admitted to a health-care facility.

The recent epidemics of severe acute respiratory syndrome (SARS) have demonstrated the critical importance of effective measures to control infection, in order to fight acute respiratory diseases in the community, both in the home and in health-care facilities. The spread of the virus causing SARS was rapid in health-care settings, where 55–72% of probable cases occurred, and health-care workers were severely affected. While the virus causing SARS is not known to be circulating in human populations at the present time, it is possible that it is present in animals and may re-emerge in humans in the future. Among the lessons learnt from the SARS epidemics are the need for health-care facilities to be prepared and to have a system of safe practice to prevent and control the spread of infection.

SARS is not the only ARD to pose a major threat to human health, as demonstrated by the emergence of multidrug resistant tuberculosis and new influenza viruses. For example, there have been several large outbreaks of highly pathogenic avian influenza (H5N1) in poultry and humans have also been affected in some instances. There is international concern that a new influenza virus will emerge and spread to cause an epidemic.

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Epidemics create a huge burden of patients, which will challenge case-management practices and pose the risk of the spread of infection associated with the care of these patients. The adoption of safe practices by health-care workers to control the spread of infection associated with health care will improve their capacity to deliver care and avoid unnecessary disruption to health services in the event of an epidemic. This in turn would reduce the impact of other common diseases, such as diarrhoea and malaria, which, if improperly managed, may produce further morbidity and mortality during epidemics.

Infected patients, in health-care facilities or in the community, represent the main source of respiratory infective agents and their subsequent transmission. Measures to control infection are equally important in both the community and in health-care settings.

**TARGET AUDIENCE**

This document is intended for community health workers (CHWs) and other HCWs providing care for patients with ARDs and advice on safe care in the home for the families of the patients.

This document presents information about certain kinds of ARDs such as SARS and avian influenza because these are of potential concern as risks to global public health, but also includes information that applies to all ARDs.

This document is divided into four units, 1 to 4, and includes instructions on the use of personal protection (e.g. masks, gloves), environmental controls (e.g. cleaning and disinfection, ventilation, waste management) and strategies (e.g. hand-washing, cough etiquette, distancing of patients) to reduce the risk of exposure. The content of this document reflects guidance presented in *Infection prevention and control of epidemic- and pandemic-prone acute respiratory diseases in health care – WHO Interim Guidelines, 2007.*

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1.0 UNDERSTANDING ARDS & ARDS OF POTENTIAL INTERNATIONAL CONCERN

OBJECTIVES OF UNIT 1
Upon completion of Unit 1, you will be able to:

1. Describe ARDs and ARDs of potential international concern;
2. Understand the importance of early detection and reporting of ARDs of potential international concern;
3. Differentiate epidemic from pandemic;
4. Differentiate seasonal from pandemic influenza, and these from avian influenza;
5. Describe how people get ARDs and ARDs of potential international concern, and who is at a higher risk of getting severe forms of disease;
6. Explain how people can protect themselves and limit the spread of ARDs.

1.1 WHAT ARE ARDS?
An ARD is an infection with a sudden onset that may affect the lungs and/or breathing passages.

Most episodes of ARDs cause mild disease, but they can produce severe disease in special populations (see section 1.7), and they are a leading cause of hospitalizations and deaths in the world. Examples of ARDs include the common cold, flu, SARS and avian flu.

- People of all age groups anywhere in the world can get ARDs.
- For people with ARDs, the most common symptoms are (Fig. 1):
  - cough
  - sore throat
  - runny nose
  - sneezing
  - shortness of breath or difficulty in breathing
  - body and muscle aches
  - fever (temperature, > 38 °C)

Sometimes ARDs start like influenza (“flu”). The symptoms of an influenza-like illness (ILI) include a sudden onset of illness with fever > 38 °C and one of the following: cough, sore throat, or body aches. Children may also have vomiting, nausea and diarrhoea.
1.2 WHAT ARE ARDS OF POTENTIAL INTERNATIONAL CONCERN?

These are ARDs that may cause epidemics of severe respiratory disease with many deaths and/or important social and economic impact. Because of the possibility of severe consequences, these are called ARDs of potential international concern.

ARDs of potential international concern are the following:

- severe acute respiratory syndrome (SARS)
- new kinds of influenza (“flu”), such as avian influenza
- a new kind of lung infection (respiratory disease).

The most common symptoms of ARDs of potential international concern are the following:

- fever (temperature > 38 °C)
- cough
- sudden onset of difficulty in breathing
- sore throat
- body aches
- muscle aches
- vomiting
- nausea
- diarrhoea.

People with ARDs of potential international concern may also have unusual symptoms such as a change in their way of thinking or how alert they are.

Front-line health workers and CHWs are the first point of contact in health care. You may be the first people to recognize ARDs of potential international concern.

ARDS of potential international concern MUST be immediately reported to local health authorities. Reporting early and accurately can help identify a new outbreak of ARD.
1.3 EARLY DETECTION AND REPORTING OF ARDS OF POTENTIAL INTERNATIONAL CONCERN

1.3.1 Tips for identifying people with ARDs of potential international concern

- More people than normal have severe ARDs.
- People with unusual acute respiratory symptoms (e.g. severe difficulty in breathing, changes in how they think and how alert they are).
- People who have had recent contact with ill animals.
- People who have had contact with someone who has an ARD of potential international concern.
- Household or family members of people with severe ARDs.

1.3.2 Your role as a community health worker

ARDs of potential international concern can start or reappear anywhere. The most important way to prevent the spread of ARDs of potential international concern is to IMMEDIATELY report any illness that might be an ARD of potential international concern to the local authorities. Why is this? When a new disease starts, we often do not know what causes it. Also, we do not know how it spreads, how quickly it spreads, or how to treat it. So if you suspect someone has an ARD of potential international concern, you need to contact your local health authority immediately and refer or transfer the person to an appropriate hospital.

- You should know beforehand who to contact if you see unusual cases of ARDs or lots of people ill with ARDs.
- Work with your local hospitals to identify which patients can safely be cared for in the home after discharge from hospital.

1.4 EPIDEMICS AND PANDEMICS

An epidemic is when there are a lot of people sick with the same illness at the same time in one region.

A pandemic is when there are a lot of people sick with the same illness at the same time over a very wide area (across country borders and in many regions of the world).

1.5 SEASONAL INFLUENZA, PANDEMIC INFLUENZA AND AVIAN INFLUENZA

Influenza (“flu”) can be caused by human influenza virus (i.e. seasonal and pandemic flu) and very rarely by an animal influenza virus (i.e. avian flu). These three types of flu are briefly described below.
1.5.1 Seasonal influenza
The virus that causes influenza ("flu") is constantly changing. This results in seasonal epidemics, most often in winter.

- The symptoms of influenza are as described in section 1.1 and include a sudden onset of illness with fever > 38 °C and one of the following: cough, sore throat, or body aches. Children may also have vomiting, nausea and diarrhoea.
- The incubation period (the time between being exposed to a disease and showing symptoms of that disease) for influenza is about 2 to 3 days.

1.5.2 Pandemic influenza
A pandemic of human influenza occurs when a new influenza virus starts to spread easily around the world from person to person.

- The way in which the new virus causes the disease determines how ill people get.
- Although we do not know the exact incubation period, experts think it would probably be similar to other human influenza viruses, about 2 to 3 days.

1.5.3 Avian influenza
Avian influenza is a bird disease caused by avian influenza viruses. It rarely spreads to humans but people in close contact with sick poultry or other affected birds are at a greater risk of catching the avian influenza virus and becoming ill. Very rarely, persons who have close contact for a long time with people who are ill with the avian influenza virus and without any protection may get infected. But there is a chance that the avian influenza virus will change into a form that could be transmitted easily between humans and spread around the world.

- At the beginning of the disease, the symptoms of avian influenza would probably be similar to the symptoms of an influenza-like illness, ILI (see section 1.1), but would get worse very quickly and produce respiratory distress (see section 1.2).
- If a person has been exposed to sick poultry, the incubation period is up to 7 days, and most typically 2 to 5 days. If a person gets infected from other people with avian influenza, the incubation period appears to be about 3 to 4 days.

1.6 HOW DO PEOPLE GET ARDS?
A person can become ill with a disease only if he/she is exposed to the disease and is susceptible to the disease. Transmission of ARD can occur through close proximity to an ill person with exposure to infectious particles, and possibly also through direct or indirect contact with secretions containing infectious particles.
1.6.1 Most common ways by which ARDs can be spread

From **being close to an ill person** (Fig. 2):
- When the ill person coughs or sneezes, their secretions come out in small drops (droplets) from the nose or mouth.
- Most of these droplets are expelled as far as 1 metre from the patient and then fall on surfaces around the coughing/sneezing patient.
- If these droplets are breathed in or deposited on the mucosa of our noses, mouths and in some instances mucosa of the eyes (e.g. avian flu) we can become infected.

From **direct contact** with secretions:
- If we touch parts of the ill person covered with their secretions (e.g. a runny nose), and then we accidentally touch our nose or mouth and, in some instances, mucosa of the eyes (e.g. avian flu) we can get infected.

From **contact with objects** that have infectious secretions on them:
- If we touch personal items that the ill person uses and which may contain infected secretions from their nose or mouth (e.g. used tissues, handkerchiefs, drinking glasses or other material) and then we accidentally touch our nose or mouth and, in some instances, our eyes (e.g. avian flu) we can get infected (Fig. 3).
- Surfaces and objects in the room near the ill person may have secretions containing infectious particles on them, and if we touch them and then accidentally touch our nose or mouth and, in some instances, our eyes (e.g. avian flu) we can get infected.

![Fig. 2](image1.png)
*Fig. 2: Infections can arise from direct and/or close contact with patients with ARDs.*

![Fig. 3](image2.png)
*Fig. 3: People can get ARDs when they touch objects that are soiled with infectious respiratory secretions.*
ARDs of potential international concern:
- People get avian influenza most often through contact with ill animals, and rarely through close and prolonged unprotected contact with ill people.
- People get SARS most often through contact with ill people.

1.6.2 What other factors influence the spread of ARDs?

Factors that affect the spread of ARDs:
- People living in crowded conditions.
- Travel – more people travel from country to country and within the country.
- Health care – health-care systems and institutions where safe infection-control practices are not followed.

Factors that affect the spread of ARDs of potential international concern (e.g. avian influenza, SARS):
- Changes in the germs (microorganisms).
- People sharing their living spaces with domestic or wild animals. This makes it easier for new diseases that develop in animals to affect humans.

1.7 WHO HAS A HIGHER RISK OF BEING SEVERELY ILL WITH ARD?

In general, the following people are more likely to be severely ill with ARDs (Fig. 4):
- Children aged less than 2 years;
- People aged more than 65 years;
- Pregnant women;
- People who already have long-term breathing problems or heart disease;
- People with a weak immune system, such as people with human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS), blood diseases or cancer.

ARDs of potential international concern: SARS and avian influenza are often severe diseases, even for healthy people.

Fig. 4: Children, people aged over 65 years and pregnant women are at a higher risk of having severe ARD.
1.8 HOW CAN WE REDUCE THE SPREAD OF ARDS?

**ARDs in general:** There are many things that everyone can do to contribute to reduce the spread of ARDs. The following are the most important:

- Physically separate people who are infected from other people by at least 1 metre (3 feet).
- Cover mouth and nose when coughing or sneezing and use good respiratory hygiene (section 1.9.2; Fig. 5).
- Perform frequent and thorough hand-washing (see section 1.9.2; Fig. 6).
- Improve air flow in the patient area by opening windows and doors to take advantage of breezes. Clean the environment around the ill.
- If available, health-care workers should use some type of protection to cover their mouth and nose (e.g. mask) when close to patients with ARDs.

1.9 REDUCING THE SPREAD OF ARDS WHEN CARING FOR PATIENTS

1.9.1 Physical separation

Physical separation is probably the most important measure to reduce the spread of ARDs!

- Keep patients with ARDs apart from other household members (especially young children, older people and those who have other diseases) as much as possible (Fig. 7).
- Anyone taking care of someone who is ill with ARD should try to stay at least 1 metre away from the patient and get close only when essential for providing care (Fig. 8).
- Teach family members to reduce the number of times they are in contact with the patient and to stay at least 1 metre away as far as possible.

1.9.2 Respiratory and hand hygiene

**Respiratory hygiene**

- Everyone should cover their mouth and nose with a single-use cloth or tissue (if possible) when sneezing or coughing and then wash their hands.
- Disposable paper tissues are the best, and often cheaper, to use. These should be thrown away after use (Fig. 9). Non-disposable items such as cloth handkerchiefs should only be used once and then laundered (see sections 2.3.3, 2.3.4).
- Spitting in public on the ground, sidewalk or into rubbish bins spreads germs and should be discouraged.
- Teach people how to cough and sneeze safely and how to safely dispose of items used to contain the cough or sneeze. Throw disposable items into a separate rubbish bag. Launder or clean items that are not disposable according to the instructions noted below for home care (see sections 2.5, 2.6).
- Remind people to wash their hands frequently and thoroughly when dealing with anyone who has respiratory symptoms, especially those who are coughing and sneezing (Fig. 9).
- CHWs should post information in community settings about how to cough and sneeze safely and how to dispose of potentially infected materials.
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**Fig. 5:** Cover your mouth and nose when coughing or sneezing to help protect against ARDs.

**Fig. 6:** Wash your hands whenever you touch anything that is soiled with infectious respiratory secretions.

**Fig. 7:** Keep patients with ARDs apart from other members of the household.

**Fig. 8:** Try to stay at least 1 metre away from patients with ARDs – only get closer when essential for providing care.

**Fig. 9:** Teach people to contain infectious respiratory secretions with tissues, dispose of the tissues and then wash hands.
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**Hand hygiene**

- All people should wash their hands thoroughly, especially after they use the hands to cover cough or sneeze.
- Hand hygiene is performed by washing hands with soap and water for at least 40–60 seconds, or by rubbing hands with an alcohol-based solution for 20–30 seconds (see Annex II). In the community, because of safety issues and lack of availability of hand rubs, hand-washing is the main method used to clean hands.
- Hand hygiene can also help prevent other diseases. So, wash your hands frequently (e.g. before and after contact with the sick, before and after preparing food, before meals, after using the toilet, etc.)

**Reminder for CHWs:** do hand hygiene:

- before and after you care for a patient.
- after you take off gloves or protective equipment.
- after you touch anything that has respiratory secretions on it.
- in between each patient, if you are caring for more than one patient.
- after using the toilet (Fig. 10), before and after preparing food, and before meals.

1.9.3 Control of the environment

**Ventilation of the environment**

- Use natural breezes to improve air flow, if the climate permits;
- To encourage good air flow, suggest that family members keep doors and windows open as much as possible (Fig. 11). Use mosquito nets in areas where diseases carried by insects (e.g. malaria) are common.
- In the room at home, place the patient near an outside wall and close to an open window.

**Clean the environment**

- Clean the surfaces and objects around and used by the patient on a regular basis.

Infectious particles that have settled on surfaces around the patient are not removed by ventilation. Thus the surfaces and objects around and used by the patient become contaminated and need to be cleaned regularly with a damp mop or cloth and detergent.

**When caring for patients with ARDs of potential international concern:** Keep patient equipment (material and items that have been in contact with the patient) separate from other patients as much as possible. Clean patient equipment safely and thoroughly (see sections 2.3.3, 2.3.4, 4.2.5).
1.9.4 Personal protection

You should cover your mouth and nose (e.g. with a mask) when working within 1 metre of patients with ARDs.

Note: If you are using a mask, make sure you know how to use it correctly (Fig. 12). Letting a used, potentially contaminated mask dangle from your neck can expose you to the disease and potentially spread it to others.

1.10 DURATION OF INFECTION-CONTROL PRECAUTIONS

The kind of infection and the age of the patient will determine the length of time for which you will need to use infection-control precautions.

1.10.1 Avian influenza virus

These patients can produce the virus for 2–3 weeks. They can be discharged from the hospital within this time if they do not need clinical care, but they will need appropriate advice on respiratory hygiene, separating themselves from other people and hand-washing.

1.10.2 Human influenza (seasonal or pandemic flu4)

• Adults and adolescents over 12 years of age: precautions should last for 5 days after symptoms have started.
• Infants and children 12 years of age or younger: precautions should last for 7 days after symptoms have started (infants can shed seasonal influenza viruses for up to 21 days).

1.10.3 SARS

For SARS patients with a normally functioning immune system, infection-control precautions should be continued while patients are symptomatic.

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Fig. 11: Use natural breezes to improve air flow in the patient's room.

Fig. 12: When putting on a mask, make sure it is correctly positioned and remove it immediately after use.

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4 All information regarding a pandemic influenza MUST be updated and checked with the local public health authorities. For the purpose of this document, it is assumed that pandemic flu will behave as previous human influenza virus.
2.0 ARDS AND HOME CARE

OBJECTIVES OF UNIT 2
Upon completion of Unit 2, you will be able to:

1. Identify how to care for a patient with ARD in the home;
2. Provide information for family members on how to keep themselves as safe as possible while caring for a patient with ARD in the home.

Most patients with an ARD are likely to be cared for in the home. During an influenza pandemic, in particular, most patients will probably be cared for at home. Family caregivers are often the people providing most of the care. It is therefore important to protect the patient and their family as much as possible. The CHW plays a critical role in caring for patients in the home and in supporting family caregivers to provide safe care. In the home-care environment, there should be a partnership between CHWs and the family.

The CHW:
- Educates caregivers on how to care for the ill member of the family as safely as possible;
- Provides the patient and family with ongoing support, education and monitoring.

2.1 PHYSICAL SEPARATION
Keep the ill person, especially those who are coughing or sneezing, in a room alone or at least 1 metre (3 feet) away from others as much as possible. This will help to prevent family members from being exposed to germs.

2.2 RESPIRATORY AND HAND HYGIENE
The ill person should be asked to cover their mouth and nose when sneezing or coughing, use tissues to catch the secretions and then wash their hands (see section 1.9.2). All individuals in the household should be encouraged to wash their hands frequently, particularly after any type of contact with the ill person or with their objects or environment.

2.3 ENVIRONMENTAL CONTROLS

2.3.1 Ventilation of the environment
Ventilation means having a good air flow in a room or other space. Fresh air should be allowed to replace the contaminated air around the patient.
• Open the doors and windows on opposite sides of the house to get a good air flow if the climate permits. The bigger the openings and the bigger the difference in temperature between the inside and the outside, the better the air flow.
• In areas where there are diseases spread by insects (like malaria), use mosquito nets if available.

2.3.2 Household cleaning
Use a damp mop or cloth to clean the house because it is a better way of collecting and removing germs from the home. For general cleaning, use water and plain soap or detergent with a damp cloth.

2.3.3 Dishes and laundry
Dishes
“Dishes” is used here to include any containers or utensils used by the patient for eating or drinking, e.g. dishes, bowls, plates, cutlery, cups, glasses etc. Wash the patient’s dishes with water and soap or detergent.

General laundry
• General laundry – wash clothes with water and soap, by hand or using a washing-machine, separately from other people’s laundry. Allow clothes to dry by the usual means, e.g. hang in the sun (Fig. 13).
• For laundry soiled with human waste or covered with secretions – remove as much of the human waste (e.g. faeces) and secretions as possible before washing the clothes. If laundry is washed by hand, wear protection (e.g. rubber gloves or a plastic bag).

Fig. 13: For the patient’s laundry and dishes: wash all dishes that have come into contact with the patient (e.g. plates, cutlery, cups, drinking glasses etc) with water and soap or detergent; wash clothes by hand or using a washing machine; and dry clothes in the sun.
2.3.4 Waste disposal
Dispose of waste as safely as possible. Prevent the waste containing secretions from patients coming into contact with other people (Fig. 14).

2.4 PERSONAL PROTECTION

- When health workers providing care in the home need to be close to a patient with respiratory symptoms (within 1 metre), they should use a mask (Fig. 12) whenever possible or the next best available protection.
- Family members providing care should also be advised on the use of the best available protection to cover their nose and mouth when close to the ill person (within 1 metre).

Note: there is no information on the effectiveness of alternative barriers such as clothing, a scarf, or rags tied over the nose and mouth. Whatever type of barrier is used, it must be removed immediately after caring for the patient. Hands should be washed immediately after its removal.

2.5 PATIENT WITH ARDS OF POTENTIAL INTERNATIONAL CONCERN

2.5.1 Travel outside the home
Sometimes people with ARDs of potential international concern need to travel outside the home. Here are some ways to reduce the spread of the disease to other people:
- If possible, do not use public transportation.
- Use an ambulance if one is available, or use private transport and keep the windows open.
- During transportation, the patient should keep at least 1 metre away from other people and should cover his/her mouth and nose (e.g. with tissue, mask or next best alternative).

2.5.2 Monitoring family and community members who may be exposed to ARDs of potential international concern
Family caregivers who have been caring for someone with ARDs of potential international concern will have been exposed to the germs causing ARDs and they may become ill. The CHW should teach family members about the symptoms to watch for and when they should seek care.

Fig. 14: Avoid contact with the patient’s waste and dispose of it safely.
3.0 KEEPING CHWS AND HCWS SAFE

OBJECTIVES OF UNIT 3
Upon completion of Unit 3, you will be able to:

1. Discuss approaches to reducing risks to their health by using personal protective equipment (PPE).
2. Identify symptoms of influenza-like illnesses (ILI) and how to monitor their own health;

All HCWs, including CHWs, are at risk of getting ARDs when they provide patient care. There are two important things you can do to reduce the risks to one’s health:

- Use the best available personal protection and infection-control techniques; and
- Monitor your own health.

3.1 MONITORING YOUR OWN HEALTH
If you take care of someone with an ARD of potential international concern, you need to monitor your own health. You should know the symptoms for ARDs and ILIs and the incubation periods (see sections 1.1, 1.2 and 1.10).

If you (HCW or CHW) get flu-like symptoms after caring for patients with ARDs of potential international concern (e.g. SARS or avian influenza) remember the following:

- Stay away from other ill people;
- Stay away from public areas;
- Immediately report your symptoms to the local health authorities.

Also:

- You need to know if you should be vaccinated annually for influenza, according to local policy;
- You should be treated with appropriate medication to prevent or treat ARDs whenever available and according to local policy.

3.2 USING THE BEST AVAILABLE PERSONAL PROTECTION
Work with your local authorities to get sufficient supplies for hand-washing and personal protective equipment (e.g. gloves, masks, eye protection, gowns, aprons) to keep yourselves and your community safe.
3.2.1 Basic measures for personal protection to avoid exposure to blood and other body fluids

The basic measures for personal protection (see Table 1) should always be followed, whatever the patient’s diagnosis, because they help prevent most infections (from secretions, blood, and other body fluids) that can be transmitted when you are caring for a patient.

3.2.2 When you provide care for patients with ARDs, you should use a mask

Personal protective equipment should include a medical mask.

3.2.3 Personal protection when caring for a patient with an ARD of potential international concern

When you provide care for patients with an ARD of potential international concern (like SARS or avian influenza), you should use personal protective equipment that includes a medical mask, eye protection, gown and gloves, whenever possible (see Annex III for details of putting on and taking off personal protective equipment).

Table 1: Basic measures for personal protection

<table>
<thead>
<tr>
<th>SCENARIO</th>
<th>Hand hygiene</th>
<th>Gloves</th>
<th>Gown</th>
<th>Medical mask</th>
<th>Eye protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Always before and after patient contact, and after contact with contaminated environmental surfaces or equipment</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To avoid direct contact with patient’s blood and body fluids, secretions, excretions, mucous membranes or non-intact skin</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If there is a risk of splashes onto the HCW’s face</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

3.2.4 Issues about specific items for personal protection

Masks

When you care for patients with ARDs, remember the following about using masks:

- Masks are the most common protective equipment you will need. As a basic rule, use them when you are within 1 metre of the patient.
- Choose the best type of mask:
  - A medical mask gives protection against droplets and splashes. Throw it away after use, or change it if it gets wet while you are using it.
  - Other masks such as paper masks do not provide as much protection as the medical mask. Sometimes people use a cloth or scarf. There is no information on the effectiveness of alternative barriers such as clothing, a scarf, or rags tied over the nose and mouth.
Whatever is used to cover the mouth and nose should be used one time only, disposed of safely, and hands cleaned immediately after disposal.

**Eye protection**

Eye protection includes visors (plastic covering for the eyes) or goggles (plastic glasses).

- Use eye protection if infectious drops from the patient might splash into your eyes or face while you work. Glasses may not protect splashes from reaching the eyes.
- Clean or dispose of the eye protection correctly:
  - if the eye protection is disposable, use it one time and then throw it away.
  - if the eye protection is not disposable, clean it in the same way as you would clean equipment that the patient uses (e.g. clean with detergent, and then disinfect with chemicals, such as bleach, that will destroy the infectious particles).

**Face shields**

Face shields cover the mouth, nose and eyes and can be used to provide facial protection instead of a mask and eye protection.

**Gowns**

- Use a gown if there is a possibility that your clothes could be splashed with the patient’s secretions or body fluids.
- Gowns can be disposable or made of cloth. Waterproof gowns are the best. Paper gowns may protect the clothes but they are not waterproof. If you use any kind of non-waterproof gown, and there is the risk of splashes, add a plastic apron.

**Gloves**

- Gloves are made of latex, vinyl, rubber or other waterproof material. Latex or vinyl gloves are usually used for patient care.
- Household rubber gloves can be worn for doing laundry and other cleaning activities.
- If there is a shortage of supplies, use gloves when there is the possibility of direct contact with the patient’s respiratory secretions, blood or body fluids (Fig. 15).

**Remember:**

- Remove your protective equipment immediately after use;
- Wash your hands immediately after taking off protective equipment, or after any contact with secretions, blood or body fluids, and between patients if caring for more than one person; and
- If you are caring for more than one ill person, change the protective equipment between patients.

---

*Fig. 15: Use gloves when there is the possibility of direct contact with the patient’s respiratory secretions, blood or body fluids.*
4.0 ARDS AND THE CLINIC

Much of the information provided in earlier units about care in the home also applies to care in the clinic but some specific procedures are different in the clinic. In addition, patients with ARDs of potential international concern, like those with SARS or avian influenza, require special care.

OBJECTIVES OF UNIT 4
Upon completion of Unit 4, you will be able to:

1. Describe how to physically separate patients in a waiting area and clinic setting;
2. Describe how to clean the clinic after caring for a patient with an ARD;
3. Prepare a 0.05% solution of bleach with the products available in the setting or choose a disinfectant solution from those available.

4.1 CLINIC OPERATIONS

The following are essential measures to be performed in the clinic:

4.1.1 Rapid identification and treatment of symptomatic ARD patients
- Post signs in the clinic to inform patients that if they have symptoms of ARDs, they should notify the health-care providers in the clinic as soon as possible.
- Evaluate and treat patients with ARDs as soon as possible. This is very important for patients suspected of having ARDs of potential international concern, such as SARS and avian influenza.

4.1.2 Patients with ARDs of potential international concern
- Patients with ARDs of potential international concern (like SARS and avian influenza) need hospital treatment as soon as possible. Notify the local authorities. Make sure the patient is moved to hospital in the safest possible way (see section 2.5.1).
- If immediate transfer to an isolation unit is not possible, while they are in the clinic, put these patients in a separate well-ventilated space, apart from all other areas of the clinic and other people (at least 1 metre from other individuals), and contact with other people avoided as much as possible.
4.1.3 Planning for an epidemic or pandemic situation

- The clinic should liaise with local authorities to outline a plan to help you with staffing and equipment in the event that you have an epidemic or pandemic situation. You need to know beforehand what plans are in place, who your contact is and how to contact them (e.g. telephone).

4.2 REDUCING THE SPREAD OF ARDS IN THE CLINIC

4.2.1 Physical separation

Physical separation means keeping people at a certain distance from people with a disease.

- If possible, separate patients with ARDs from other people in separate waiting rooms and treatment areas and at least 1 metre from other patients.
- Sometimes patients need to stay at the clinic for a short period of time, e.g. before being transferred to a hospital. In this case, place patients with similar illnesses and symptoms together and keep a distance of at least 1 metre.
- Separate patients who have a high risk for developing severe disease if they are infected with ARDs (for example, patients with a weak immune system, HIV/AIDS, patients with cancer or heart disease) from patients with ARDs.
- In the case of ARDs of potential international concern, if immediate transfer to an isolation unit is not possible, keep people who may have ARDs of potential international concern in a separate well-ventilated space and away from other people as much as possible.

4.2.2 Respiratory and hand hygiene

Respiratory hygiene

- Teach patients and accompanying persons and other HCWs to use good respiratory hygiene: to cover their mouth and nose when coughing or sneezing, and to wash their hands after direct contact with respiratory secretions.
- Provide tissues and receptacles (e.g. rubbish bins) if possible. If tissues are not available, ask patients to keep their handkerchiefs (or other material such as rags used to catch respiratory secretions) separate from other people.
- If the ill person with respiratory symptoms has to share the same closed space as other people (e.g. waiting room), and if masks are available and the ill person can tolerate it, encourage him/her to use a mask.

Hand hygiene

Clean your hands well before and after each contact with a patient. Hand hygiene is a key measure to prevent the spread of infections in the clinic (see section 1.9.2).

4.2.3 Personal protection

Wear a medical mask or best available alternative when working within 1 metre of patients with ARDs.
4.2.4 Ventilation of the environment

Use natural ventilation (as in the home): open doors and windows to use the natural air movement in the clinic. Use mosquito nets if you are in an area where insect-borne diseases (e.g. malaria) are a concern.

4.2.5 Cleaning the clinic

- Use a damp mop not a dry broom.
- Use plain soap and water for general cleaning. Use the cleaning product (e.g. soap, detergent) you have available.
- Cleaning of spills containing patient secretions or body fluids:
  - Wear rubber gloves.
  - Remove as much of the patient secretions or body fluids as possible from surfaces before cleaning.
  - Clean the surface areas (e.g. table) around the patient using a damp cloth. Wash hands as soon as the rubber gloves are taken off.
  - If the surface (e.g. bed or furniture) is in direct contact with another person’s skin or mucosa, then use a disinfectant such as 0.05% bleach (see section 4.4) after cleaning.
- Clean equipment used by the patient with water and plain soap or detergent. After cleaning, disinfect with 0.05% bleach (see section 4.4) or available disinfectant according to the clinic protocol. If available, alcohol-based solutions can also be used to disinfect small non-porous surfaces (safety issues like fire hazards and accidental drinking should be addressed). Wear rubber gloves for cleaning and disinfection. If the cleaning may cause splashes, also use a gown (plus a plastic apron if the gown is not waterproof), and facial protection (either eye protection and a mask, or a face shield).
- After all cleaning, wash hands thoroughly.
- Patients with ARDs should not use the same equipment (pens, clipboards) as other patients. If they have to use the same equipment, clean the equipment in between uses.

4.2.6 Laundry

General laundry: wash clothes with water and soap, by hand or in a washing machine.

For laundry soiled with human waste or grossly contaminated with secretions: remove as much human waste (e.g. faeces) as possible before washing the clothes. Dispose of the waste in the safest way possible to avoid contact with other people.

If laundry is washed by hand: wear protection (e.g. rubber gloves or a plastic bag on each hand), wash with soap or detergent and water, soak for 20–30 minutes in 0.05% bleach (see section 4.4) after washing and then rinse with water.

If washing machines with hot water are available: wash the patient’s laundry with detergent in hot water (70 oC; 160 oF) for at least 25 minutes.
4.3 TRANSPORT OF CLINICAL SPECIMENS

- Know who your contact person is for laboratory testing and how to contact him/her in an urgent situation.
- When you have a patient with symptoms of ARDs, get advice from your contact person as soon as possible on what specimens need to be collected, how they are to be collected and how they are to be transported.
- All specimens (such as blood, urine and sputum) that need to be sent out for testing should be packaged in leak-proof bags, and labelled such that anyone handling them knows they may be dangerous.

4.4 USE OF BLEACH FOR DISINFECTION

Why use bleach?

- Bleach (when diluted to a concentration of 0.05%) is a disinfectant which is good for destroying infectious particles, but it must be used safely.
- Bleach does not work if it is in contact with body secretions and fluids, so you must always clean secretions and body fluids before disinfecting with bleach.

4.4.1 When should you use bleach?

- To disinfect after cleaning blood spills or secretions on surfaces like beds and furniture with which people’s skin or mucosa (mouth, eyes) may have direct contact. Walls do not need to be cleaned with bleach.
- To disinfect after cleaning clothes that are grossly contaminated with secretions/human waste.

4.4.2 How to use bleach

- The available commercial form of bleach must be diluted before use to a concentration of 0.05%. If the concentration of the available commercial form is 5%, 1 part of bleach should be diluted with 99 parts of cold water.
- Always mix bleach with cold water; it breaks down if mixed with hot water.
- Items that can be dipped into bleach solution include clothes, linen, and plastic or glass. Metallic objects can be corroded by bleach, and alcohol-based solutions could be used as an alternative for disinfecting small non-porous/metallic surfaces.
- Objects that can safely be dipped into diluted bleach should be soaked for 30 minutes.
- For surfaces or things that cannot be dipped into diluted bleach, be sure that the surface is in contact with diluted bleach for at least 10 minutes.
- Make a fresh solution of bleach daily. The solution loses its strength after 24 hours.

---

6 This document focuses on the use of bleach for disinfection, bleach being the most commonly available disinfectant, but other disinfectants can be used according to local guidelines.
4.4.3 Precautions when working with bleach

- Keep bleach away from children and animals (Fig. 16).
- Bleach breaks down in sunlight so keep it in a cool, shaded place.
- Be sure that the windows and doors are open to keep the bleach fumes from becoming too strong (Fig. 17).
- Be careful not to splash or spill bleach onto your body, particularly your skin, mouth, nose and eyes. If you do spill bleach onto your body, wash it off with cold water as quickly as possible (Fig. 18).
- Whenever working with bleach, use some protection to cover your hands e.g. rubber gloves or a plastic bag.
- Never mix bleach with other cleaning agents because you can accidentally produce poisonous gas.
- Bleach can damage the dyes of cloth (such as clothing).
## ANNEX I

Sample checklist for the assessment of environmental conditions for home care of patients with acute respiratory diseases (ARDs) of potential international concern.

<table>
<thead>
<tr>
<th>Infrastructure</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functioning telephone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any other means to rapidly communicate with the health system</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Potable water</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Sewerage system</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Cooking source and fuel</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Operable electricity</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Operable heat source</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Air conditioning</td>
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<td>NO</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Accommodation</th>
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<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Separate room/bedroom for the patient</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accessible bathroom in the home</td>
<td>YES</td>
<td>NO</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Resources</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Food</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Necessary medications</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Medical masks (patient)</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Medical masks (care providers, household contacts)</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Gloves</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Hand hygiene</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Household cleaning products</td>
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<td>NO</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Primary care and support</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Person to provide care and support</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access to medical advice/care</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Any at-risk people at home (e.g. children &lt; 2 years of age, elderly &gt; 65 years of age, immunocompromised people)</td>
<td>YES</td>
<td>NO</td>
</tr>
</tbody>
</table>
ANNEX II
How to hand-rub with alcohol-based formulation

Apply a palmful of the product in a cupped hand, covering all surfaces.

2 Rub hands palm to palm

3 Right palm over left dorsum with interlaced fingers and vice versa,

4 Palm to palm with fingers interlaced,

5 Backs of fingers to opposing palms with fingers interlocked,

6 Rotational rubbing of left thumb clasped in right palm and vice versa,

7 Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa.

8 Your hands are now safe.

How to hand-wash with soap and water

1. Wet hands with water.
2. Apply enough soap to cover all hand surfaces.
3. Rub hands palm to palm.
4. palm to palm with fingers interlaced,
5. backs of fingers to opposing palms with fingers interlocked,
6. Rotational rubbing of left thumb clasped in right palm and vice versa,
7. Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa.
8. Rinse hands with water,
9. Dry hands thoroughly with a single use towel,
10. Use towel to turn off faucet.
11. 40-60 seconds
12. Your hands are now safe.
ANNEX III
How to put on personal protective equipment (PPE)

Step 1
- Identify hazards & manage risk. Gather the necessary PPE.
- Plan where to put on & take off PPE.
- Do you have a friend? Mirror?
- Do you know how you will deal with waste?

Step 2
- Put on a gown.

Step 3
- Put on mask.

Step 4
- Put on eye protection e.g. visor, face shield, goggles (consider anti-fog drops or fog-resistant goggles). Caps are optional: if worn, put on after eye protection.

Step 5
- Put on gloves (over cuff).
How to take off personal protective equipment (PPE)

**Step 1**
- Avoid contamination of self, others & environment.
- Remove the most heavily contaminated items first.

*Remove gloves & gown*
- Peel off gown & gloves and roll inside-out.
- Dispose of gloves and gown safely.

**Step 2**
- Perform hand hygiene.

**Step 3**
- Remove cap (if worn);
- Remove eye protection from behind;
- Put eye protection in a separate container for reprocessing.

**Step 4**
- Remove mask from behind.

**Step 5**
- Perform hand hygiene.
Infection-control measures for health care of patients with acute respiratory diseases in community settings