



World Health
Organization

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

Trainer's guide



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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.

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

TRAINING OBJECTIVES

Upon completion of training, CHWs and HCWs should be able to:

- 1 Recognize patients with symptoms of 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 SARS and human cases of 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.¹ ARDs are also among the most frequent reasons for consulting a health-care worker or being admitted to a health-care facility.

The recent epidemics of severe acute respiratory syndrome (SARS), have demonstrated the critical importance of effective infection-control measures in health care. The spread of the virus causing SARS was amplified in health-care settings, where 55–72% of probable cases² occurred, and health-care workers (HCW) 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 animal hosts 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 pursue a culture of safe practice to prevent and control the spread of infections associated with health care.

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. Such occurrences raise international concern about the emergence of a new influenza virus with pandemic potential. Susceptibility to a new influenza virus or other new infective agent causing an ARD is likely to be widespread among the general population, including HCWs, and in the event of an

¹ Infection prevention and control of epidemic- and pandemic-prone acute respiratory diseases in health care. WHO Interim Guidelines Available at: http://www.who.int/csr/resources/publications/WHO_CDS_EPR_2007_6c.pdf

² McDonald LC et al. SARS in healthcare facilities, Toronto and Taiwan. *Emerging Infectious Diseases*, 2004,10:777–81.

epidemic many people will fall ill and require care. The potentially huge number of patients will challenge case-management and pose the risk of the spread of infection in health-care settings, and in the community.

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 mitigate the impact of other diseases (e.g. diarrhoea, 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 pathogens and their subsequent transmission. Measures to control infection are equally important in both settings and guidance for HCWs in both settings should be aligned.

TARGET AUDIENCE

The purpose of this document is to provide trainers with material for training community health workers (CHWs) and other HCWs on the safe care of patients with ARDs at home and in community clinics. This document presents information about certain kinds of ARDs, such as SARS and avian influenza, because these are of potential international concern as risks to global public health, but also includes information that applies to all ARDs. The guidance includes instructions on the use of personal protection (e.g. masks, gloves), environmental controls (e.g. cleaning and disinfection, ventilation, waste management) and other 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*.³

CHWs are widely employed in the provision of health care, but their training and education vary greatly. Therefore, trainers should adapt the information presented here to respond to the knowledge gaps of the particular group of CHWs being addressed.

³ 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/index.html

TRAINING PROGRAMME: CONTENT AND PROCESS

Programme content

The training programme described in this document contains four units, 1 to 4. The content and training objectives of these units are summarized in Table 1. In the present document, which is designed for trainers, the subject matter for each unit is followed by suggestions for exercises and questions for evaluations to reinforce learning.

The care and treatment of patients with ARDs will vary widely depending on the local context. Thus trainers using this document should customize the content and approach according to the local situation. For example, Unit 1 gives information on the use of disposable tissues, which would not be appropriate in areas where disposable tissues are not available and cloth handkerchiefs are more common, and Unit 4 presents recommendations for the use of bleach that would not be appropriate in areas where bleach is not available.

Table 1: Overview of training content

Unit no. and content	TRAINING OBJECTIVES Upon completion of each unit trainees should be able to:
1.0 Understanding ARDs and ARDs of potential international concern	<ul style="list-style-type: none"> • Describe ARDs and ARDs of potential international concern. • Understand the importance of early detection and reporting of ARDs of potential international concern. • Differentiate epidemic from pandemic. • Differentiate seasonal from pandemic influenza, and these from avian influenza. • Describe how people get ARDs and ARDs of potential international concern, and who is at a higher risk of becoming severely ill. • Explain how people can protect themselves and limit the spread of ARDs.
2.0 ARDs and home care	<ul style="list-style-type: none"> • Identify how to care for a patient with ARD in the home. • Provide information for family members on how to reduce the risk to themselves while caring for a patient with ARD in the home.
3.0 Keeping CHWs and HCWs safe	<ul style="list-style-type: none"> • Identify symptoms of influenza-like illness and how to monitor their own health. • Discuss approaches to reduce risks to their health by using protective equipment.
4.0 ARDs and the clinic	<ul style="list-style-type: none"> • Describe how to physically separate patients in a waiting area and clinic setting. • Identify how to clean the clinic setting after caring for a patient with ARDs. • Prepare a 0.05% solution of bleach.

ARDs, acute respiratory diseases; CHW, community health worker; HCW, health-care worker.

Training process

Training is most effective when it uses an active learning (“learning by doing”) approach and this document contains a number of exercises by which to engage the trainee’s attention. Trainers are encouraged to develop other active learning exercises to help trainees to understand and apply the content of the units in this document.

A self-study approach, where the trainees are simply provided with the written materials and expected to integrate the material into their practice setting, is not recommended. CHWs and other HCWs need training and guidance in a setting where they can ask questions, demonstrate their knowledge and skills, and be adequately assessed.

Tips for training adult learners

The information in this section is adapted from *Educational Programme for Nursing and Midwifery Management of HIV/AIDS Prevention, Care, Treatment and Support: Programme Development Guide*, WHO Regional Office for South-East Asia, 2006.

Four common styles of learning

There are four common styles of learning that an individual may favour, according to the way in which he/she processes information.

- **Visuals:** People who absorb information best if it is presented visually, such as through diagrams, graphs and imagery. Visuals will tend to learn best through slide presentations, pictures, charts, videos, etc.
- **Auditories:** People who prefer to talk through problems and listen to speech, but with plenty of variety of tone, pitch and rate. Auditories will tend to learn best through lectures, discussions, etc.
- **Kinaesthetics:** People who prefer action, movement and like to be involved. They prefer a relaxed, non-threatening environment and are not threatened if people sit or stand close to them. Kinaesthetics will tend to learn best through “doing”, e.g. role play, clinical placements.
- **Digitals:** People who like orderly, written information that shows careful attention to details and structure. Digitals will tend to learn best through written material, e.g. handouts.

In any group of people there is usually a mix of individuals with different styles of learning, and knowing this may help trainers to understand why it is important to use a variety of different teaching approaches.

General qualities of adult learners

Adult learners are not “empty vessels” that need to be filled with knowledge; they have valuable experience of everyday life and work in an organization. If the people being educated are adults, then trainers need to manage education events in a way that recognizes, respects and builds upon the knowledge and experience of their trainees.

Some tips for trainers that can help to make learning an enjoyable experience are given below. Further aspects are summarized in Table 2.

TRAINER'S GUIDE

- Adults feel anxious if participating in a group makes them appear at a disadvantage, either professionally or personally, so:
 - design training workshops, educational exercises and discussion sessions such that people feel safe to ask questions and confident that their contribution will be respected;
 - do not ask people to take risks too early in a workshop or course (e.g. engage in role play) unless they already know one another well; allow time and opportunities for people to establish themselves in a group.
- Adults bring a great deal of experience and knowledge to any learning situation, so:
 - show respect for the experience of the participants by asking them to share ideas, opinions, and knowledge, and recognize that they may be a good resource for reaching your teaching goals;
 - use of a needs assessment can tell you more about the individuals in a group or, if you already know them, identify those who could provide input before, during or after your session(s).
- Adults are decision-makers and self-directed learners, so:
 - do not seek to make people obey you; be the “guide on the side” rather than the “sage on the stage”;
 - listen to what they want and need, be flexible in your planning, and change your approach if your agenda or methods are not working;
 - seek feedback from the group.
- Adults are motivated by information or tasks that they find meaningful, so:
 - conduct a needs assessment so that you are aware of what people want (and need) to learn, how much they already know, and the kinds of “generative themes” that might affect their attention span. Generative themes are concerns and issues that are most important in a person’s life and they may enhance or challenge a person’s ability to learn. They include such things as the fear of losing a job, the health of a loved one, the desire for promotion, the need for a change, the pending birth of a child, problems in a relationship, or new possibilities for growth and development.
- Adults have many responsibilities and can be impatient when their time is wasted, so:
 - be thoughtful and kind;
 - learn what questions they have about the subject and do not cover material they already know unless there is a good reason;
 - begin and end your session on time.

Table 2: Principles of learning in adults

Principle	Description of principle	Practical use
First and last	<p><i>Primacy:</i> Things learned first are learned best; it is difficult to “un-learn” wrong information or skills.</p> <p><i>Recency:</i> What is learned last stays fresh in the memory and is remembered best.</p>	<p><i>Primacy:</i></p> <ul style="list-style-type: none"> • Preview important points at the beginning. • Ensure accuracy first time (for both information and demonstrations) and explain these points throughout the session. • For demonstrations, do not start with how not to do something as it can be hard to “un-learn” later. <p><i>Recency:</i></p> <ul style="list-style-type: none"> • Have short sessions or summarize the information frequently throughout the presentation. • Close the session with a summary of the most important points.
Active learning	People learn best if they are actively involved – this is the most appropriate method for adult learning. People retain 90% of what they see, hear, say, and do.	<ul style="list-style-type: none"> • Plan activities for trainees. • Ask questions throughout the session to keep the trainees involved and to check their understanding. • Active learning also helps trainees remain awake and interested throughout the day. • If possible give hands-on experience. For example, use of role play and case studies may help trainees learn more easily the skills necessary to enact contact precautions. Without this practice, it would be difficult for them to apply these skills in the workplace based only on the lecture information.
Over-learning	People learn things better if they repeat or “over-learn” them. If trainees receive the information in a variety of ways and can practise what is being taught, they are more likely to be able to use the information later.	<ul style="list-style-type: none"> • Repeat the information in a variety of ways, e.g. questions, summaries, examples, and exercises. • Let trainees perform exercises themselves.
Enjoyment	People learn better when they are having fun – when our brain is in an alert but relaxed state.	<ul style="list-style-type: none"> • Use humour and games to reduce stress, aid retention of information and encourage group participation. • Ensure that the humour and games are appropriate for the group and culture, and not offensive to anyone.
Appropriateness & relevance	People learn best if the material presented is relevant and at the right level. They need to understand how new information links to what they already know, and how to apply new information and skills to the workplace or personal situation.	<ul style="list-style-type: none"> • Use familiar examples. • Explain how information can be applied. • Link to what is already known. Use descriptions, examples or illustrations that are familiar to trainees from their previous experience. • Use case studies or ask the trainees to develop an action plan for implementing their training in the workplace.
Two-way communication	People learn best when they feel included.	<ul style="list-style-type: none"> • Communicate with trainees, not at them. • Design some interactions into presentations, e.g. a question- and-answer session or an interactive activity. • Encourage feedback, which can increase trainees’ motivation to learn.

1.0

UNDERSTANDING ARDS & ARDS OF POTENTIAL INTERNATIONAL CONCERN

Most episodes of ARD are mild (e.g. the common cold), but ARD can be associated with severe disease in certain populations (see section 1.7), and are a leading cause of hospitalization and death in the world. New respiratory diseases are constantly developing and spreading among humans. Some ARDs are of potential concern because they can spread quickly and cause severe illness and death in large numbers of people in a short period of time. ARDs of potential international concern include SARS, new kinds of influenza, and any new infectious respiratory disease that may emerge in the future. Some ARDs are primarily diseases of animals and birds (e.g. avian influenza) but have the potential to spread to humans.

OBJECTIVES OF UNIT 1

Upon completion of Unit 1, trainees 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 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?

ARDS are acute infectious diseases that affect the respiratory tract (lungs and/or breathing passages) and may be caused by many different microorganisms. ARDs can affect all age groups in all parts of the world. The most common signs and symptoms include cough, sore throat, runny nose, sneezing, and shortness of breath or difficulty in breathing, and are often accompanied by body and muscle aches and fever ($> 38^{\circ}\text{C}$) (Fig. 1).

ARDS frequently present as an influenza-like illness (ILI) i.e. a sudden onset of illness with fever ($> 38^{\circ}\text{C}$) and one of the following symptoms: cough, sore throat and body aches. Children may also experience nausea, vomiting and diarrhoea.

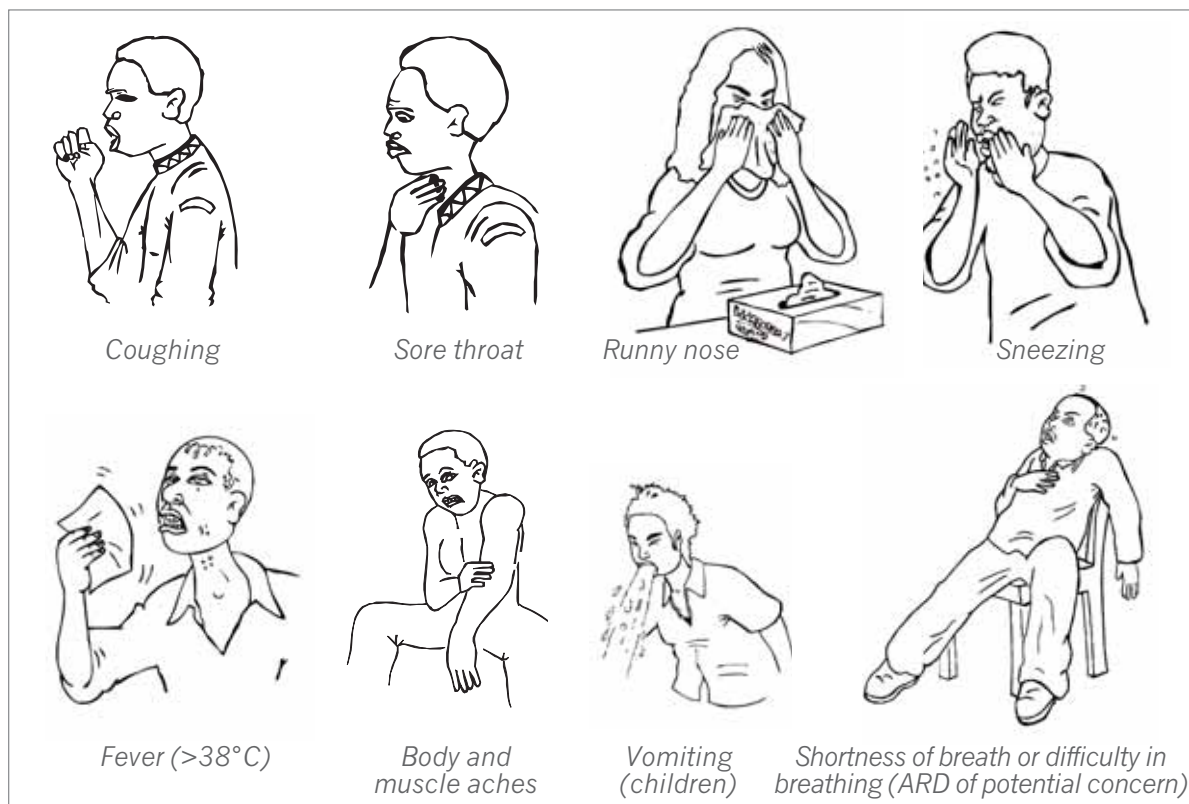


Fig. 1: The most common symptoms in people with ARDs.

1.2 WHAT ARE ARDS OF POTENTIAL INTERNATIONAL CONCERN?

These are ARDs that may cause epidemics with severe consequences, such as large numbers of ill people and many deaths. The ARDs of potential international concern include SARS, new kinds of influenza (e.g. avian influenza), and new respiratory diseases that may emerge in the future.

The most common signs and symptoms of ARDs of potential international concern are those of an ILI that may be accompanied by vomiting, nausea or diarrhoea. In addition, patients with these ARDs frequently exhibit severe shortness of breath (dyspnoea) and respiratory distress, and may present unusual signs such as disturbance of consciousness. The patient may have a history of contact with ill animals or with other patients with similar symptoms.

1.3 EARLY DETECTION AND REPORTING OF ARDS OF POTENTIAL INTERNATIONAL CONCERN

Front-line HCWs and CHWs are often the first point of contact between the patient and the health-care system, and may be first to recognize ARDs of potential international concern. ARDs of potential international concern **MUST** be immediately reported to local health authorities according to the local procedures.

When a new disease is emerging, health authorities often do not know its cause, who is more susceptible, how quickly it spreads, or the best way to treat it. All members of the health-care team are important in providing information to the authorities **IMMEDIATELY** upon suspicion of ARDs of potential international concern since these diseases can emerge or reappear anywhere. Equally importantly, health workers must also be alerted

and informed by the health authorities about possible events and precautions involving diseases of potential international concern.

1.3.1 Tips for identifying people with ARDs of potential international concern

- Unusually high numbers of patients with severe ARDs.
- Patients with unusual symptoms (e.g. severe respiratory distress, disturbance in consciousness, or alertness).
- Patients who have had recent contact with ill animals or other patients reported to have an ARD of potential international concern.
- Household or family members of patients with severe ARDs.
- Individuals who have had contact with a patient who has an ARD of potential international concern and who develop similar signs and symptoms (e.g. HCWs who have been directly involved in caring for patients with severe ARDs or patients in the same room/ward).

Early and accurate reporting to the health authorities can help to alert the health system to a new disease or new outbreak of disease.

1.3.2 The role of the community health worker

- CHWs have special responsibilities in identifying people who may have an ARD of potential international concern and promptly referring/transferring these patients to a suitable hospital.
- CHWs should know which authorities to contact if they are seeing unusual cases of ARDs or large numbers of people affected by ARDs.
- CHWs should work with their local hospitals to identify which patients can be cared for safely in the home after discharge (see Annex I).

1.4 EPIDEMICS AND PANDEMICS

Many ARDs can spread easily from person to person. An epidemic is an unusually high number of cases of a disease affecting many people at the same time within a specific region. Frequently the cases appear within a short time period. In temperate zones, epidemics of respiratory diseases are usually observed during cold months. A pandemic is an epidemic occurring worldwide or over a very wide area involving several countries, and usually affecting a very large number of people.

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 influenza are described briefly below.

1.5.1 Seasonal influenza

The viruses that cause influenza are constantly changing and people are not always immune to new variants of the virus. These variants may then cause epidemics, most often in the winter season. Illnesses resembling influenza that occur in the summer are usually due to

other viruses. The symptoms of seasonal influenza are similar to those described for ILI (see section 1.1). The incubation period for seasonal influenza is about 2–3 days.

1.5.2 Pandemic influenza

Human pandemic influenza⁴ occurs when a new human influenza virus to which most people in the world have little or no immunity starts to spread from person to person worldwide. The incubation period for a new virus is not known; however, experts expect that it would be similar to current human influenza i.e. ranging from 1 to 4 days (typically 2–3 days).

1.5.3 Avian influenza

Avian influenza is a disease of birds that is caused by avian influenza viruses. The spread to humans that are in close contact with poultry or other birds occurs rarely. Avian influenza in humans may present as an ILI in the early stage of illness, but frequently develops into pneumonia and then to severe respiratory distress. The disease may present unusual symptoms as described in section 1.2. Where exposure to poultry has been reported for the patient, the incubation period for cases in humans is less than 7 days, and most typically 2–5 days. In clusters where limited human-to-human transmission is likely to have occurred, the incubation period appears to be approximately 3–4 days, but in one instance it was estimated at 8–9 days. However, there is the potential for the avian influenza virus to change into a virus that can cause a form of influenza in humans that spreads easily from person to person. This is a great concern for world health since it may represent the beginning of a new pandemic of flu.

1.6 HOW DO PEOPLE GET ARDS?

A person can become ill with a disease only if he/she is susceptible to the disease and is exposed to the disease. A person who is ill with an ARD is the main source of the disease, and transmission of ARD can occur when the source is in close proximity to a susceptible person. When we cough or sneeze, droplets of secretions from the nose and mouth are expelled into the air around us by the force of the cough or sneeze. In a patient with an ARD, these droplets contain infectious particles. The droplets are expelled in the air and gradually settle on surfaces around a coughing patient (commonly within a distance of 1 metre from the patient). Ill people may also receive infectious particles on their hands when they cover their mouth or nose when coughing, sneezing or cleaning the nose. Surfaces can also become contaminated through direct contact with secretions or the hands, used handkerchiefs, used drinking glasses, used tissues or other material which has been in contact with the secretions. Other body fluids and excreta may also contain infectious particles.

⁴ All information regarding a pandemic influenza MUST be updated and checked with the local public health authorities.

1.6.1 Most common ways by which ARDs can be spread

- Direct deposition of droplets generated by someone coughing or sneezing onto the mucosa of the mouth, nose or eyes (viruses entering by the eyes/conjunctiva are particularly important in SARS and avian influenza) (Fig. 2);
- Contact with droplets, e.g. touching the hands of ill people who have touched their own secretions, or when cleaning the secretions of others such as children, and then accidentally spreading the droplets through touching the eyes, nose or mouth;
- Through contamination of the hands by touching items that are contaminated with secretions (e.g. used tissues or handkerchiefs).

In addition to the modes of spread described above, the following are relevant to ARDs of potential international concern:

- Avian influenza is most often spread to people through close and direct contact with affected animals, and infrequently through intimate (e.g. close and prolonged) contact with patients (Fig. 3).
- SARS is spread through contaminated droplets from patients to other people, most often through close contact.



Fig. 2: Infections can arise from direct and/or close contact with patients with ARDs.



Fig. 3: People can get ARDs when they touch objects that are soiled with infectious respiratory secretions.

1.6.2 Other factors influencing the spread of ARDs

There are many factors that influence how quickly ARDs spread around the world. These include international travel, overcrowded living conditions, and overcrowded health-care settings where infection-control measures are not respected.

With regard to ARDs of potential international concern, changes in the microorganisms themselves and, in the case of avian influenza, the sharing of living space by humans with domestic or wild animals, may facilitate the emergence of new diseases affecting humans. People who have contact with affected animals (e.g. poultry infected with avian influenza) are more likely to become ill. Those who have been taking care of ill people, such as family members, without using any type of personal protection, may also become ill.

1.7 WHO HAS A HIGHER RISK OF ACQUIRING SEVERE FORMS OF ARD?

ARDs in general: Some people are more likely to become severely ill with ARDs – the very young (aged < 2 years); older people (aged > 65 years); pregnant women; people with pre-existing respiratory or chronic heart conditions; people with a weak immune system, such as people with human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS), blood diseases or cancer (Fig. 4).

ARDs of potential international concern: SARS and avian influenza are frequently severe diseases, even for previously 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 PEOPLE CONTRIBUTE TO REDUCING THE SPREAD OF ARDS?

ARDS in general: There are many things that everyone can do 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 (section 1.9.2) (Fig. 6);
- Implement environmental controls: improve ventilation of the space by opening windows and doors to take advantage of breezes; clean the environment surrounding the ill person;
- If available, health workers should use some type of protection to cover mouth and nose (e.g. mask) when providing care for ARDs patients.

Especially for CHWs and HCWs: Protect yourselves and your patients by washing your hands before and after providing patient care. Wash hands whenever you touch anything that has respiratory secretions on it (Fig. 6). Washing hands *after* taking off masks or other protective equipment is important because the hands very often become contaminated when equipment used by and for the patient is handled. In settings where alcohol-based hand rubs are available and the safety concerns (such as fire hazards and accidental ingestion) are adequately addressed, their proper use (rubbing hands for 20–30 seconds) should be promoted as a means of disinfection.



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.

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!

- Patients with ARDs should try to keep away from other individuals (especially young children, the elderly and those who have chronic underlying diseases) as much as possible (Fig. 7).
- Anyone taking care of someone who is ill should try to distance themselves by at least 1 metre and get close to the patient only when essential for providing care (Fig. 8).

- If you are teaching family members how to take care of a patient at home, instruct them to reduce the number of contacts with the patient and to try as far as possible to maintain a distance of at least 1 metre.

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 perform hand hygiene.
- All people with respiratory symptoms should use tissues to contain the secretions and throw the tissues away once they are used (disposable paper tissues are preferred because they are cheaper and can be discarded in an appropriate manner after use). Non-disposable items (e.g. cloth handkerchiefs) should be used only once (if possible) and then hand hygiene should be performed (Fig. 9). Cloth handkerchiefs should be laundered according to the instructions noted below for laundry.
- Discourage public spitting onto the ground or sidewalks or into trash containers. All respiratory secretions should be contained in disposable tissues or cloth handkerchiefs.

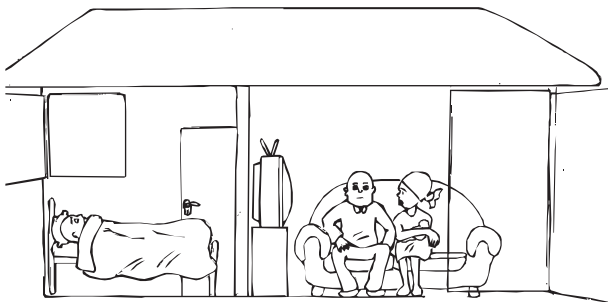


Fig. 7: Keep patients with ARDs apart from other members of the household.

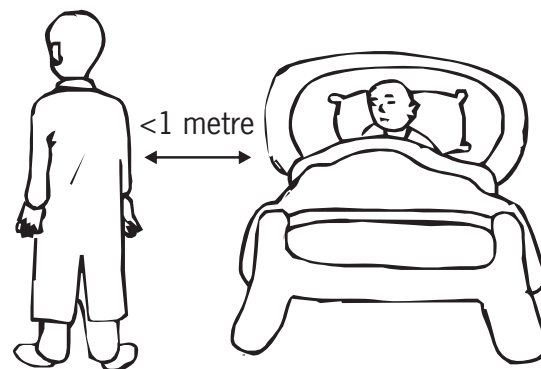


Fig. 8: Try to stay at least 1 metre away from patients with ARDs – only get closer when essential for providing care.



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

- Teach people how to cough and sneeze safely and how to deal with items used to contain the cough or sneeze. For items that are disposable (e.g. paper tissues), place them in a trash bag. For items that are not disposable (e.g. shirt sleeve used for containing a sneeze), launder or clean following the instructions noted below for home care (sections 2.3.3, 2.3.4).
- People should be reminded to wash their hands frequently and thoroughly when dealing with anyone who has respiratory symptoms, especially those who are coughing and sneezing (Fig. 9).
- Community clinics should post information in community settings about how to cough and sneeze safely and how to dispose of potentially infected materials.

Hand hygiene

- To help to reduce the spread of respiratory infections, all people should wash their hands frequently, especially after they have used their hands to cover a cough or sneeze. NOTE: hand hygiene can also help to prevent other diseases. So, remind people to wash their hands frequently (e.g. after using the toilet (Fig. 10), before and after contact with the ill person, before and after preparing food, before meals).
- 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 (such as fire hazards or accidental ingestion) and lack of availability of alcohol-based hand rubs, hand-washing is the main method used to clean hands.



Fig. 10: Wash your hands after using the toilet.

1.9.3 Environmental controls

Environmental controls include measures to reduce the concentration of infectious particles in the air, surfaces and items that may be in contact with susceptible persons. An example of environmental controls for infectious respiratory diseases is the promotion of good environmental ventilation. For diseases that can also be spread by contact, disinfection of equipment, cleaning of surfaces, laundry and waste management should be addressed.

Ventilation of the environment

In some instances (e.g. for tuberculosis), the droplets containing infectious particles are very small and do not immediately settle on surfaces around the patient but may remain suspended in the air for a short time. The risk of infection from these small droplets can be reduced by ensuring that rooms are well ventilated, thus using the moving air to remove the small droplets. This is particularly important in the room where the patient is living.

To encourage good ventilation:

- Teach householders to keep doors and windows open as much as possible (Fig. 11). In areas where vector-borne diseases (e.g. malaria) are a concern, use mosquito nets whenever available.
- A patient placed in a naturally ventilated room should be placed near the outside wall, close to an open window rather than close to an inner wall.

Cleaning of the environment

- 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, 4.2.5, 4.4).

1.9.4 Personal protection

In order to prevent the spread of infectious particles from the patient to health-care personnel and to other patients, make adequate use of the protection available (see Unit 4 for more details about personal protective equipment). If medical masks are available and the training on their correct use is feasible, health workers should be encouraged to use a medical mask when providing close care (within 1 metre) to a patient with respiratory symptoms (e.g. coughing or sneezing).

Note to trainers: incorrect use of masks (e.g. re-use of disposable masks, keeping masks dangling around the neck) (Fig. 12) may increase the risk of spreading the disease to the mask user and others.

When caring for patients with ARDs of potential international concern: Individuals in contact with the patient should use the best available personal protection (mask, eye protection, gloves and gown), and when leaving the patient's space carefully remove the protection and carefully perform hand hygiene.



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

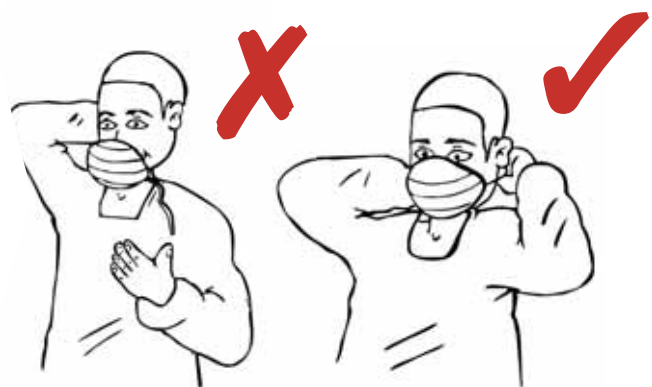


Fig. 12: When putting on a mask, make sure it is correctly positioned and remove it immediately after use.

1.10 DURATION OF INFECTION-CONTROL PRECAUTIONS

The length of time for which infection-control precautions are required varies with the kind of infection and age of the patient.

1.10.1 Avian influenza virus

Patients infected with avian influenza virus may shed virus from their respiratory tracts for up to 2–3 weeks. They can be discharged from the hospital if clinically they do not require hospitalization; however, they will need appropriate advice on separating themselves from others, respiratory hygiene, and thorough hand-washing.

1.10.2 Human influenza (seasonal and pandemic⁵ influenza)

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

1.10.3 SARS

For SARS patients with normal immune-system function, precautions for infection control should be maintained while patients are symptomatic.

⁵ All information regarding a pandemic influenza MUST be updated and checked with the local public health authorities. For the purposes of this document, it is assumed that a pandemic influenza virus will be transmitted in a similar way to previously recognized human influenza viruses.

TRAINING EXERCISES AND EVALUATION QUESTIONS

TRAINING EXERCISES FOR UNIT 1

Exercise No.	Exercise	Rationale
1-1	<p>Estimate a metre</p> <p>Using a roll of string, ribbon, yarn or thread, have the trainees estimate 1 metre. The trainer should have a metre stick or tape available but not in plain sight so the trainees make their best estimates. After the exercise cut the string into 1-metre lengths for trainees to take home. In resource-poor settings, individuals might measure a metre by a number of steps.</p>	Active learning is retained better than simple discussion; having people measure how long they think 1 metre is will help them to remember the distance and they will have the string to take home.
1-2	<p>Demonstrate hand hygiene (role play)</p> <p>Have a volunteer “teach” the trainer how to wash their hands. The trainer will play the role of a family or community member.</p>	By gently providing guidance and instruction, the trainers can reinforce the correct technique and correct any misunderstanding.
1-3	<p>Develop a story, poem, song, poster or saying about respiratory hygiene</p> <p>Using the most culturally- and locally-appropriate technique, have the community health workers develop a story, poem, song, poster or saying about respiratory hygiene. Depending on the group, the trainer may ask for work to be carried out by the individual and then shared with the group OR for work to be carried out in small groups then shared with the larger group.</p>	Since community health workers are experts in their local settings, development of a locally-appropriate reminder system will be most effective. Sharing results in the group setting helps group members to learn from each other and provides an opportunity for immediate feedback.

Note to trainers: Community health workers are experts in their local setting. So that trainees can make the best use of what they have learnt, help them to identify what they can do in their local area.

EVALUATION QUESTIONS FOR UNIT 1

Question No.	Question	Answer
1-1	Describe at least two symptoms of ARDs*	<p>The most common signs and symptoms include cough, sore throat, runny nose, sneezing, and shortness of breath or difficulty in breathing, body and muscle aches and fever (temperature > 38°C).</p> <p>Frequently, ARDs present as an ILI, which is a sudden onset febrile illness (temperature > 38°C) with one (or more) of the following symptoms: cough, sore throat, body or muscle aches, vomiting, abdominal pain or diarrhoea.</p>
1-2	Describe as many symptoms as possible of ARDs of potential international concern (SARS, avian influenza)*	<p>Sudden onset of severe respiratory disease.</p> <p>Fever (temperature > 38°C), cough, sudden onset of respiratory illness, sore throat, body aches, muscle aches, or vomiting, nausea or diarrhoea, sudden severe dyspnoea, changes in consciousness.</p>
1-3	Which groups of people are at greater risk of contracting severe respiratory disease?	<p>People with pre-existing diseases such as HIV/AIDS, cancer, heart or respiratory disease; the very young (age < 2 years); older people (age > 65 years); pregnant women.</p>
1-4	How are ARDs spread from person to person?*	<p>Any or all of the following: transferring infectious droplets from someone coughing or sneezing to your nose or mouth,* and eyes (viruses entering by the eyes/conjunctiva are particularly important in SARS and avian influenza); contaminating your hands by contact with infectious respiratory secretions on objects and then transferring these infectious particles to nose or mouth,* and possibly eyes.</p>

Question No.	Question	Answer
1-5	Name at least one factor that influences the spread of ARDs	Any of the following can be named: inappropriate respiratory hygiene; overcrowding of people (in households, in hospitals or health centres); not following infection-control procedures in health-care settings. In addition, regarding the spread of ARDs of potential international concern: changes in the microorganisms themselves; humans sharing their living spaces with domestic or wild animals; international travel.
1-6	What are the most effective ways to reduce the spread of ARDs?*	Most important means: physical separation. Other means: containing secretions through respiratory hygiene, proper hand-washing, environmental ventilation.

ARDs, acute respiratory diseases; CHW, community health worker; HCW, health-care worker; ILI, influenza-like illness; SARS, severe acute respiratory syndrome.

Note to trainers: Ideally, evaluation will include a demonstration of how to perform these measures through role play or return demonstration (i.e. demonstration by the trainee of something they have just been taught or that has just been demonstrated by the trainer). However, the setting may allow for verbal or written answers only. The most critical items are marked with an asterisk (*).

2.0 ARDS AND HOME CARE

Patients with an ARD are likely to need care in the home. During an influenza pandemic, in particular, most patients will probably be cared for at home. Protecting both the patient and their family is important. The information contained in this unit will help CHWs and HCWs to identify what they can do to teach people in the community how to care for ill family members and keep themselves safe at the same time.

It is important to remember that, although CHWs play an important role in home care, it is usually family members who provide most patient care, day and night. In the home-care environment there should be a partnership between CHWs and the family. The CHW should:

- Educate caregivers on how to care for the ill member of the family as safely as possible; and
- Provide the patient and family with ongoing support, education and monitoring.

OBJECTIVES OF UNIT 2

Upon completion of Unit 2, trainees 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.



All the information in Unit 1 regarding hand-washing and avoiding touching secretions or body fluids from the patient also applies to care in the home. The following points should also be addressed.

2.1 PHYSICAL SEPARATION

Keep the patient who is coughing or sneezing in a room alone or at least 1 metre (3 feet) away from other people. This will help prevent other individuals from being exposed to infectious particles (see also section 1.9.1).

2.2 RESPIRATORY AND HAND HYGIENE

The patient should be asked to cover their mouth and nose when sneezing or coughing, use tissues to contain 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, and particularly after any type of contact with the patient or with the patient's belongings or environment.

2.3 ENVIRONMENTAL CONTROLS

2.3.1 Ventilation of the environment

Use natural ventilation as much as possible (i.e. in locations where the climate permits). Opening doors and windows on opposite sides of the house helps to use natural wind movement. In areas where vector-borne diseases (e.g. malaria) are a concern, mosquito nets should be used whenever available (see also section 1.9.3).

2.3.2 Household cleaning

When cleaning the house, it is better to use a damp mop or cloth rather than a dry broom. A dry broom can raise dust and infectious particles back into the air whereas a damp mop is better at collecting and removing the particles. For general cleaning purposes, 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. All dishes used by the patient should be washed with water and soap or detergent.

General laundry

Wash clothes with water and soap, by hand or using a washing machine. Let clothes dry by the usual means (e.g. hang in the sun). Soiled handkerchiefs (if handkerchiefs are used) and bedding should be kept far from other people until they have been washed.

For laundry soiled with human waste or grossly contaminated with secretions

Remove as much human waste (e.g. faeces) and secretions as possible before washing the clothes. Dispose of the waste in the safest way possible so as to avoid contact with other people. Wash hands after this manipulation. If the soiled laundry is washed by hand, wear protection (e.g. rubber gloves or plastic bags on the hands), wash clothes with soap or detergent and water, and dry by the usual means (Fig. 13).



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

Whenever possible, use the existing systems of sanitation and waste disposal. When a sanitary system is not available, avoid contact between patient waste containing secretions and other people as far as possible (Fig. 14). For example, faeces can be put in toilets; disposable tissues can be discarded with the household waste.

2.4 PERSONAL PROTECTION

When health workers providing care in the home need to be close to a patient with respiratory symptoms (less than 1 metre), a medical mask should be used whenever possible, or the next best available protection.

Family members providing care should also be advised on the use of available protection to cover their nose and mouth.

NOTE: Although some alternative barriers to medical masks are frequently used (e.g. clothing, scarf, or rags tied over the nose and mouth), there is no information available on their effectiveness. Whatever type of barrier is used, it must be removed immediately after caring for the patient. Hands should be washed immediately after removal of the barrier.

2.5 PATIENTS WITH ARDS OF POTENTIAL INTERNATIONAL CONCERN

2.5.1 Travel outside the home

Avoid the use of public transport if at all possible. Use an ambulance if available or private transport and keep the windows open.

During transportation, the patient should stay 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 members and community members who have been caring for a patient with an ARD of potential international concern may be exposed to infectious particles and become ill themselves. They should be made aware of the symptoms that they may develop and that would indicate the need to seek health care.



Fig. 14: Avoid contact with the patient's waste and dispose of it safely.

TRAINING EXERCISES AND EVALUATION QUESTIONS

TRAINING EXERCISES FOR UNIT 2

Exercise No.	Exercise	Rationale
2-1	<p>Draw a floor plan of a house & show patient placement & ventilation</p> <p>Ask the trainees to draw the floor plan of a typical house or living arrangement (e.g. apartment) in their local area (they might draw the floor plan of their own house if it is typical). Be sure they identify the windows and doors. They should identify in which room the patient will stay while ill, and which windows and doors they would open for cross-ventilation.</p>	Active learning that is applicable to one's own situation has the most relevance. Trainers can then identify if there are additional opportunities for improving ventilation, patient placement, etc.
2-2	<p>Safe handling of body fluids</p> <p>In a discussion format, the trainees should discuss where and how they would dispose of the following kinds of waste (adapt this to the local context):</p> <ol style="list-style-type: none"> faeces a used handkerchief containing cough secretions. 	Many human body fluids can spread ARDs so all should be treated with care. Having the trainees discuss possible ways to dispose of waste provides the opportunity for the trainer to give guidance, praise correct and safe disposal methods and redirect trainees suggesting incorrect disposal methods towards safer ones.
2-3	<p>Assessment of environmental conditions for home care of patients with ARDs of potential international concern</p> <p>A patient with avian influenza is exceptionally being discharged from hospital before the end of the infectious period (normally these patients are cared for in hospital). Ask the trainees to draw up a checklist to assess whether environmental conditions in the home are appropriate.</p> <p>Trainees should then compare their checklist with the sample in Annex I. This sample checklist can be modified to reflect local conditions. Each trainee should finalize their own checklist to reflect their local priorities.</p>	Local conditions vary widely and the ability of the community health workers to verify the available infrastructure, accommodation, resources, and primary care and support will also vary. Working through a case study provides context-specific detail for each item.

ARDs, acute respiratory diseases.

EVALUATION QUESTIONS FOR UNIT 2

Question No.	Question	Answer
2-1	Identify as many ways as possible to help family members stay safe when caring for a patient with an ARD. *	<p>Most important: * keeping at least 1 metre away from the patient as much as possible; washing hands after contact with any of the patient's body fluids or secretions.</p> <p>Other measures: improving ventilation by opening opposite doors and windows in the house; using a damp mop for floors; using a damp cloth to wipe down surfaces; using a protection to cover mouth and mouth (if available) whenever very close to the patient.</p>
2-2	<p>What are the safest ways to transport the patient from home to hospital? List the methods below in order of priority:</p> <p>a) private car with windows closed b) public bus with the windows open and not too crowded as to permit distance (> 1 metre) between the patient and others c) ambulance d) private car with windows open.</p>	<p>In order of priority: b, c, d; a is an incorrect answer</p>
2-3	<p>If a patient has to use a car, bus, van or taxi to get medical care, how far away from other people should they stay? *</p> <p>What other precautions should be taken?</p>	<p>At least 1 metre</p> <p>The patient should cover nose and mouth (e.g. mask or use the best alternative). Open the windows.</p>

ARDs, acute respiratory diseases.

Note to trainers: Ideally, evaluation will include a demonstration of how to perform these measures through role play or return demonstration (i.e. demonstration by the trainee of something they have just been taught or that has just been demonstrated by the trainer). However, the setting may allow for verbal or written answers only. The most critical items are marked with an asterisk (*).

3.0

KEEPING CHWS AND HCWS SAFE

There are precautions that all health-care workers, including CHWs, can take to keep themselves safe.

OBJECTIVES OF UNIT 3

Upon completion of Unit 3, trainees 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 catching ARDs when they provide patient care. There are two important things that HCWs can do:

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

3.1 MONITORING PERSONAL HEALTH

This is particularly important when HCWs and CHWs are caring for patients with ARDs of potential international concern (e.g. SARS, avian influenza). If health workers who have had contact with such patients develop symptoms, they must:

- Stay away from other ill people;
- Stay away from public areas;
- Immediately notify the local health authorities of their illness.

The incubation period (time between exposure to the disease and development of symptoms) varies according to the disease. For example, symptoms can occur within 7–10 days of caring for a patient with SARS, while for avian influenza the incubation period can be as short as 1–2 days.

Trainers should transmit the following information, in line with local policy:

- HCWs and CHWs should be vaccinated annually for influenza, whenever the vaccine is available and according to local policy.
- If HCWs and CHWs develop an ILI, they 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

HCWs and CHWs should work with the local authorities to obtain sufficient supplies of materials for hand hygiene and personal protection (e.g. gloves, masks, eye protection, gowns, aprons) to keep themselves and their communities safe. It is important to use protective equipment wisely, only if and when it is needed.

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 3) should always be followed when providing care for patients, whatever the patient's diagnosis, in order to reduce the risk of infection associated with secretions, blood, and other body fluids. Hand hygiene should always be performed, and personal protection used to avoid direct unprotected contact with these body fluids.

Table 3: Basic measures for personal protection

SCENARIO	Hand hygiene	Gloves	Gown	Medical mask	Eye protection
Always before and after patient contact, and after contact with contaminated environmental surfaces or equipment	✓				
To avoid direct contact with patient's blood and body fluids, secretions, excretions, mucous membranes or non-intact skin	✓	✓	✓		
If there is a risk of splashes to the face of the health-care worker	✓	✓	✓	✓	✓

3.2.2 Personal protection when providing care for a patient with an ARD

When caring for a patient with an ARD, personal protective equipment should include a medical mask.

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

When caring for a patient with an ARD of potential international concern, personal protective equipment should include a medical mask, eye protection, gown and gloves, whenever possible (see Annex III for details of putting on and taking off personal protective equipment).

3.2.4 Issues about specific items for personal protection

Masks

Masks are the most common protective equipment needed by CHWs and HCWs when caring for patients with ARDs in the community, that is, when the CHW or HCW is close to a patient (< 1 metre) who is coughing or sneezing. They are also used when there is risk of splashes with blood or body fluids onto the face, as part of facial protection.

There are many kinds of masks. Medical masks fit the face and are thrown away when they are wet or after use. Other kinds of masks (e.g. paper masks) are sometimes used, but do not provide as much protection and may give the HCW and CHW a false sense of safety. If medical masks are not available, use the next best available mouth and nose covering.

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 is used to cover the mouth and nose should be used once only, disposed of safely, and hands should be washed immediately after disposal.

Eye protection

Eye protection includes eye-visors or goggles. Eye protection is needed if there is a possibility that the eyes of the health worker may be splashed with the patient's secretions or body fluids. Glasses are sometimes perceived as being protective, but they are not designed to prevent splashes from reaching the eye. Eye-visors and goggles may be used once and then thrown away, if disposable. Some types can be cleaned, but cleaning should be done with detergent, and then disinfected with chemicals (e.g. bleach) that will destroy the infectious particles.

Face shields

Face shields cover the mouth, nose and eyes, and if available, can be used to provide facial protection instead of using a mask and eye protection. However, a face shield alone does not protect the health worker from fine infectious particles that are generated during special procedures performed in hospitals (e.g. aspiration of the respiratory tract, bronchoscopy). In these more complex settings, a mask that is effective against fine particles should be used in addition to the face shield (for more details see *Infection prevention and control of epidemic- and pandemic-prone acute respiratory diseases in health care – WHO Interim Guidelines, 2007*).⁶

Gowns

Gowns are used if there is a possibility that the clothes of the HCW or CHW could be splashed with the patient's secretions or body fluids. Gowns can be disposable (e.g. made of paper) or made of cloth. Gowns that are waterproof protect the clothes of the HCW or CHW; some paper gowns may protect the clothes but may not be waterproof. If any kind of non-waterproof gown is used and there is the risk of large splashes, add a plastic apron.

⁶ Available at http://www.who.int/csr/resources/publications/WHO_CD_EPR_2007_6/en/

Gloves

Gloves may be 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 washing heavily soiled 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 blood, respiratory secretions or other body fluids (Fig. 15).

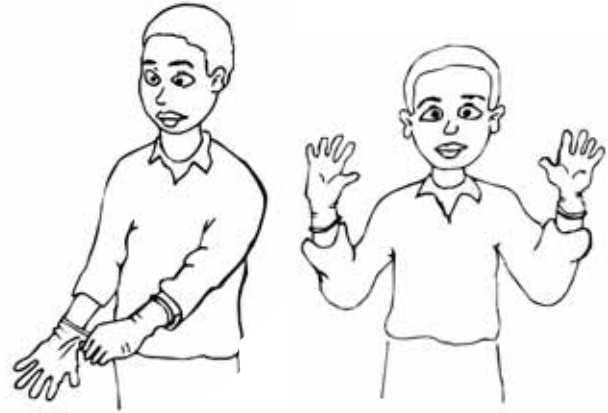


Fig. 15: Use gloves when there is the possibility of direct contact with the patient's respiratory secretions, blood or body fluids.

Remember:

- Personal protective equipment should be removed immediately after use;
- Wash hands immediately after taking off protective equipment or after any contact with secretions, blood or other body fluids; and between patients if caring for more than one person; and
- If the HCW or CHW is caring for more than one patient, change protective equipment between patients.

TRAINING EXERCISES AND EVALUATION QUESTIONS

TRAINING EXERCISES FOR UNIT 3

Exercise No.	Exercise	Rationale
3-1	<p>Create a memory device to help to memorize the signs and symptoms of ILIs</p> <p>Trainees may use a song, poem, story or any memory device. Trainees may want to work in groups to create the memory device.</p>	Repeating the most important information helps trainees to integrate the information. Using a trainee-created memory device will have more meaning and help the trainees retain the information.
3-2	<p>Role-play a CHW who develops an ILI.</p> <p>The trainer should provide a locally-appropriate example of a CHW who is taking care of someone with SARS or avian influenza and then develops symptoms of ILI. Choose one of the trainees and ask them what they would do next.</p>	Active learning. Both self-care and notification of the authorities are important steps to take; CHWs and HCWs should take care of their immediate health needs first and then notify the local authorities of their illness.

Exercise No.	Exercise	Rationale
3-3	<p>Putting on and taking off PPE correctly</p> <p>Trainers should adapt the following content to the local context and the availability of PPE.</p> <p>The most critical things to teach are use of masks and hand hygiene, and these two should be emphasized. For ARDs, a mask is the most common kind of equipment needed. The CHW should demonstrate removal and disposal and then wash hands.</p> <p>For ARDs of potential international concern, use the PPE commonly available in the local area (gowns, gloves, eye protection, masks) and have the CHWs put on the equipment in the following order (gown, mask, eye protection and gloves). Then have the CHWs remove the equipment in the correct order (gloves and gown, wash hands, eye protection, mask and then wash hands).</p>	<p>As a reminder, provide each CHW with a small card showing the order of putting on and taking off the personal protective equipment that is available in the local area.</p>
3-4	<p>If dealing with ARDs of potential international concern, it is desirable to put on and take off PPE using a “buddy system”</p> <p>Ask the CHWs to put on and take off the equipment again using the “buddy system” to check each other; the trainer should observe and provide input only when the order is incorrect.</p>	<p>Practising with the locally-available equipment will help the trainees remember the use of and order of equipment. Practising with a buddy helps the trainees reinforce their knowledge. Providing a take-home message on a card will allow the trainees to refer to the information rapidly.</p>

ARDs, acute respiratory diseases; CHW, community health workers; HCW, health-care worker; ILI, influenza-like illness; PPE, personal protective equipment.

Note to trainers: If there are sufficient supplies for the local area, teach the trainees how to put on and take off items of personal protective equipment.

EVALUATION QUESTIONS FOR UNIT 3

Question No.	Question	Answer
3-1	What are the symptoms of an ILI?	A sudden onset febrile (temperature > 38°C) illness with one or more of the following symptoms: cough, sudden onset of respiratory problems, sore throat, body aches, muscle aches. It may include also vomiting, abdominal pain or diarrhoea.
3-2	Identify the personal protective equipment you will want to use when caring for a patient with an ARD in each of the following situations: * a) giving an oral medication to a patient who cannot take the medication alone; giving the medication in a spoon; b) giving a bath; c) feeding the patient; d) changing heavily soiled bed linen with no patient contact.	a) medical mask; b) medical mask, gloves and gown; c) medical mask, gloves only if the patient's secretions may get onto you; if caring for a patient with an ARD of potential international concern, use gown, gloves, mask and eye protection; d) gloves and gown.

ARDs, acute respiratory diseases; CHW, community health workers; HCW, health-care worker; ILI, influenza-like illness; SARS, severe acute respiratory syndrome.

Note to trainers: Ideally, evaluation will include a demonstration of how to perform these measures through role play or return demonstration (i.e. demonstration by the trainee of something they have just been taught or that has just been demonstrated by the trainer). However, the setting may allow for verbal or written answers only. The most critical items are marked with an asterisk (*).

4.0 ARDS AND THE CLINIC

Much of the information provided in earlier units about care in the home applies to care in a clinic setting, but there are some specific procedures that 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 this unit, trainees 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 from the products available in the setting or choose a disinfectant solution from those available.



4.1 CLINIC OPERATIONS

4.1.1 Rapid identification and treatment of symptomatic ARD patients

HCWs working in a clinic setting should:

- 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 particularly 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 tend to present with an acute severe respiratory disease and frequently seek care in the nearest clinic – which may be a community clinic. Such patients require special precautions:

- They need a higher level of hospital treatment as soon as possible. Notify the local authorities and make arrangements to transport patients with ARDs of potential international concern in the safest manner possible (see section 2.5.1).
- If immediate transfer to an isolation unit is not possible, patients with ARDs of potential international concern should be placed in a well-ventilated space in a single room or separated by at least 1 metre from other individuals, and their contact with other people restricted as much as possible (e.g. only contact with people essential for health care).

4.1.3 Planning for an epidemic or pandemic situation (“surge capacity”)

The clinic should liaise with local authorities to outline a plan to help health workers with staffing and equipment in the event of an epidemic or pandemic situation. Note to trainers: the trainees need to know what plans are in place, who to contact in the event of an epidemic or pandemic (likely to be the local health authorities) and how to contact them (e.g. telephone or messenger).

4.2 MEASURES TO REDUCE THE SPREAD OF ARDS IN THE CLINIC

It is important to respect the following points (also covered in earlier units) in order to reduce the potential for spread of infection in the clinic.

4.2.1 Physical separation

If possible, separate patients with ARD-like symptoms from other patients in separate waiting 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.⁷

Remember that patients with poor immunity (such as those with cancer, HIV/AIDS and other diseases) can get ARDs as a severe disease, so separate these patients from those with ARDs.

For 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

Instruct patients, and any other person with respiratory symptoms to cover the mouth and nose when coughing or sneezing. If possible, provide tissues and receptacles (e.g. rubbish bins) for the disposal thereof. If tissues are not available, encourage patients to keep the handkerchiefs or other material (e.g. rags) used to contain respiratory secretions away from other people. If the symptomatic person has to share a closed space with other people (e.g. waiting room), and if masks are available and the symptomatic person can tolerate it, encourage and teach him/her to use a mask.

Hand hygiene

Hand hygiene is a key measure to prevent the spread of infectious diseases in the health-care facility, and should be strongly promoted and reinforced. Hand hygiene can be performed by means of washing hands with soap and water, or thorough rubbing of hands with an alcohol-based solution in facilities where alcohol-based hand rubs are available and safety concerns (such as fire hazards or accidental ingestion) are adequately addressed (section 1.9.2). The proper use of alcohol-based hand rubs should be encouraged as

⁷ Physical separation of in-patients should be based on the principles of cohorting. Cohorting is 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. When the etiological agent has not been confirmed by the microbiology laboratory, patients with the same suspected diagnosis (similar epidemiological and clinical information) can be placed in the same unit.

the main means to disinfect the hands of HCWs in the clinic. Hands should be cleaned thoroughly before and after each patient contact.

4.2.3 Personal protection

All CHWs working with patients with ARDs should wear medical masks or the best available alternative when working within 1 metre of the patient.

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 in an endemic area for vector-borne diseases (e.g. malaria).

4.2.5 Cleaning the clinic

For general purposes: use a damp mop, not a dry broom, and use plain soap and water. After all cleaning, wash hands thoroughly.

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.

Use the cleaning product you have available for this cleaning (note to trainers: adapt this information based on the kinds of cleaning products, i.e. soap, detergent, that are available in the local community).

Cleaning of equipment used by the patient: Clean with water and plain soap or detergent. After cleaning, disinfect with 0.05% bleach (see section 4.4) or the available disinfectant according to the clinic protocol. If available, alcohol-based solutions can also be used to disinfect small areas with a non-porous surface (safety issues like fire hazards and accidental ingestion should be addressed). Wear rubber gloves for cleaning and disinfection. If 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 facial shield).

Avoid general use of items in contact with patients with ARDs: In addition to all the above points, do not allow HCWs or patients to use equipment or items (e.g. pens, clipboards, toys) that are used by other patients. If patients have to use the same equipment, ensure proper cleaning between patients.

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 °C; 160 °F) for at least 25 minutes.

4.3 TRANSPORT OF CLINICAL SPECIMENS

If clinical specimens such as blood, urine, or sputum need to be sent to a laboratory facility for testing, ensure that they are contained in leak-proof bags labelled such that anyone handling them knows that they may be dangerous. The contact person in the testing laboratory should be identified and communication initiated at the earliest convenience in order to obtain advice on what specimens need to be collected, how they are to be collected and how they are to be transported.

4.4 USE OF BLEACH FOR DISINFECTION⁸

Household bleach (chlorine bleach; sodium hypochlorite) at a concentration of 0.05% is very effective for destroying infectious particles, but must be used safely. Also, in order to be effective, cleaning of secretions and body fluids must be performed before disinfection, because bleach is easily inactivated by secretions and body fluids.

4.4.1 When is it necessary to use bleach?

- To disinfect after cleaning blood spills or secretions on surfaces that are in direct contact with the skin or mucosa (mouth, eyes) of individuals.
- To disinfect after cleaning clothes that are grossly contaminated with secretions/human waste.

4.4.2 How to use bleach

From an initial concentration of 5% (the available commercial form), the bleach should be diluted before use, 1 part bleach to 99 parts cold water. The bleach must be diluted with cold water because hot water will cause the bleach to break down and it will lose its effectiveness. A fresh bleach solution should be made daily because the solution loses its potency after 24 hours.

Note to trainers: The dilution of bleach necessary to achieve the desired concentration (i.e. 0.05%) depends on the initial concentration of bleach, and this may vary from place to place.

Items that can safely be dipped into bleach solution include clothes, linen, and plastic or glass. Metallic objects can be corroded by bleach; alcohol-based solutions could be used as an alternative for disinfecting small non-porous/metallic surfaces.

⁸ 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.

Objects that can safely be dipped into bleach solution should be soaked for 30 minutes. For surfaces or things that cannot be dipped into bleach solution, be sure that the surface is in contact with bleach solution for at least 10 minutes.

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 windows or doors are open to prevent the build-up of bleach fumes (Fig. 17).
- Be careful not to splash 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 handling bleach, use some protection to cover your hands (e.g. rubber gloves, if available; if not available, then use a waterproof plastic bag).
- Never mix bleach with other cleaning agents because poisonous gas may accidentally be produced.
- Personnel should be advised that bleach can damage the dyes of textiles (such as clothing).

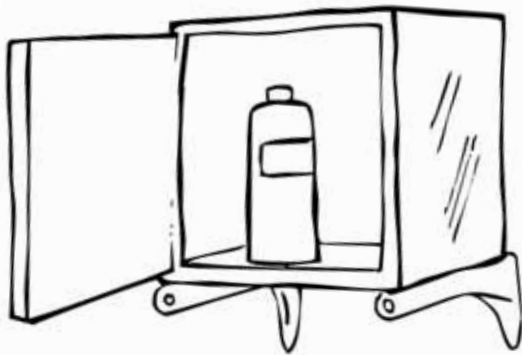


Fig. 16: Keep bleach out of reach of children and animals.



Fig. 17: Keep windows and doors open to keep bleach fumes from becoming too strong.



Fig. 18: In case of accidental contact with bleach, wash the exposed surface immediately with cold water.

TRAINING EXERCISES AND EVALUATION QUESTIONS

TRAINING EXERCISES FOR UNIT 4

Exercise No.	Exercise	Rationale
4-1	<p>Separate patients in the clinic</p> <p>Draw a diagram of the local clinic including waiting areas, rooms and include windows and doors. Have the CHWs track the patient from the time they enter the clinic to the time they leave showing where they would place the patient.</p>	Trainers should watch out for physical separation and natural ventilation in this exercise. Ask where the CHW would ask the patient to wait if the waiting area was crowded and there were few or no seats.
4-2	<p>Clean the clinic</p> <p>Using the same diagram, have the CHWs identify how they would clean the surfaces in the waiting areas, the examination room, and the equipment in each of these rooms and what type of cleaner they would use.</p> <p>Trainers should make sure that the CHWs identify all the possible surfaces that could be contaminated with respiratory secretions. Remind the CHWs that this includes pens, thermometers and all types of equipment.</p> <p>If the training is taking place in a clinic setting, have the trainees actually clean the environment to demonstrate the skills required.</p>	Applying the information to the actual setting makes the content more meaningful and allows the trainer to clarify important points.
4-3	<p>Create posters on reporting symptoms of ARDs</p> <p>Have the CHWs create posters encouraging patients to report symptoms of ARDs that are specific to their local context and can be posted in the clinic.</p>	Creating posters requires the CHWs to have in-depth understanding of the symptoms, allows for integration and application of the material and gives the CHWs a product to take home with them.

Exercise No.	Exercise	Rationale
4-4	<p>Example of diluting bleach (if locally available)</p> <p>If bleach is available locally, bring an empty bleach bottle filled with water. Provide a container of clean water. Using cups, glasses, utensils commonly available in the community or the bleach bottle lid as a measuring tool, have the trainees demonstrate how they might dilute the bleach with one part bleach to 99 parts cold water to give a final concentration of 0.05% (for an initial concentration of 5% bleach).</p>	Under-dilution (bleach is too strong) and over-dilution (bleach is too weak) are likely if the trainees do not use some approach to measure 99 parts of water and one part bleach (if the initial concentration is 5% bleach).

ARDs, acute respiratory diseases; CHW, community health worker; HCW, health-care worker.

EVALUATION QUESTIONS FOR UNIT 4

Question No.	Question	Answer
4-1	<p>Which of the following is the most important thing to do in the clinic setting?*</p> <p>a) separation of patients b) use of natural ventilation c) wearing a gown</p>	While both separating patients and using natural ventilation are important, separating patients is the best way to reduce the spread of the ARD.
4-2	When cleaning the clinic after the patient has been in the waiting area, why is it better to use a damp mop and damp dust-cloth than a dry broom and dry dust-cloth to remove the infectious particles?	Using a damp mop and damp dust-cloth prevents moving the infectious particles from the surfaces where they have settled back into the air.
4-3	After cleaning the clinic, what are the two most important things to remember?	Safely dispose of the cleaning material (e.g. rags), and then wash your hands.

ARDs, acute respiratory diseases.

Note to trainers: Ideally, evaluation will include a demonstration of how to perform these measures through role play or return demonstration (i.e. demonstration by the trainee of something they have just been taught or that has just been demonstrated by the trainer). However, the setting may allow for verbal or written answers only. The most critical items are marked with an asterisk (*).

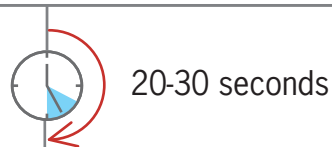
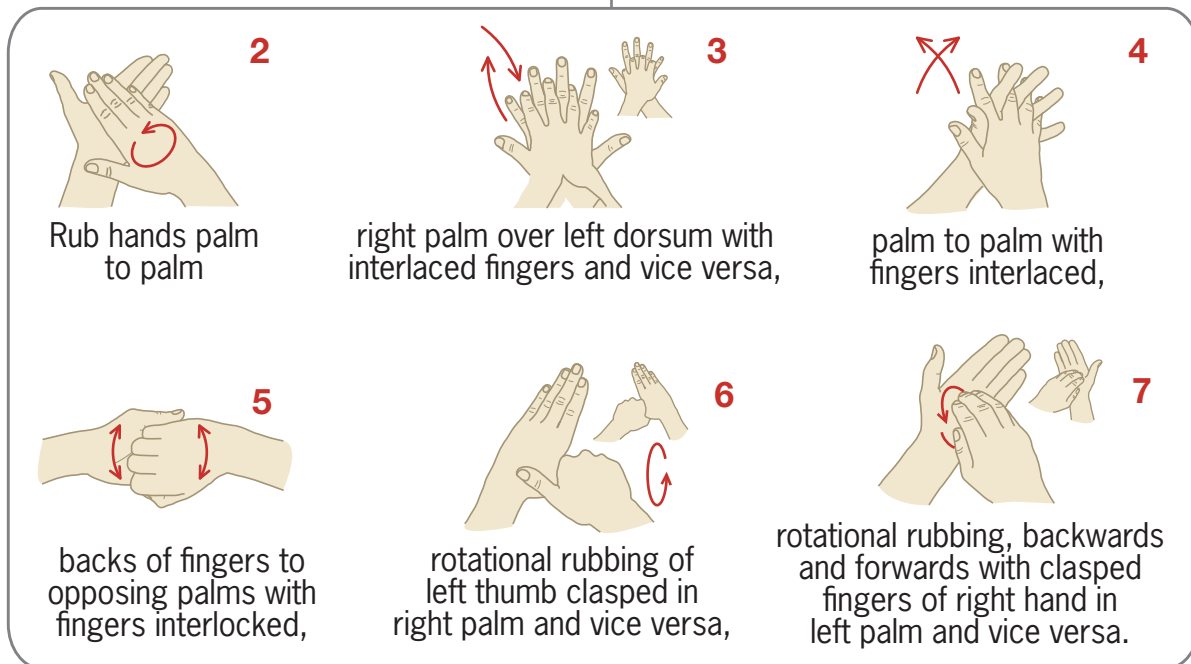
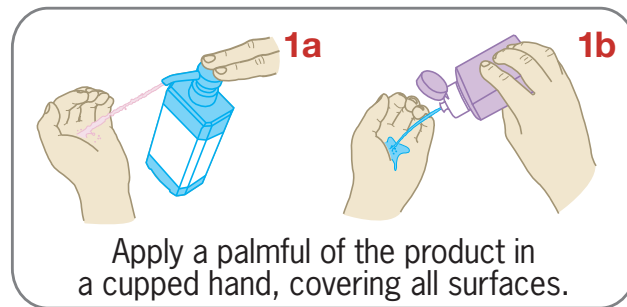
ANNEX I

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

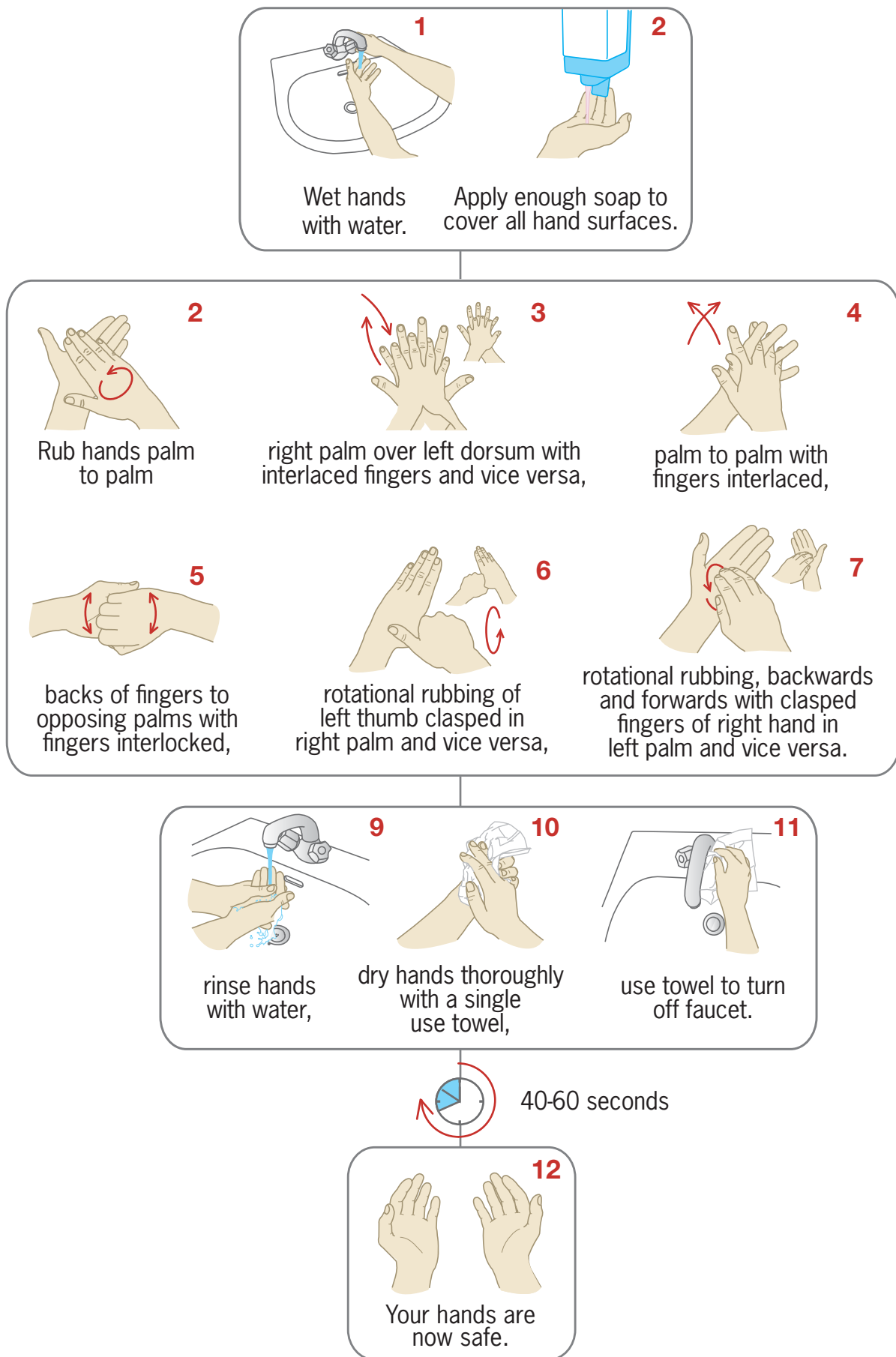
Infrastructure		
Functioning telephone	YES	NO
Any other means to rapidly communicate with the health system	YES	NO
Potable water	YES	NO
Sewerage system	YES	NO
Cooking source and fuel	YES	NO
Operable electricity	YES	NO
Operable heat source	YES	NO
Air conditioning	YES	NO
Accommodation		
Separate room/bedroom for the patient	YES	NO
Accessible bathroom in the home	YES	NO
Resources		
Food	YES	NO
Necessary medications	YES	NO
Medical masks (patient)	YES	NO
Medical masks (care providers, household contacts)	YES	NO
Gloves	YES	NO
Hand hygiene	YES	NO
Household cleaning products	YES	NO
Primary care and support		
Person to provide care and support	YES	NO
Access to medical advice/care	YES	NO
Any at-risk people at home (e.g. children < 2 years of age, elderly > 65 years of age, immunocompromised people)	YES	NO

ANNEX II

How to hand-rub with alcohol-based formulation



How to hand-wash with soap and water



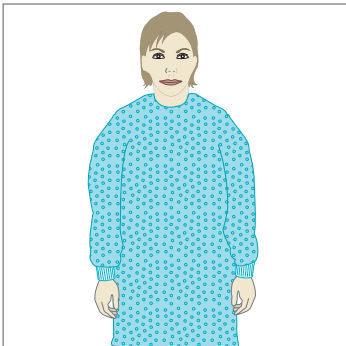
ANNEX III

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?



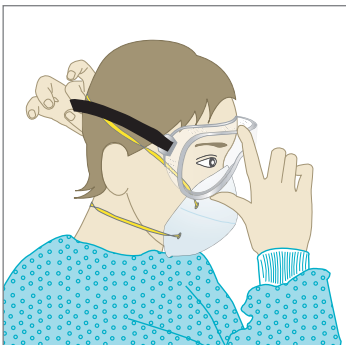
Step 2

- Put on a gown.



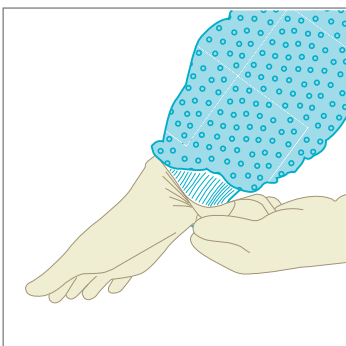
Step 3

- Put on mask.



Step 4

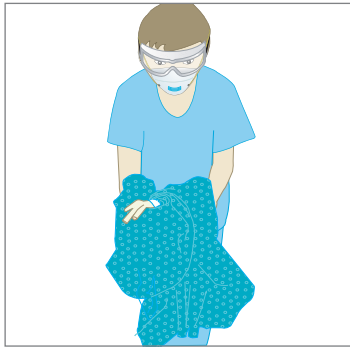
- Put on eye protection e.g. visor, face shield, goggles (consider anti-fog drops or fog-resistant goggles).
- Caps are optional: if worn, put on after eye protection.



Step 5

- Put on gloves (over cuff).

How to take off personal protective equipment (PPE)

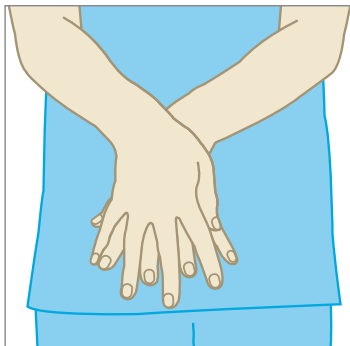


Step 1

- 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.



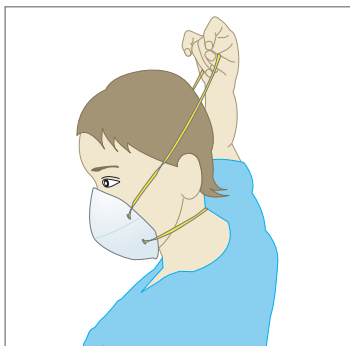
Step 2

- Perform hand hygiene.



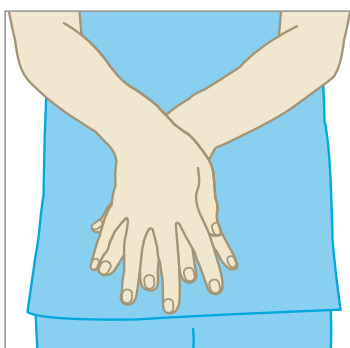
Step 3

- 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.

NOTES

