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RESPIRATORY INFECTION CONTROL IN HEALTH CARE FACILITIES

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TRAINING APPROACH OVERVIEW

BEFORE STARTING THIS COURSE

This course will be conducted in a way that is different from traditional training courses. First of all, it is based on the assumption that people participate in the course because they:

- Are interested in the topic
- Wish to improve their knowledge or skills, and thus their job performance
- Desire to be actively involved in course activities

To be effective, clinical trainers must use appropriate training strategies, particularly “hands-on” training techniques, which are best reflected in this ancient Chinese proverb.

The training approach used in this course stresses the importance of the cost-effective use of resources and application of relevant educational technologies including humane training techniques. The latter encompass the use of equipment used for infection prevention, or a simulation in a model isolation room, to minimize risk to the participants and patients, and also to facilitate learning.

MASTERY LEARNING

The mastery learning approach assumes that all participants can master (learn) the required knowledge, attitudes or skills provided sufficient time is allowed and appropriate learning methods are used. The goal of mastery learning is that 100 percent of the participants will “master” the knowledge and skills on which the learning is based.

Mastery learning is used extensively in inservice training where the number of participants, who may be practicing clinicians, is often small. Although the principles of mastery learning can be applied in preservice education, it must be applied across a longer period of time and multiple skills must be tracked simultaneously.

Although some participants are able to acquire new knowledge or new skills immediately, others may require additional time or alternative

—Confucius
learning methods before they are able to demonstrate mastery. Not only do people vary in their abilities to absorb new material, but individuals also learn best in different ways—through written, spoken or visual means. Effective learning strategies, such as mastery learning, take these differences into account and use a variety of teaching methods.

The mastery learning approach also enables the participant to have a self-directed learning experience. This is achieved by having the trainer serve as facilitator and by changing the concept of testing and how test results are used. Moreover, the philosophy underlying the mastery learning approach is one of continual assessment of learning, in which the trainer regularly informs participants of their progress in learning new information and skills.

Mastery learning is most successful in the context of a performance improvement initiative at the participant’s worksite. By approaching learning as a component of an overall strategy to improve performance and quality of clinical care, the learning becomes more relevant and more readily applied. When participants and health service supervisors have done an assessment of current practice and actual performance – as compared to some recognized performance standard – then gaps can be identified. If these gaps are related to a lack of knowledge or skills, then a training intervention may be the appropriate way to address this gap, and thus, improve services. With this in mind, participants come to a training course with a focused objective and a greater readiness to learn.

With the mastery learning approach, assessment of learning is:

- Competency-based, which means assessment is keyed to the learning objectives and emphasizes acquiring the essential skills and attitudinal concepts needed to perform a job, not just to acquiring new knowledge.
- Dynamic, because it enables participants to receive continual feedback on how successful they are in meeting the course objectives.
- Less stressful, because from the outset participants, both individually and as a group, know what they are expected to learn, know where to find the information and have ample opportunity for discussion with the trainer.

**KEY FEATURES OF EFFECTIVE CLINICAL TRAINING**

Mastery learning is based on principles of adult learning. This means that learning is participatory, relevant and practical. It builds on what the participant already knows or has experienced, and provides opportunities for practicing skills. Key features of mastery learning are that it:
- Uses behavior modeling,
- Is competency-based, and
- Incorporates humanistic learning techniques.

**Behavior Modeling**

Social learning theory states that when conditions are ideal, a person learns most rapidly and effectively from watching someone else perform (model) a skill or activity. For modeling to be successful, however, the trainer must clearly and properly demonstrate the skill or activity so that participants have a clear picture of the performance expected of them.

Behavior modeling, or observational learning, takes place in three stages. In the first stage, **skill acquisition**, the participant sees others perform the procedure and acquires a mental picture of the required steps. Once the mental image is acquired, the participant attempts to perform the procedure, usually with supervision. Next, the participant practices until **skill competency** is achieved, and s/he feels confident performing the procedure. The final stage, **skill proficiency**, occurs with repeated practice over time.

<table>
<thead>
<tr>
<th>Skill Acquisition</th>
<th>Knows the steps and their sequence (if necessary) to perform the required skill or activity but needs assistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skill Competency</td>
<td>Knows the steps and their sequence (if necessary) and can perform the required skill</td>
</tr>
<tr>
<td>Skill Proficiency</td>
<td>Knows the steps and their sequence (if necessary) and effectively performs the required skill or activity</td>
</tr>
</tbody>
</table>

**COMPETENCY-BASED TRAINING**

Competency-based training (CBT) is learning by doing. It focuses on the specific knowledge, attitudes and skills needed to carry out the procedure or activity. How the participant performs (i.e., a combination of knowledge, attitudes and, most important, skills) is emphasized rather than just the information learned. Competency in the new skill or activity is assessed objectively by evaluating overall performance.

To successfully accomplish CBT, the clinical skill or activity to be taught must be broken down into its essential steps. Each step is then analyzed to determine the most efficient and safe way to perform and learn it. The process is called **standardization**. Once a procedure, such as wearing protective suits, has been standardized, competency-based learning guides and evaluation checklists can be developed to make learning the necessary
steps or tasks easier and evaluating the participant’s performance more objective.

An essential component of CBT is coaching, in which the classroom or clinical trainer first explains a skill or activity and then demonstrates it using a simulation model or other training aid, such as a video. Once the procedure has been demonstrated and discussed, the trainer then observes and interacts with participants to guide them in learning the skill or activity, monitoring their progress and helping them overcome problems.

The coaching process ensures that the participant receives feedback regarding performance:

- **Before practice**—The trainer and participants meet briefly before each practice session to review the skill/activity, including the steps/tasks that will be emphasized during the session.

- **During practice**—The trainer observes, coaches and provides feedback to the participant as s/he performs the steps/tasks outlined in the learning guide.

- **After practice**—Immediately after practice, the trainer uses the learning guide to discuss the strengths of the participant’s performance and also offer feedback and specific suggestions for improvement.

**HUMANISTIC TRAINING TECHNIQUE**

The use of more humane (humanistic) techniques allows the participant to learn and practice new skills in a simulation rather than during an actual situation or with a patient, which then contributes to better clinical learning. This reduces stress for the participant as well as risk of injury and discomfort to the patient or the participant. Thus, effective use of models (humanistic approach) is an important factor in improving the quality of clinical training and, ultimately, service provision.

Before a participant performs a clinical procedure at the actual clinical setting, two learning activities should occur:

- The **clinical trainer** should **demonstrate** the required skills and patient interactions several times using an anatomic model, role plays or simulations.

- Under the guidance of the trainer, the **participant should practice** the required skills and patient interactions using the model, role plays or simulations and actual instruments in a setting that is as similar as possible to the real situation.
Only when skill competency has been demonstrated in the classroom should participants have their first contact with a patient.

This often presents challenges in a setting where there are large numbers of participants. Before any participant provides services to a patient, however, it is important that the participant demonstrate skill competency using models, role plays or simulations, especially for core skills.

When mastery learning, which is based on adult learning principles and behavior modeling, is integrated with CBT, the result is a powerful and extremely effective method for providing clinical training. And when humanistic training techniques, such as using anatomic models and other learning aids, are incorporated, training time and costs can be significantly reduced.

**COMPONENTS OF THE INFECTIOUS RESPIRATORY ILLNESSES COURSE PACKAGE**

This clinical course is geared toward helping practitioners change infection control practices in themselves and in the facilities in which they work. For that reason, the course content is based on the practices described in the following two pocket guides:

- *Respiratory Infection Control in Health Care Facilities: Summary Guidance*
- *Respiratory Infection Control in Health Care Facilities: A Quick Reference Guide*

The detailed explanation for the practices and behaviors in those pocket guides is contained in the following technical documents:

- *Tuberculosis Infection-Control in the Era of Expanding HIV Care and Treatment*, Addendum to *WHO Guidelines for the Prevention of Tuberculosis in Health Care Facilities in Resource-Limited Settings*

In addition, the course package contains:

- A participant’s handbook containing the course schedule and description, learning guides and skills checklists.
- A trainer’s notebook, which includes all participant handbook contents plus the answer key for the questionnaire.
For the most current clinical information on avian influenza, tuberculosis and other respiratory infections, the participant and trainer are also referred to the following Web sites of the Centers for Disease Control and Prevention (CDC) and the World Health Organization (WHO):

http://www.cdc.gov/flu/avian/
http://www.who.int/csr/disease/avian_influenza/en/

**USING THE LEARNING RESOURCE PACKAGE**

In designing the training materials for this course, particular attention has been paid to making them “user friendly” and to permitting the course participants and clinical trainer the widest possible latitude in adapting the training to the participants’ (group and individual) learning needs. For example, at the beginning of each course an assessment is made of each participant’s knowledge. The results of this pre-course assessment are then used jointly by the participants and an advanced or master trainer to adapt the course content as needed so that the training focuses on acquisition of new information and skills.

A second feature relates to the use of the reference manual and participant’s handbook. The pocket guides and the additional reference materials are designed to provide all of the essential information needed to conduct the course in a logical manner. Because they serve as the “text” for the participants and the “example of desired behaviors” for the trainer, special handouts or supplemental materials are not needed. In addition, because the manual and additional reference materials contain only information that is consistent with the course goals and objectives, they become an integral part of all classroom activities, such as giving an illustrated lecture or leading a discussion.

The Course Notebook for Participants, on the other hand, serves a dual function. First, and foremost, it is the “road map” that guides the participant through each phase of the course. It contains the course syllabus and course schedule, checklists and learning guides as well as picture job aids needed during the course.

The Course Notebook for Trainers contains the same material as the participant’s notebook as well as material for the trainer. In addition, it contains the answer keys to the questionnaires.

In keeping with the training philosophy on which this course is based, all training activities will be conducted in an interactive, participatory manner. To accomplish this requires that the role of the trainer continually change throughout the course. For example, the trainer is an
instructor when presenting a classroom demonstration; a facilitator when conducting small group discussions or using role plays; and shifts to the role of coach when helping participants practice a procedure. Finally, when objectively assessing performance, the trainer serves as an evaluator.

In summary, the CBT approach used in this course incorporates a number of key features. First, it is based on adult learning principles, which means that it is interactive, relevant and practical. Moreover, it requires that the trainer facilitate the learning experience rather than serve in the more traditional role of an instructor or lecturer. Second, it involves use of behavior modeling to facilitate learning a standardized way of performing a skill or activity. Third, it is competency-based. This means that evaluation is based on how well the participant performs the procedure or activity, not just on how much has been learned. Fourth, where possible, it relies heavily on the use of anatomic models and other training aids (i.e., it is humanistic) to enable participants to practice repeatedly the standardized way of performing a skill or activity before working with clients. Thus by the time the trainer evaluates each participant’s performance, using a checklist, every participant should be able to perform every skill or activity competently. This is the ultimate measure of training.
COURSE DESCRIPTION

This course was developed to guide clinicians (doctors, nurses and other clinicians) and other health workers caring for patients with infectious respiratory illnesses and facility managers to implement effective infection control practices at their health care facility. The design of this course is based on the assumption that the participants are qualified service providers who have basic infection control skills and are familiar with infection control principles.

This course has three components:

- Review of infection control practices for infectious respiratory illnesses (e.g., avian influenza, tuberculosis). Clinician participants will participate in sessions on Standard Precautions and Transmission-Based Precautions, combined precautions for infectious respiratory illnesses, and caring for patients with infectious respiratory illnesses, including such procedures as handwashing, gloving and the use of personal protective equipment.

- Clinical skill practice. Opportunity is provided during the course for practice of clinical skills in a simulated environment. Individual skills relevant to caring for a patient with an infectious respiratory illness will be demonstrated and then practiced under supervision in order for the participant to gain competence in the necessary skills.

- Small group work. Participants will work in groups (by department, facility or country) to identify gaps and develop implementation and follow-up plans to prevent the spread of infectious respiratory illnesses in the health care facility.

The three components of the course may be modified or expanded depending on the composition of the group and needs of the participants.

The course builds on each participant’s past knowledge and takes advantage of her/his high motivation to accomplish the learning tasks in the minimum time. Training emphasizes doing, not just knowing, and uses competency-based evaluation of performance.

The course works best when it is a component of an overall program to implement infection control standards within a clinical facility and it is linked to a measurable mechanism to improve performance of the health care team. When performance of the team in the workplace is assessed prior to this training, participants come to the course with a clear objective and purpose for their learning. Activities and learning
approaches are seen as relevant to performance and improved quality in the workplace and participants begin thinking about how they will use this information and these skills.

Specific characteristics of this course are as follows:

- **Knowledge transfer**: The trainers use a variety of adult learning techniques to present the critical information during the course, including facilitated discussions, case studies, illustrated lectures, hands-on learning and exercises. All necessary information is contained in the pocket guides and accompanying reference documents. Each participant is given a personal copy of these items for use during the course and continued reference after the course.

- **Knowledge assessment**: During the morning of the first day, participants demonstrate their knowledge of infection control by completing a written initial knowledge assessment. The trainers use that information to reinforce what is already known and to focus on new information. The trainers use a mid-course knowledge assessment to ensure that the information is learned. In addition, the clinical trainer continually carries out ongoing knowledge assessment of participants in the learning environment through question and answering.

- **Skill transfer**: Classroom and clinical sessions focus on key aspects of infection control clinical skills. Participants are given important decision-making skills as well as psychomotor skills using learning tools such as case studies, role plays, exercises and skill learning guides. Learning takes place at skill stations where each participant is given the chance to practice the necessary skills.

- **Skill assessment**: Participants work together to document progress in learning new skills by using the clinical skills learning guides. A clinical trainer uses competency-based skills checklists to evaluate each participant’s performance. Continuous coaching by trainers ensures that each participant’s performance is monitored and assessed.

Participants’ successful completion of the course is, therefore, based on their mastery of the knowledge and skills components.

**COURSE OVERVIEW**

**Course Description.** This 3-day course is designed to prepare participants to apply updated knowledge and skills in respiratory infection control (RIC) focusing on Standard and Transmission-Based Precautions against the transmission of infectious respiratory illnesses at their institution, through a humanistic and participative approach to learning.
Course Goals. To prepare competent health care workers who can provide effective care to control the spread of infectious respiratory illnesses in the health care facility.

Participant Learning Objectives
By the end of the training course, the participant will be able to:

- Describe the mechanism of transmission of various infectious respiratory pathogens.
- Describe the hierarchy of respiratory infection control and the fundamentals of infection control for health care providers related to preventing transmission of infectious respiratory pathogens.
- List the issues related to case detection/identification of infectious respiratory illnesses in a health care setting.
- Describe correct placement and transportation of patients.
- Demonstrate the precautions for infection control in infectious respiratory illnesses and understand how to use them to prevent secondary transmission of infectious respiratory illnesses in health care facilities.
- Demonstrate appropriate understanding of environmental ventilation and management practices.
- Describe appropriate cough etiquette.
- Demonstrate the proper selection and use of masks.
- Describe mortuary care and infection control practices during post-mortem examination.

Training/Learning Methods
- Illustrated lectures and group discussion
- Individual and group exercise
- Simulated practice with RIC equipment at skill stations
- Case studies
- Role plays
Training Materials

- The main documents for the desired respiratory infection control practices resulting from this course are Respiratory Infection Control in Health Care Facilities: Summary Guidance and Respiratory Infection Control in Health Care Facilities: Summary Guidance: A Quick Reference Guide
- Course Notebook for Participants
- Course Notebook for Trainers
- Infection prevention equipment and materials
- PowerPoint presentations
- For reference on respiratory infection control, it is suggested that copies of the following WHO and CDC guidelines be available during the course:
  - Infection Prevention and Control of Epidemic- and Pandemic-Prone Acute Respiratory Diseases in Health Care, WHO Interim Guidelines, June 2007
  - Tuberculosis Infection-Control in the Era of Expanding HIV Care and Treatment, Addendum to WHO Guidelines for the Prevention of Tuberculosis in Health Care Facilities in Resource-Limited Settings

For reference on general infection prevention practices, it is suggested that copies of the following Jhpiego manual be available during the course:


Participant Selection Criteria

Participants for this course may be practicing clinicians (doctors, nurses and other clinicians) and other staff (administrators, department heads, lab staff) who are capable of providing consistent institutional support for implementation of infection control practices (e.g., supplies, equipment, supervision, linkages with referral facilities, etc.).

- Participants should have the support of their supervisors or managers in order to achieve improved job performance after completing the course. In particular, participants should be prepared to communicate with supervisors or managers about the course and seek endorsement for training, encouragement for attendance and participation, and involvement in the transfer of new knowledge and skills to their jobs. Participants should also be prepared to discuss with their supervisors and managers the level of support (both administrative and material) they might need to incorporate preventive measures against
tuberculosis, avian influenza or other infectious respiratory pathogens into the health care facility practices.

**Methods of Evaluation**
- Initial Knowledge Assessment and Course Knowledge Questionnaire
- Learning Guides and Checklists

**Course Duration**
- Three 8-hour days, with 1-hour lunch each day

**Suggested Course Composition**
- One facilitator for each five participants
<table>
<thead>
<tr>
<th>DAY 1</th>
<th>DAY 2</th>
<th>DAY 3</th>
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<tbody>
<tr>
<td><strong>08:00–12:30</strong></td>
<td><strong>08:00–12:30</strong></td>
<td><strong>08:00–12:30</strong></td>
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<tr>
<td><strong>Opening:</strong></td>
<td><strong>Agenda/Warm-up</strong></td>
<td><strong>Agenda and Warm-up</strong></td>
</tr>
<tr>
<td>• Welcome and introductions</td>
<td><strong>Presentation/Demonstration/Discussion:</strong></td>
<td><strong>Presentation/Discussion:</strong></td>
</tr>
<tr>
<td>• Participant expectations</td>
<td>• Hand hygiene—rationale and technique</td>
<td>• Transmission-Based Precautions</td>
</tr>
<tr>
<td><strong>Overview of the Course:</strong></td>
<td>• Personal protective equipment—rationale and technique</td>
<td>• Contact/Airborne/Droplet Precautions</td>
</tr>
<tr>
<td>• Goals and objectives</td>
<td><strong>Exercise:</strong> Selecting and Using Masks</td>
<td>• Mortuary care and post-mortem examination</td>
</tr>
<tr>
<td>• Review of course material</td>
<td><strong>Presentation/Discussion:</strong></td>
<td><strong>Small Group Work:</strong> Case studies</td>
</tr>
<tr>
<td><strong>Initial Knowledge Assessment</strong></td>
<td>• Respiratory hygiene/cough etiquette</td>
<td><strong>Exercises:</strong> Infection Control Measures for Procedures on Patients with Respiratory Infections</td>
</tr>
<tr>
<td><strong>Presentation/Discussion:</strong></td>
<td><strong>Presentation/Demonstration/Discussion:</strong></td>
<td><strong>Clinical Simulation:</strong> Fast Tracking of a Patient with Coughing and Sneezing</td>
</tr>
<tr>
<td>• Transmission of Tuberculosis and Influenza</td>
<td>• Cleaning the patient care environment</td>
<td><strong>Course Knowledge Questionnaire</strong></td>
</tr>
<tr>
<td>• Hierarchy of Respiratory Infection Control</td>
<td>• Linens and waste disposal</td>
<td></td>
</tr>
<tr>
<td><strong>Review the Group and Individual Knowledge Matrix</strong></td>
<td><strong>Instructions for skill practice at Skill Stations</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Exercise:</strong> Infectious Disease Transmission Cycle</td>
<td></td>
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<tr>
<td><strong>Presentation/Discussion</strong></td>
<td></td>
<td></td>
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<tr>
<td>• Early Recognition, Isolation and Reporting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Screening, Education, Separation, Priority Services</td>
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<td></td>
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</tbody>
</table>

12:30–13:30 LUNCH
<table>
<thead>
<tr>
<th>DAY 1</th>
<th>DAY 2</th>
<th>DAY 3</th>
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</thead>
<tbody>
<tr>
<td><strong>13:30–17:00</strong></td>
<td><strong>13:30–17:00</strong></td>
<td><strong>13:30–17:00</strong></td>
</tr>
<tr>
<td><strong>Presentation/Discussion: Environmental Measures</strong></td>
<td><strong>Skill Practice and Assessment</strong></td>
<td><strong>Review Knowledge Questionnaire</strong></td>
</tr>
<tr>
<td>• Environmental ventilation</td>
<td>All participants rotate among different skill stations for demonstration, discussion, practice and assessment for competency</td>
<td><strong>Small Group Activity:</strong> Gap identification: Preparedness of your health care facility for management of infectious respiratory illnesses</td>
</tr>
<tr>
<td>• Patient placement and transport</td>
<td><strong>Skill Stations</strong> in</td>
<td>• Standard and Transmission-Based Precautions</td>
</tr>
<tr>
<td><strong>Exercise:</strong> Environmental ventilation and patient placement</td>
<td>1. Hand hygiene</td>
<td>• Early recognition, screening and awareness</td>
</tr>
<tr>
<td><strong>Presentation/Discussion</strong></td>
<td>2. Donning and removing Personal Protective Equipment</td>
<td><strong>Presentation</strong> of selected individual/team implementation plans</td>
</tr>
<tr>
<td>• Isolation rooms</td>
<td>3. Cleaning and disinfecting respiratory equipment</td>
<td><strong>Program Summary and Discussions</strong></td>
</tr>
<tr>
<td>• Health care workers or family entering/exiting</td>
<td><strong>Exercise:</strong> Early recognition and care of patients with suspected or confirmed respiratory infections</td>
<td><strong>Course Evaluation</strong></td>
</tr>
<tr>
<td><strong>Exercises:</strong> Early recognition and care of patients with suspected or confirmed respiratory infections</td>
<td><strong>Exercise:</strong> Develop a job aid for screening patients</td>
<td><strong>Certificate Distribution and Closing</strong></td>
</tr>
<tr>
<td><strong>Exercise:</strong> Develop a job aid for screening patients</td>
<td><strong>Summary of Day</strong></td>
<td></td>
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<tr>
<td><strong>Summary of Day</strong></td>
<td><strong>Reading Assignment:</strong> RIC Quick Reference Guide</td>
<td><strong>Reading Assignment:</strong> RIC Summary Guidance</td>
</tr>
</tbody>
</table>
INITIAL KNOWLEDGE ASSESSMENT

HOW THE RESULTS WILL BE USED

The main objective of the Initial Knowledge Assessment is to assist both the trainer and the participant as they begin their work together in the course by finding out what the participants, individually and as a group, know about the course topics. This allows the trainer to identify topics that may need to be stressed during the course. Providing the results of the initial assessment to the participants helps them to focus on their individual learning needs. In addition, the questions show the participants the content that will be presented in the course.

The questions are given in the true/false format. A special form, the Individual and Group Assessment Matrix, is provided to record the scores of all course participants. Using this form, the trainer and participants can quickly chart the number of correct answers for each of the questions. By examining the data in the matrix, the group members can easily determine their collective strengths and weaknesses and jointly plan with the trainer how to best use the course time to achieve the desired learning objectives.

For the trainer, the results of the assessment will show which topics may need more emphasis during the learning sessions. Conversely, for the categories where 85% or more of participants answer the questions correctly, the trainer may choose to spend some of the allotted time on other content.
INITIAL KNOWLEDGE ASSESSMENT AND ANSWER SHEET

Instructions
In the space provided, print a capital T if the statement is true or a capital F if the statement is false.

RESPIRATORY CONTROL PRACTICES IN HEALTH CARE FACILITIES

1. Patients who are coughing and sneezing while waiting to see the doctor should be asked to cover the nose and mouth with a cloth or tissue when coughing or sneezing. ________

2. A patient who comes to the clinic coughing and sneezing should be told to have a seat in the common waiting room until the doctor is available. ________

3. Particulate respirators provide good protection from infection, regardless of work practices or environmental controls. ________

4. Standard Precautions are designed for the care of all persons, patients, clients and staff, regardless of whether or not they are known to be infectious. ________

5. Standard Precautions include placing patients in protective isolation. ________

6. Each disease has only one route of transmission. ________

7. Transmission-Based Precautions are used instead of Standard Precautions for patients with serious respiratory infections. ________

8. Droplet precautions include the use of a mask if within 1 meter of the infected patient. ________

USE OF MASKS AND RESPIRATORS

9. Health care workers (HCWs) should wear particulate respirators when providing routine nursing care to human cases of avian influenza. ________

10. A medical mask should be worn by all HCWs when providing routine care to patients with known tuberculosis. ________

11. When obtaining an induced sputum collection from a patient, HCWs should wear a medical mask. ________

12. When using a nebulizer on a patient, HCWs should always wear a particulate respirator. ________

USE OF GLOVES AND HAND HYGIENE

13. Gloves must never be used as an alternative to hand hygiene. ________

14. HCWs must use an alcohol-based handrub when caring for patients with tuberculosis. ________
ENVIRONMENTAL VENTILATION
15. In high-risk areas of health care facilities such as isolation rooms, the recommended minimal ventilation rate is 12 air changes per hour (ACH).
16. Environmental ventilation can eliminate the risk of infection from respiratory aerosols.

SAFE NEEDLE PRACTICES
17. Before placing a disposable (single-use) needle and syringe in a puncture-proof container or box, you should first carefully recap the needle.

CLEANING RESPIRATORY EQUIPMENT
18. Health care workers must wear gloves, gown, rubber apron, face protection and a medical mask when cleaning respiratory equipment.

MORTUARY CARE
19. Health care workers should follow Standard Precautions when handling the body of a deceased patient.
20. Any kind of fluid from a dead body may transmit disease.

PATIENT PLACEMENT AND TRANSPORT
21. Patients with avian influenza must be placed in Airborne Precaution Rooms (APRs).
22. When cohorting patients with the same suspected or confirmed diagnosis in one room, a distance of at least 1 meter must be maintained between each patient.
23. Patients with acute respiratory diseases (ARDs) must wear a medical mask while being transported outside of cohorting or isolation areas.

PROTECTING THE HEALTH OF STAFF AND VISITORS
24. Family members who wish to view the body of a relative who has died of avian influenza should be required to wear personal protective equipment (PPE).
25. Hand hygiene is required after direct contact with every patient.
EXERCISE SUMMARIES FOR PARTICIPANTS

EXERCISE ONE

INFECTIOUS DISEASE TRANSMISSION CYCLE

Objectives

The purpose of this activity is to:

- Review the conditions that allow infectious diseases to be spread.
- Understand how to break the cycle according to different methods of transmission.

Instructions

- Each small group will be given a card inscribed with one of the following infectious diseases: influenza, tuberculosis, severe acute respiratory syndrome (SARS), hepatitis A, malaria.
- Each small group will work together to draw the transmission cycle of their specific disease on a flipchart. See Appendix A: The Disease Transmission Cycle.
- Each small group will also identify and record on a flipchart barriers or measures to break the transmission cycle and prevent the spread of the infectious disease.
- Each small group will then report back to the plenary session with their answers for a review and discussion of responses.
EXERCISE TWO

ENVIRONMENTAL VENTILATION AND PATIENT PLACEMENT

Objectives

The purpose of this activity is to:

- Identify correct or incorrect/incomplete ventilation and patient placement practices in each photograph or diagram presented, and discuss how to implement correct practices at your own health care facility (HCF) or how to improve incorrect/incomplete practices.
- Understand the basic principles of natural, mechanical and mixed mode ventilation.
- Develop a cost-effective HCF strategy for implementation of adequate ventilation in critically important patient care areas: waiting rooms, examination rooms, corridors, procedure rooms (minor and major surgery, bronchoscopy, induced sputum collection), isolation rooms, cohorted patient wards.
- Understand important principles of patient placement that can maximize benefits of adequate environmental ventilation including location of patient beds and examination tables.

Instructions

- Study the photos/illustrations/diagrams, which will be either projected or distributed, and identify good or bad practices related to environmental ventilation and patient placement. During the group discussion, consider and describe why these are good or bad practices, and if bad, what simple steps can be taken to improve ventilation.
- Draw a typical examination room and a typical patient room or ward in your HCF. Identify the windows, the patient care areas and the entry/exit point for the room. During the group discussion, consider and describe ways to improve ventilation in these areas.
EXERCISE THREE

EARLY RECOGNITION AND CARE OF PATIENTS WITH SUSPECTED OR CONFIRMED RESPIRATORY INFECTIONS

Objectives
The purpose of this activity is to:

- Review the principles of early recognition and care of a patient who presents to a typical health care facility with a suspected or confirmed respiratory infection.
- Understand how to implement precautions in different clinical settings.
- Understand how to prevent transmission of respiratory infections throughout the continuum of care in health care facilities using case scenarios that track a typical patient pathway from reception area or waiting room through triage area to admission requiring general nursing care.

Instructions

- Note Table 1: Early Recognition and Care of Patients with Suspected or Confirmed Respiratory Infections.
- Each small group will answer the questions related to respiratory infection control practices in one of the following scenarios:
  - Quick Reference Guide—Scenario One: Patient Arrival at the Reception Area
  - Quick Reference Guide—Scenario Two: Triage and Physical Examination
  - Quick Reference Guide—Scenario Three: General Nursing Care
- Each small group will have 10 to 15 minutes to discuss and answer the questions and record their answers on a flipchart.
- Each small group will then report back to the plenary session with their answers. During the plenary session, all scenarios will be discussed with an emphasis on similarities and differences in RIC practices in different clinical settings. See Summary Table 1.
Scenario One: Patient Arrival at the Reception Area

Scenario: Patient arrives at the health care facility (HCF) with coughing and sneezing.

Diagnosis is unknown.

What types of procedures will I be undertaking on this occasion?

How close will I be to the patient during these procedures?

What is the likelihood of my having contact with any blood or body fluids during the procedures?

What measures should be in place to stop the patient from transmitting infection?

- Environment

- Patient

- HCW

What infection control supplies should be available?
Scenario Two: Triage and Physical Examination

Scenario: Patient requires triage and physical examination.

Diagnosis is unknown.

What types of procedures will I be undertaking on this occasion?

How close will I be to the patient during these procedures?

What is the likelihood of my having contact with any blood or body fluids during the procedures?

What measures should be in place to stop the patient from transmitting infection?

- Environment

- Patient

- HCW

What infection control supplies should be available?
Scenario Three: General Nursing Care

Scenario: Patient requires general nursing care.

Diagnosis and risk are factors known.

What types of procedures will I be undertaking on this occasion?

How close will I be to the patient during these procedures?

What is the likelihood of my having contact with any blood or body fluids during the procedures?

What measures should be in place to stop the patient from transmitting infection and what pieces of PPE should be available?

- Environment

- Patient

- HCW

What infection control supplies should be available?
EXERCISE FOUR

DEVELOP A JOB AID FOR SCREENING PATIENTS WITH A SUSPECTED INFECTIOUS RESPIRATORY DISEASE OF POTENTIAL CONCERN

Objectives

The purpose of this activity is to:

■ Understand how evidence-based principles of patient screening using epidemiologic and clinical clues can enhance early recognition, isolation and reporting of patients with infectious respiratory diseases of potential concern such as SARS or avian influenza.

■ Develop a real life tool or job aid that can assist facility health care workers to screen incoming patients for acute febrile respiratory illness or prolonged duration of cough more efficiently and effectively. Specific screening criteria may vary depending on the local setting and patient population.

Instructions

■ Each small group will develop a job aid that will help HCWs quickly and effectively screen and identify clients with an infectious respiratory disease of potential concern (SARS, human cases of avian influenza or novel and as yet unreported respiratory infections). A job aid is a tool that helps health care workers do their job better, and according to some standard. Job aids give health care workers the information that they need, at the moment that they need it.

■ Each group will either draw or describe the job aid on a piece of flipchart paper.

■ Show and/or demonstrate all job aids to the plenary group. Critique the job aids for: completeness, accuracy, clarity and ease of use.
EXERCISE FIVE

WHAT IS RIGHT OR WRONG WITH THIS PICTURE?

Objectives
The purpose of this activity is to:

- Start seeing things with “different eyes”
- Identify correct or incorrect/incomplete infection control practices in each photograph presented, and discuss how to implement correct practices in their own sites or how to improve incorrect/incomplete practices

Instructions
- Look at the photos of the infection control practices and discuss the positive infection control practices seen and discuss how these practices are similar or different from their own HCFs. Discuss how to improve the poor practices and how to implement the positive practices in their sites.
EXERCISE SIX

MATCH THE MASK TO THE ACTIVITY

Objectives
The purpose of this activity is to understand:
- What task or activity requires a mask
- What types of masks are preferable and acceptable for the task

Instructions
- Review Table 5 entitled “Match the Mask to the Activity.”
- Fill in the table by answering the questions and selecting the appropriate type of masks.
- Participate in a discussion about the rationale for the answers.
EXERCISE SEVEN

SMALL GROUP WORK: CASE STUDIES

Instructions

- Each small group will discuss respiratory infection control practices in one of the following scenarios and prepare a response to be presented for discussion at the plenary session:

1. Identify the triage/emergency room requirements for evaluating patients presenting with cough and fever in an area where an acute respiratory distress (ARD) of potential concern (e.g., SARS, human cases of avian flu, other new influenza viruses causing human infection, novel ARDs not previously reported that can cause large-scale outbreaks and outbreaks with high morbidity and mortality) is present.

   During the discussion consider:
   - How to prevent transmission between patients as well as to HCWs
   - Patient placement issues
   - Availability of PPE
   - How to prioritize service delivery
   - Staffing issues

2. Identify the types of PPE needed to care for patients with an ARD of potential concern, and the number of each item needed to care for a patient during his/her stay at the health care facility. The group should develop a plan to stockpile PPE for one patient for 7 days, based on the following considerations:
   - What physical care the patient needs (if the person needs a respirator, suctioning, assistance with activities of daily living, etc.).
   - Based on the type of physical care, how many health care providers will be assigned to this patient in a 24-hour period (needs to be limited to the minimum).
   - How often the health care provider(s) will go in and out of the isolation room when providing care.
   - Types of PPE needed and which ones can be reused.

3. Identify the activities that a facility should conduct to prepare for the care of patients with an ARD of potential concern.

   During the discussion consider:
   - Advanced planning
   - Staffing issues
   - Training needs
   - Facility capacity
   - Procurement of supplies
- Reporting systems
- Role of emergency response teams
- Health care needs of HCWs during an epidemic
EXERCISE EIGHT

INFECTION CONTROL MEASURES FOR PROCEDURES ON PATIENTS WITH SUSPECTED OR CONFIRMED RESPIRATORY INFECTIONS

Objectives

The purpose of this activity is to:

- Review infection control measures for health care workers caring for patients with suspected or confirmed respiratory infections during specific clinical procedures: nebulized drug therapy, collection of an induced sputum specimen, resuscitation/intubation/suctioning/extubation, bronchoscopy
- Understand how to implement precautions during different kinds of medical procedures.
- Understand how to prevent transmission of respiratory infections throughout the continuum of care in health care facilities using case scenarios that describe common medical procedures performed on patients with suspected or confirmed respiratory infections.

Instructions

- Review Table 6: Infection Control Measures for Procedures on Patients with Suspected or Confirmed Respiratory Infections.

- Each small group will answer the questions related to respiratory infection control practices in one of the following scenarios:
  - Quick Reference Guide—Scenario Four: Nebulized Drug Therapy
  - Quick Reference Guide—Scenario Five: Collection of an Induced Sputum Specimen
  - Quick Reference Guide—Scenario Six: Resuscitation, Intubation, Suctioning and/or Extubation
  - Quick Reference Guide—Scenario Seven: Bronchoscopy

- Each small group will have 10 to 15 minutes to discuss and answer the questions and record their answers on a flipchart.

- Each small group will then report back to the plenary session with their answers. During the plenary session, all scenarios will be discussed with an emphasis on similarities and differences in RIC practices during different medical procedures.

- See Summary Table 6.
Scenario Four: Nebulized Drug Therapy

Scenario: Patient requires delivery of nebulized drug.

Patient is coughing and has a fever, but diagnosis is unknown.

What types of procedures will I be undertaking on this occasion?

How close will I be to the patient during these procedures?

What is the likelihood of my having contact with any blood or body fluids during the procedures?

What measures should be in place to stop the patient from transmitting infection?
- Environment

- Patient

- HCW

What infection control supplies should be available?
Scenario Five: Collection of an Induced Sputum Specimen

Scenario: Non-intubated patient in any clinical setting with fever and coughing.

Diagnosis is unconfirmed.

What types of procedures will I be undertaking on this occasion?

How close will I be to the patient during these procedures?

What is the likelihood of my having contact with any blood or body fluids during the procedures?

What measures should be in place to stop the patient from transmitting infection and what pieces of PPE should be available?

- Environment

- HCW

What infection control supplies should be available?
Scenario Six: Resuscitation, Intubation, Suctioning and/or Extubation

Scenario: Intubated patient in emergency department, intensive care unit, operating theatre or equivalent setting. The patient’s diagnosis and risk factors are known.

What types of procedures will I be undertaking on this occasion?

How close will I be to the patient during these procedures?

What is the likelihood of my having contact with any blood or body fluids during the procedures?

What measures should be in place to stop the patient from transmitting infection and what pieces of PPE should be available?

- Environment

- HCW

What infection control supplies should be available?
Scenario Seven: Bronchoscopy

Scenario: Sedated patient in emergency department, intensive care unit, procedure room or equivalent setting. The patient’s diagnosis and risk factors are known.

What types of procedures will I be undertaking on this occasion?

How close will I be to the patient during these procedures?

What is the likelihood of my having contact with any blood or body fluids during the procedures?

What measures should be in place to stop the patient from transmitting infection and what pieces of PPE should be available?

- Environment

- HCW

What infection control supplies should be available?
EXERCISE NINE

CLINICAL SIMULATION: EFFECTIVE SCREENING AND FAST TRACKING OF A PATIENT WITH COUGHING AND SNEEZING

Objectives
The purpose of this activity is to provide a simulated experience for learners to practice problem-solving and decision-making skills in screening patients for signs and symptoms of infectious respiratory illnesses and fast tracking their pathway through the health care facility.

Instructions
The activity should be carried out in the most realistic setting possible:

- One learner should play the role of patient and a second learner the role of the HCW. Other learners may be called on to assist the HCW.
- The trainer will give the learner playing the role of HCW information about the patient’s condition and ask pertinent questions.
- The learner will be expected to think quickly and react (intervene) rapidly when the teacher provides information and asks questions.
- Initially, the teacher and learner will discuss what is happening during the simulation in order to develop problem-solving and decision-making skills. Further discussion may take place after the simulation is completed.
- As the learner’s skills become stronger, the focus of the simulation should shift to providing appropriate care in a quick, efficient and effective manner. All discussion and questioning should take place after the simulation is over.
EXERCISE TEN

SMALL GROUP ACTIVITY: GAP IDENTIFICATION, IMPLEMENTATION AND FOLLOW-UP PLANNING

Utilizing the Action Plan Form, participants will identify gaps specific to their site, comparing their existing situation with required respiratory infection control measures. The plans should be as detailed as possible and preferably include names and positions of people, and drawings or plans for rooms and floors of the facility.

In the process of identifying gaps and further developing their implementation plans and follow-up activities, the participants should consider the following:

- Types and quantity of PPE
- Where (source) and how (budget) they are going to get the PPE
- Availability of isolation rooms or identification of rooms/areas that can be used or adapted for isolation of patients with infectious respiratory illnesses
- Location of the isolation room(s), including handwashing and toilet facilities
- Set-up of the isolation room and required patient-care equipment (sphygmomanometers, stethoscopes, thermometers, suction equipment, oxygen, etc.)
- Number of staff required to provide care in the isolation room, type of providers (physician, nurse, housekeeper), and identification of staff by name (consider appropriateness of staff selected for such positions)
- Requirements for transporting patient, if needed
- Information the patient and the family should know for preventing the spread of infectious respiratory illnesses (type of transmission, PPE, hand hygiene, respiratory hygiene and cough etiquette) and ways of delivering this information to the patients and their families (e.g., posters, printed materials, informational lectures, TV/radio, individual counseling)
# Action Plan for Implementation of Improved Respiratory Infection Control Practices

<table>
<thead>
<tr>
<th>Respiratory Infection Control Goal to Be Achieved</th>
<th>Steps to Achieve This Goal</th>
<th>Who Will Be Involved</th>
<th>When Will This Be Done</th>
<th>What Is Needed To Achieve This</th>
</tr>
</thead>
<tbody>
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<td>1.</td>
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</table>
LEARNING GUIDES AND CHECKLISTS FOR RESPIRATORY INFECTION CONTROL SKILLS

USING THE LEARNING GUIDES AND CHECKLISTS

The learning guides for respiratory infection control skills contain the tasks or activities performed by the health care provider in caring for patients with infectious respiratory diseases. The learning guide breaks the task down into discrete steps so that it is easier to learn the procedure. The checklists are a summary of those key tasks, skills and activities performed by the health care provider and are meant to be used in assessment of skill competency.

The participant is not expected to perform all of the steps or tasks correctly the first time s/he practices them. Instead, the learning guides and checklists are intended to:

- Help the participant in learning the correct steps and the order in which they should be performed (skill acquisition); and
- Measure progressive learning in small steps as the participant gains confidence and skill (skill competency).

Used consistently, the learning guides and checklists help participants measure their progress and stay focused on the key steps or tasks. Furthermore, the learning guide is designed to make communication (coaching and feedback) between the participant and clinical trainer easier, more detailed and more helpful.

Because the learning guide is used to help in developing skills, it is important that the rating (scoring) be done as carefully and objectively as possible. The participant’s performance of each step is rated on a three-point scale as follows:

1. **Needs Improvement**: Step or task not performed correctly and/or out of order (if necessary) or is omitted
2. **Competently Performed**: Step or task performed correctly in correct order (if necessary), but participant does not progress from step to step efficiently
3. **Proficiently Performed**: Step or task efficiently and precisely performed in the correct order (if necessary)
The checklist focuses only on the key tasks performed and skills and activities used. The checklist can be used during role play simulations by an observer, by the participant as a self-assessment form, or by the clinical trainer to evaluate the participant’s performance and achievement of skill competency before the end of the course. The rating scale used is described below:

<table>
<thead>
<tr>
<th><strong>Competent:</strong></th>
<th>Performs the step according to the standard procedure or guidelines.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Not Competent:</strong></td>
<td>Unable to perform the step according to the standard procedure or guidelines, or does not perform the step at all.</td>
</tr>
</tbody>
</table>
LEARNING GUIDE ONE

HANDWASHING
(To be used by Participants)

Rate the performance of each step or task observed using the following rating scale:

1 **Needs Improvement**: Step or task not performed correctly or out of sequence (if necessary) or is omitted

2 **Competently Performed**: Step or task performed correctly in proper sequence (if necessary), but participant does not progress from step to step efficiently

3 **Proficiently Performed**: Step or task efficiently and precisely performed in the proper sequence (if necessary)

<table>
<thead>
<tr>
<th>LEARNING GUIDE FOR HANDWASHING WITH SOAP AND WATER</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STEP/TASK</strong></td>
</tr>
<tr>
<td><strong>PREPARATION</strong></td>
</tr>
<tr>
<td>1. Examine hands for visible dirt or contamination with proteinaceous material.</td>
</tr>
<tr>
<td>2. If hands are visibly dirty (or if alcohol-based handrub is unavailable), locate hand soap. Antiseptic is not required.</td>
</tr>
<tr>
<td>3. Identify source of clean water (tap or other source).</td>
</tr>
<tr>
<td>4. Check flow of the water (tap, shower) and waste water container if no drains.</td>
</tr>
<tr>
<td>5. Use personal towel or a single-use paper towel (if available).</td>
</tr>
<tr>
<td>6. Prepare waste basket for used paper towel.</td>
</tr>
<tr>
<td><strong>WASHING HANDS</strong></td>
</tr>
<tr>
<td>7. Turn on tap and maintain straight stream of water.</td>
</tr>
<tr>
<td>8. Avoid splashing clothes or other parts of the body.</td>
</tr>
<tr>
<td>9. Thoroughly rinse both hands.</td>
</tr>
<tr>
<td>10. Apply enough soap to cover all hand surfaces. Vigorously rub all areas of hands and fingers together for at least 10–15 seconds, paying close attention to areas under fingernails and between fingers in the following manner:</td>
</tr>
<tr>
<td>11. Rub hands, palm to palm.</td>
</tr>
<tr>
<td>12. Rub right palm over back of left hand with interlaced fingers.</td>
</tr>
<tr>
<td>13. Rub left palm over back of right hand with interlaced fingers.</td>
</tr>
<tr>
<td>14. Rub palm to palm with fingers interlaced.</td>
</tr>
<tr>
<td>15. Rub back of fingers of right hand over palm of left hand with fingers interlocked.</td>
</tr>
<tr>
<td>16. Rub back of fingers of left hand over palm of right hand with fingers interlocked.</td>
</tr>
<tr>
<td>17. Rotationally rub right thumb while clasped in left palm.</td>
</tr>
<tr>
<td>18. Rotationally rub left thumb while clasped in right palm.</td>
</tr>
<tr>
<td>STEP/TASK</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>19. Rotationally rub backwards and forwards with clasped fingers of right hand in left palm.</td>
</tr>
<tr>
<td>20. Rotationally rub backwards and forwards with clasped fingers of left hand in right palm.</td>
</tr>
<tr>
<td>21. Rinse hands thoroughly with clean water.</td>
</tr>
<tr>
<td>22. Dry hands with a single-use or personal towel and use the towel to turn off the faucet, or air dry hands.</td>
</tr>
<tr>
<td>23. Throw paper towel into the basket (if using personal towel, hang and allow it to air dry).</td>
</tr>
<tr>
<td>24. Wait 40 to 60 seconds and make sure hands are dry before proceeding with next task.</td>
</tr>
</tbody>
</table>

**Notes:**

- **DO NOT** use alcohol-based hand products when hands are visibly soiled or after exposure of non-intact skin to blood or body fluids.
- If bar soap is used, provide small bars and soap racks that drain. Cut a large bar of soap into small, matchbox-size pieces.
- Avoid dipping hands into basins containing standing water. Even with the addition of an antiseptic agent, such as Dettol® or Savlon®, microorganisms can survive and multiply in these solutions.
- Do not add soap to a partially empty liquid soap dispenser. This practice of “topping off” dispensers may lead to bacterial contamination of the soap.
- When no running water is available, use a bucket with a tap that can be turned off to lather hands and turned on again for rinsing, or use a bucket and pitcher.
- Ensure hands are dry before starting any activity.

**Note:** Used water should be collected in a basin and discarded in a latrine if a drain is not available.
LEARNING GUIDE TWO

HANDRUB WITH ALCOHOL-BASED FORMULATION
(To be used by Participants)

Rate the performance of each step or task observed using the following rating scale:

1 **Needs Improvement**: Step or task not performed correctly or out of sequence (if necessary) or is omitted

2 **Competently Performed**: Step or task performed correctly in proper sequence (if necessary), but participant does not progress from step to step efficiently

3 **Proficiently Performed**: Step or task efficiently and precisely performed in the proper sequence (if necessary)

### LEARNING GUIDE FOR HANDRUB WITH ALCOHOL-BASED FORMULATION

<table>
<thead>
<tr>
<th>STEP/TASK</th>
<th>CASES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PREPARATION</strong></td>
<td></td>
</tr>
<tr>
<td>1. Examine hands for visible dirt or contamination with proteinaceous material.</td>
<td></td>
</tr>
<tr>
<td>2. If hands not visibly dirty, locate alcohol-based handrub container.</td>
<td></td>
</tr>
<tr>
<td><strong>CLEANING HANDS</strong></td>
<td></td>
</tr>
<tr>
<td>3. Turn on tap and maintain straight stream of water. Apply a palmful of handrub product in a cupped hand, and spread out to cover all surfaces.</td>
<td></td>
</tr>
<tr>
<td>4. Rub hands, palm to palm.</td>
<td></td>
</tr>
<tr>
<td>5. Rub right palm over back of left hand with interlaced fingers.</td>
<td></td>
</tr>
<tr>
<td>6. Rub left palm over back of right hand with interlaced fingers.</td>
<td></td>
</tr>
<tr>
<td>7. Rub palm to palm with fingers interlaced.</td>
<td></td>
</tr>
<tr>
<td>8. Rub back of fingers of right hand over palm of left hand with fingers interlocked.</td>
<td></td>
</tr>
<tr>
<td>9. Rub back of fingers of left hand over palm of right hand with fingers interlocked.</td>
<td></td>
</tr>
<tr>
<td>10. Rotationally rub right thumb while clasped in left palm.</td>
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<td>11. Rotationally rub left thumb while clasped in right palm.</td>
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<tr>
<td>12. Rotationally rub backwards and forwards with clasped fingers of right hand in left palm.</td>
<td></td>
</tr>
<tr>
<td>13. Rotationally rub backwards and forwards with clasped fingers of left hand in right palm.</td>
<td></td>
</tr>
<tr>
<td>14. Continue handrubbing until all handrub solution is absorbed.</td>
<td></td>
</tr>
<tr>
<td>15. Wait 20 to 30 seconds before proceeding with next task.</td>
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</tbody>
</table>

**Note**: Do not use alcohol-based hand products when hands are visibly soiled or after exposure of non-intact skin to blood or body fluids. In these cases, wash hands with soap and water, and dry.
LEARNING GUIDE THREE

DONNING AND REMOVING PPE
(To be used by Participants)

Rate the performance of each step or task observed using the following rating scale:

1 Needs Improvement: Step or task not performed correctly or out of sequence (if necessary) or is omitted

2 Competently Performed: Step or task performed correctly in proper sequence (if necessary), but participant does not progress from step to step efficiently

3 Proficiently Performed: Step or task efficiently and precisely performed in the proper sequence (if necessary)

<table>
<thead>
<tr>
<th>STEP/TASK</th>
<th>CASES</th>
</tr>
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<tbody>
<tr>
<td><strong>Preparation</strong></td>
<td></td>
</tr>
<tr>
<td>1. After assessing potential risk of exposure to an infectious disease, don appropriate PPE before contact with the patient, generally before entering the room.</td>
<td></td>
</tr>
<tr>
<td>2. Check that you have all the PPE you need (gloves, gown, goggles or face shield, and mask or respirator) and a waste container/laundry bin for disposal of PPE after removal.</td>
<td></td>
</tr>
<tr>
<td>3. Wash hands with soap or use alcohol-based handrub if no visible soiling of hands.</td>
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</tr>
<tr>
<td><strong>Gown</strong></td>
<td></td>
</tr>
<tr>
<td>4. Fully cover torso from neck to knees, arms to end of wrists, and wrap it around the back.</td>
<td></td>
</tr>
<tr>
<td>5. Fasten at the back of the neck and waist.</td>
<td></td>
</tr>
<tr>
<td><strong>Mask or Particulate Respirator</strong></td>
<td></td>
</tr>
<tr>
<td>6. Secure ties or elastic bands at middle of head and neck.</td>
<td></td>
</tr>
<tr>
<td>7. Fit flexible band to nose bridge.</td>
<td></td>
</tr>
<tr>
<td>8. Fit snugly to face and below chin.</td>
<td></td>
</tr>
<tr>
<td>9. Check fit/seal of respirator.</td>
<td></td>
</tr>
<tr>
<td><strong>Protective Eyewear: Eye Visors, Face Shields or Goggles</strong></td>
<td></td>
</tr>
<tr>
<td>10. Place face shield over mouth, nose, face and eyes and adjust to fit. If shield not available, cover eyes with goggles or visors.</td>
<td></td>
</tr>
<tr>
<td><strong>Gloves</strong></td>
<td></td>
</tr>
<tr>
<td>11. Extend them to cover wrists/cuffs of isolation gown.</td>
<td></td>
</tr>
</tbody>
</table>
**LEARNING GUIDE FOR DONNING AND REMOVING PPE**

<table>
<thead>
<tr>
<th>STEP/TASK</th>
<th>CASES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>REMOVING PPE</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Preparation</strong></td>
<td></td>
</tr>
<tr>
<td>1. Stand at patient’s room doorway or in anteroom.</td>
<td></td>
</tr>
<tr>
<td><strong>Gloves</strong> (Remember that the outside of the gloves is contaminated!)</td>
<td></td>
</tr>
<tr>
<td>2. Grasp the outside of glove with opposite gloved hand; peel off, turning glove inside out.</td>
<td></td>
</tr>
<tr>
<td>3. Hold removed glove in gloved hand.</td>
<td></td>
</tr>
<tr>
<td>4. Slide fingers of ungloved hand under remaining glove at wrist.</td>
<td></td>
</tr>
<tr>
<td>5. Peel glove off over first glove.</td>
<td></td>
</tr>
<tr>
<td>6. Discard gloves in appropriate waste container.</td>
<td></td>
</tr>
<tr>
<td><strong>Protective Eyewear: Eye visors, Face Shields or Goggles</strong> (Remember that the outside of the visor, face shield or goggles is contaminated!)</td>
<td></td>
</tr>
<tr>
<td>7. To remove, handle by headband or ear pieces from behind.</td>
<td></td>
</tr>
<tr>
<td>8. Place in designated receptacle for reprocessing or in waste container.</td>
<td></td>
</tr>
<tr>
<td><strong>Gowns</strong></td>
<td></td>
</tr>
<tr>
<td>9. Unfasten tie of re-usable gown.</td>
<td></td>
</tr>
<tr>
<td>10. Pull away from neck and shoulders, touching inside of gown only.</td>
<td></td>
</tr>
<tr>
<td>11. Turn gown inside out.</td>
<td></td>
</tr>
<tr>
<td>12. Fold or roll into a bundle and place safely in laundry bin for processing in laundry facility.</td>
<td></td>
</tr>
<tr>
<td><strong>Mask or Respirator</strong> (Remember, the front of the mask or respirator is contaminated—<strong>DO NOT TOUCH</strong>)</td>
<td></td>
</tr>
<tr>
<td>13. Leave the patient’s room and close the door.</td>
<td></td>
</tr>
<tr>
<td>14. Grasp the bottom, then the top ties or elastics and remove.</td>
<td></td>
</tr>
<tr>
<td><strong>Hand Hygiene</strong></td>
<td></td>
</tr>
<tr>
<td>15. Wash hands with soap or use alcohol-based handrub if no visible soiling.</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Combination of PPE will affect sequence—be practical!

**General PPE Guidelines**
- Hand hygiene should always be performed, despite PPE use.
- Remove and replace if necessary any damaged or broken pieces of re-usable PPE as soon as you become aware that they are not in full working order.
- Remove all PPE as soon as possible after completing the care and avoid contaminating:
  - The environment outside the isolation room;
  - Any other patient or worker; and
  - Yourself.
LEARNING GUIDE FOUR

CLEANING AND DISINFECTING REUSABLE RESPIRATORY EQUIPMENT
(To be used by Participants)

Rate the performance of each step or task observed using the following rating scale:

1 Needs Improvement: Step or task not performed correctly or out of sequence (if necessary) or is omitted

2 Competently Performed: Step or task performed correctly in proper sequence (if necessary), but participant does not progress from step to step efficiently

3 Proficiently Performed: Step or task efficiently and precisely performed in the proper sequence (if necessary)

<table>
<thead>
<tr>
<th>STEP/TASK</th>
<th>CASES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Identify and collect respiratory equipment that requires processing (decontamination, cleaning, and/or disinfection) between uses. Avoid any contact between a used piece of equipment and skin, mucosa or clothing. Determine whether the piece of respiratory equipment is reusable or single-use.</td>
<td></td>
</tr>
<tr>
<td>2. Dispose of single-use respiratory equipment in an appropriate container with lid.</td>
<td></td>
</tr>
<tr>
<td>3. If processing re-usable respiratory equipment, identify clean water source and soap/detergent container or dispenser for cleaning.</td>
<td></td>
</tr>
<tr>
<td>4. Prepare a 0.5% chlorine solution for decontamination if required. See Tables 3 and 4 for guidelines for preparation of dilute chlorine solutions from liquid and powdered bleach. See Table 2 for decontamination guidelines for common types of respiratory equipment.</td>
<td></td>
</tr>
<tr>
<td>5. For re-usable respiratory equipment, cleaning followed by high-level disinfection may be required. Using the guidance in Table 2, select the most appropriate method for cleaning and processing each of the following items: plastic airway, ambu bag, CPR face mask, rubber suction catheter, plastic suction catheter, ventilator tubing. Note to trainer: Ensure that participant demonstrated correct procedure for processing each of the above items.</td>
<td></td>
</tr>
<tr>
<td>6. Select an appropriate method of high-level disinfection (HLD).</td>
<td></td>
</tr>
<tr>
<td>STEP/TASK</td>
<td>CASES</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>7. Check that you have all the PPE you need (rubber gloves, gown, rubber apron, goggles or face shield, and mask) to protect against splashing, spraying or aerosols.</td>
<td></td>
</tr>
</tbody>
</table>

### PROCESSING REUSABLE RESPIRATORY EQUIPMENT

1. Perform routine hand hygiene

2. Put on appropriate PPE:
   - a gown
   - a rubber apron
   - face protection such as a full face shield or an eye protector such as a visor or goggles
   - a medical mask
   - rubber gloves

3. Using technical guidance in Table 1, determine the correct procedure and appropriately decontaminate each of the following pieces of equipment:
   - plastic airway
   - ambu bag
   - CPR face mask
   - rubber suction catheter
   - plastic suction catheter
   - ventilator tubing

4. Rinse equipment immediately after decontamination where applicable.

5. Separate all parts or pieces of equipment to allow access to all surfaces.

6. Using technical guidance in Table 1, determine the correct procedure and appropriately wash and clean each of the following pieces of equipment with soap or detergent (liquid dish soap) and clean water until all visible signs of soiling are removed:
   - plastic airway
   - ambu bag
   - CPR face mask
   - rubber suction catheter
   - plastic suction catheter
   - ventilator tubing

7. Using technical guidance in Table 1, determine the correct procedure and, appropriately rinse each of the following pieces of equipment completely with clean water inside and out:
   - plastic airway
   - ambu bag
   - CPR face mask
   - rubber suction catheter
   - plastic suction catheter
   - ventilator tubing
**STEP/TASK**

8. Using technical guidance in Table 1, determine the correct procedure and, appropriately disinfect each of the following pieces of equipment:
   - plastic airway
   - ambu bag
   - CPR face mask
   - rubber suction catheter
   - plastic suction catheter
   - ventilator tubing

9. Dry all cleaned and disinfected equipment before storage. Equipment parts may also be air dried on a clean towel or cloth.

10. Store all cleaned and disinfected equipment dry in closed individual packages.

---

**LEARNING GUIDE FOR CLEANING AND DISINFECTING REUSABLE RESPIRATORY EQUIPMENT**

<table>
<thead>
<tr>
<th>STEP/TASK</th>
<th>CASES</th>
</tr>
</thead>
<tbody>
<tr>
<td>8. Using technical guidance in Table 1, determine the correct procedure</td>
<td></td>
</tr>
<tr>
<td>and, appropriately disinfect each of the following pieces of equipment:</td>
<td></td>
</tr>
<tr>
<td>- plastic airway</td>
<td></td>
</tr>
<tr>
<td>- ambu bag</td>
<td></td>
</tr>
<tr>
<td>- CPR face mask</td>
<td></td>
</tr>
<tr>
<td>- rubber suction catheter</td>
<td></td>
</tr>
<tr>
<td>- plastic suction catheter</td>
<td></td>
</tr>
<tr>
<td>- ventilator tubing</td>
<td></td>
</tr>
<tr>
<td>9. Dry all cleaned and disinfected equipment before storage. Equipment</td>
<td></td>
</tr>
<tr>
<td>parts may also be air dried on a clean towel or cloth.</td>
<td></td>
</tr>
<tr>
<td>10. Store all cleaned and disinfected equipment dry in closed individual</td>
<td></td>
</tr>
<tr>
<td>packages.</td>
<td></td>
</tr>
</tbody>
</table>
**CHECKLIST ONE**

**HANDWASHING**

Place a “C” in case box if step is performed *competently* or an “N” if it is not performed *competently* or is omitted.

**Competent:** Performs the step according to the standard procedure or guidelines.

**Not Competent:** Unable to perform the step according to the standard procedure or guidelines, or does not perform the step at all.

<table>
<thead>
<tr>
<th>CHECKLIST FOR HANDWASHING WITH SOAP AND WATER</th>
</tr>
</thead>
</table>

### PREPARATION

<table>
<thead>
<tr>
<th>STEP/TASK</th>
<th>CASES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Check flow of clean water (tap, shower) and waste water container if no drains. <strong>Note:</strong> Used water should be collected in a basin and discarded in a latrine if a drain is not available.</td>
<td></td>
</tr>
<tr>
<td>2. Ready personal towel or a single-use paper towel.</td>
<td></td>
</tr>
<tr>
<td>3. Locate soap.</td>
<td></td>
</tr>
</tbody>
</table>

### WASHING HANDS

<table>
<thead>
<tr>
<th>STEP/TASK</th>
<th>CASES</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Moisten hands thoroughly with soap and running water.</td>
<td></td>
</tr>
<tr>
<td>5. Thoroughly wash all areas of hands and fingers for at least 10–15 seconds.</td>
<td></td>
</tr>
<tr>
<td>6. Rub hands palm to palm.</td>
<td></td>
</tr>
<tr>
<td>7. Rub right palm over back of left hand with interlaced fingers.</td>
<td></td>
</tr>
<tr>
<td>8. Rub left palm over back of right hand with interlaced fingers.</td>
<td></td>
</tr>
<tr>
<td>9. Rub palm to palm with fingers interlaced.</td>
<td></td>
</tr>
<tr>
<td>10. Rub back of fingers of right hand over palm of left hand with fingers interlocked.</td>
<td></td>
</tr>
<tr>
<td>11. Rub back of fingers of left hand over palm of right hand with fingers interlocked.</td>
<td></td>
</tr>
<tr>
<td>12. Rotationally rub right thumb while clasped in left palm.</td>
<td></td>
</tr>
<tr>
<td>13. Rotationally rub left thumb while clasped in right palm.</td>
<td></td>
</tr>
<tr>
<td>14. Rotationally rub backwards and forwards with clasped fingers of right hand in left palm.</td>
<td></td>
</tr>
<tr>
<td>15. Rotationally rub backwards and forwards with clasped fingers of left hand in right palm.</td>
<td></td>
</tr>
<tr>
<td>16. Rinse hands thoroughly with clean water.</td>
<td></td>
</tr>
<tr>
<td>17. Dry hands with a personal towel or a single-use paper towel and use the towel to turn off the faucet, or air dry hands.</td>
<td></td>
</tr>
<tr>
<td>18. Throw paper towel into the basket (if using personal towel, hang and allow to air dry).</td>
<td></td>
</tr>
</tbody>
</table>
CHECKLIST TWO

HANDRUB WITH ALCOHOL-BASED FORMULATION

Place a “C” in case box if step is performed **competently** or an “N” if it is **not** performed **competently** or is omitted.

**Competent:** Performs the step according to the standard procedure or guidelines.

**Not Competent:** Unable to perform the step according to the standard procedure or guidelines, or does not perform the step at all.

<table>
<thead>
<tr>
<th>CHECKLIST FOR HANDBRUB WITH ALCOHOL-BASED FORMULATION</th>
<th>CASES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STEP/TASK</strong></td>
<td><strong>CASES</strong></td>
</tr>
<tr>
<td><strong>PREPARATION</strong></td>
<td></td>
</tr>
<tr>
<td>1. If hands not visibly dirty, locate alcohol-based handrub container.</td>
<td></td>
</tr>
<tr>
<td><strong>SKILL/ACTIVITY PERFORMED SATISFACTORILY</strong></td>
<td></td>
</tr>
<tr>
<td><strong>WASHING HANDS</strong></td>
<td></td>
</tr>
<tr>
<td>2. Apply a palmful of handrub product in a cupped hand and spread out to cover all surfaces.</td>
<td></td>
</tr>
<tr>
<td>3. Rub hands, palm to palm.</td>
<td></td>
</tr>
<tr>
<td>4. Rub right palm over back of left hand with interlaced fingers.</td>
<td></td>
</tr>
<tr>
<td>5. Rub left palm over back of right hand with interlaced fingers.</td>
<td></td>
</tr>
<tr>
<td>6. Rub palm to palm with fingers interlaced.</td>
<td></td>
</tr>
<tr>
<td>7. Rub back of fingers of right hand over palm of left hand with fingers interlocked.</td>
<td></td>
</tr>
<tr>
<td>8. Rub back of fingers of left hand over palm of right hand with fingers interlocked.</td>
<td></td>
</tr>
<tr>
<td>9. Rotationally rub right thumb while clasped in left palm.</td>
<td></td>
</tr>
<tr>
<td>10. Rotationally rub left thumb while clasped in right palm.</td>
<td></td>
</tr>
<tr>
<td>11. Rotationally rub backwards and forwards with clasped fingers of left hand in right palm.</td>
<td></td>
</tr>
<tr>
<td>12. Rotationally rub backwards and forwards with clasped fingers of left hand in right palm</td>
<td></td>
</tr>
<tr>
<td><strong>SKILL/ACTIVITY PERFORMED SATISFACTORILY</strong></td>
<td></td>
</tr>
</tbody>
</table>
## CHECKLIST THREE
### DONNING AND REMOVING PPE

Place a “C” in case box if step is performed **competently** or an “N” if it is not performed **competently** or is omitted.

**Competent:** Performs the step according to the standard procedure or guidelines.

**Not Competent:** Unable to perform the step according to the standard procedure or guidelines, or does not perform the step at all.

<table>
<thead>
<tr>
<th>CHECKLIST FOR DONNING AND REMOVING PPE</th>
<th>CASES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DONNING PPE</strong></td>
<td></td>
</tr>
<tr>
<td>1. Don before contact with the patient.</td>
<td></td>
</tr>
<tr>
<td>2. Check that all PPE and disposal bins are available.</td>
<td></td>
</tr>
<tr>
<td>3. Wash hands with soap or use alcohol-based handrub.</td>
<td></td>
</tr>
<tr>
<td>4. Don PPE in the following sequence:</td>
<td></td>
</tr>
<tr>
<td>• Gown first</td>
<td></td>
</tr>
<tr>
<td>• Mask or respirator covering nose and mouth</td>
<td></td>
</tr>
<tr>
<td>• Protective eyewear: visor, face shield or goggles</td>
<td></td>
</tr>
<tr>
<td>• Gloves</td>
<td></td>
</tr>
<tr>
<td><strong>SKILL/ACTIVITY PERFORMED SATISFACTORILY</strong></td>
<td></td>
</tr>
<tr>
<td><strong>REMOVING PPE</strong></td>
<td></td>
</tr>
<tr>
<td>1. Stand at patient’s room doorway.</td>
<td></td>
</tr>
<tr>
<td>2. Remove PPE in the following sequence (not touching contaminated parts):</td>
<td></td>
</tr>
<tr>
<td>• Gloves</td>
<td></td>
</tr>
<tr>
<td>• Protective eyewear</td>
<td></td>
</tr>
<tr>
<td>• Gown</td>
<td></td>
</tr>
<tr>
<td>3. Discard PPE in waste container.</td>
<td></td>
</tr>
<tr>
<td>4. Leave the patient’s room and close the door.</td>
<td></td>
</tr>
<tr>
<td>5. Remove mask or respirator.</td>
<td></td>
</tr>
<tr>
<td>6. Wash hands with soap or use alcohol-based handrub.</td>
<td></td>
</tr>
<tr>
<td><strong>SKILL/ACTIVITY PERFORMED SATISFACTORILY</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Combination of PPE will affect sequence—be practical!
## CHECKLIST FOUR

### CLEANING AND DISINFECTING REUSABLE RESPIRATORY EQUIPMENT

Place a "C" in case box if step is performed *competently* or an "N" if it is not performed *competently* or is omitted.

**Competent**: Performs the step according to the standard procedure or guidelines.

**Not Competent**: Unable to perform the step according to the standard procedure or guidelines, or does not perform the step at all.

### CHECKLIST FOR CLEANING AND DISINFECTING REUSABLE RESPIRATORY EQUIPMENT

<table>
<thead>
<tr>
<th>STEP/TASK</th>
<th>CASES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PREPARATION</strong></td>
<td></td>
</tr>
<tr>
<td>1. Perform routine hand hygiene.</td>
<td></td>
</tr>
<tr>
<td>2. Put on the proper PPE:</td>
<td></td>
</tr>
<tr>
<td>- a gown</td>
<td></td>
</tr>
<tr>
<td>- a rubber apron</td>
<td></td>
</tr>
<tr>
<td>- face shield or medical mask and protective eyewear</td>
<td></td>
</tr>
<tr>
<td>- rubber utility gloves</td>
<td></td>
</tr>
<tr>
<td><strong>SKILL/ACTIVITY PERFORMED SATISFACTORYLY</strong></td>
<td></td>
</tr>
<tr>
<td><strong>CLEANING AND DISINFECTING SUCTION CATHETERS</strong></td>
<td></td>
</tr>
<tr>
<td>1. Fill a plastic container (or utility sink) with clean water.</td>
<td></td>
</tr>
<tr>
<td>2. Using a brush and liquid or powder detergent, scrub tubing under the surface of the water, removing all blood and other foreign matter.</td>
<td></td>
</tr>
<tr>
<td>3. Pass soapy water through the catheters three times.</td>
<td></td>
</tr>
<tr>
<td>4. Thoroughly rinse the instruments and other items with clean water three times (inside and outside).</td>
<td></td>
</tr>
<tr>
<td>5. Select an appropriate method of HLD</td>
<td></td>
</tr>
<tr>
<td>6. Air dry before use or storage.</td>
<td></td>
</tr>
<tr>
<td><strong>SKILL/ACTIVITY PERFORMED SATISFACTORYLY</strong></td>
<td></td>
</tr>
<tr>
<td><strong>CLEANING AND DISINFECTING PLASTIC AIRWAYS</strong></td>
<td></td>
</tr>
<tr>
<td>1. Wash all surfaces with soap and water.</td>
<td></td>
</tr>
<tr>
<td>2. Rinse with clean water until no soap remains.</td>
<td></td>
</tr>
<tr>
<td>3. Select an appropriate method of HLD.</td>
<td></td>
</tr>
<tr>
<td>4. Air dry before use or storage.</td>
<td></td>
</tr>
<tr>
<td><strong>SKILL/ACTIVITY PERFORMED SATISFACTORYLY</strong></td>
<td></td>
</tr>
<tr>
<td>STEP/TASK</td>
<td>CASES</td>
</tr>
<tr>
<td>-----------</td>
<td>-------</td>
</tr>
<tr>
<td><strong>CLEANING AND DISINFECTING VENTILATOR TUBING</strong></td>
<td></td>
</tr>
<tr>
<td>1. Using a brush, wash with soap and water.</td>
<td></td>
</tr>
<tr>
<td>2. Rinse in clean water until no soap remains.</td>
<td></td>
</tr>
<tr>
<td>3. Select an appropriate method of HLD.</td>
<td></td>
</tr>
<tr>
<td>4. Air dry before use or storage.</td>
<td></td>
</tr>
<tr>
<td><strong>SKILL/ACTIVITY PERFORMED SATISFACTORILY</strong></td>
<td></td>
</tr>
<tr>
<td><strong>CLEANING AND DISINFECTING AMBU BAGS AND CPR FACE MASKS</strong></td>
<td></td>
</tr>
<tr>
<td>1. Wipe exposed surfaces with a gauze pad soaked in 60–90% alcohol or 0.5% chlorine. If surfaces are soiled with organic substances such as blood or other body fluids, use 0.5% chlorine solution. Alcohol is not effective in the presence of organic matter.</td>
<td></td>
</tr>
<tr>
<td>2. Rinse immediately.</td>
<td></td>
</tr>
<tr>
<td>3. Wash exposed surfaces with soap and water.</td>
<td></td>
</tr>
<tr>
<td>4. Rinse with clean water.</td>
<td></td>
</tr>
<tr>
<td>5. Select an appropriate method of HLD.</td>
<td></td>
</tr>
<tr>
<td>6. Air dry before use or storage.</td>
<td></td>
</tr>
<tr>
<td><strong>SKILL/ACTIVITY PERFORMED SATISFACTORILY</strong></td>
<td></td>
</tr>
<tr>
<td><strong>PPE AND HAND HYGIENE AFTER CLEANING</strong></td>
<td></td>
</tr>
<tr>
<td>1. Remove all PPE without touching contaminated areas.</td>
<td></td>
</tr>
<tr>
<td>2. Wash hands with soap and running (or poured) water. Dry with a clean, individual towel or paper towel, or allow hands to air dry. OR Rub hands with an alcohol-based solution until the hands are dry (if hands are not visibly soiled).</td>
<td></td>
</tr>
<tr>
<td><strong>SKILL/ACTIVITY PERFORMED SATISFACTORILY</strong></td>
<td></td>
</tr>
</tbody>
</table>
TABLE 1: EARLY RECOGNITION AND CARE OF PATIENTS WITH SUSPECTED OR CONFIRMED RESPIRATORY INFECTIONS

<table>
<thead>
<tr>
<th>Scenario: A patient arrives at the HCF with coughing and fever</th>
<th>Reception</th>
<th>Physical Exam/Triage</th>
<th>Nursing Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expected types of procedures/patient interactions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proximity to patient</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Likelihood of contact with body fluids</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measures to stop transmission of infection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infection control supplies required</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TABLE 2: GUIDELINES FOR CLEANING AND DISINFECTING REUSABLE RESPIRATORY EQUIPMENT

<table>
<thead>
<tr>
<th>Process</th>
<th>Decontamination</th>
<th>Cleaning</th>
<th>Sterilization</th>
<th>High-Level Disinfection</th>
</tr>
</thead>
<tbody>
<tr>
<td>INSTRUMENTS OR OTHER ITEMS</td>
<td>DECONTAMINATION</td>
<td>CLEANING</td>
<td>STERILIZATION</td>
<td>HIGH-LEVEL DISINFECTION</td>
</tr>
</tbody>
</table>
| AIRWAYS (PLASTIC)           | Soak in a 0.5% chlorine solution for 10 minutes prior to cleaning. Rinse and wash immediately. | Wash with soap and water. Rinse with clean water, air or towel dry. | Not necessary. | ● HLD recommended. Methods vary regionally.  
|                             |                 |                                   |               | ● Air dry before use.    |
| AMBU BAGS AND CPR FACE MASKS| Wipe exposed surfaces with gauze pad soaked in 60–90% alcohol or 0.5% chlorine; rinse immediately. If masks are soiled with organic substances such as blood or other body fluids, use 0.5% chlorine solution. Alcohol is not effective in the presence of organic matter. | Wash with soap and water. Rinse with clean water, air or towel dry. | Not necessary. | ● HLD recommended.  
|                             |                 |                                   |               | ● Methods vary regionally.  
|                             |                 |                                   |               | ● Air dry before use.    |
| SUCTION CATHETERS (RUBBER OR PLASTIC) | Soak in 0.5% chlorine solution for 10 minutes prior to cleaning. Rinse or wash immediately. | Pass soapy water through catheter three times. Rinse three times with clean water (inside and outside). | Not recommended. (Heat from autoclaving or dry-heat ovens will damage plastic catheters; rubber catheters can be autoclaved.) | ● HLD recommended. Methods vary regionally.  
|                             |                 |                                   |               | ● Air dry before use.    |
| VENTILATOR TUBING           | Not necessary.  | Using a brush, wash with soap and water. Rinse with clean water and air dry. | Not possible using an autoclave or dry heat oven. | ● HLD recommended. Methods vary regionally.  
|                             |                 |                                   |               | ● Air dry before use.    |

### TABLE 3: PREPARING DILUTE CHLORINE SOLUTIONS FROM LIQUID BLEACH (SODIUM HYPOCHLORITE SOLUTION) FOR DECONTAMINATION AND HIGH-LEVEL DISINFECTION

<table>
<thead>
<tr>
<th>TYPE OR BRAND OF BLEACH (BY COUNTRY)</th>
<th>CHLORINE % Available</th>
<th>PARTS WATER TO 1 PART BLEACH&lt;sup&gt;a&lt;/sup&gt;</th>
<th>0.5%</th>
<th>0.1%&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 °chlorum&lt;sup&gt;c&lt;/sup&gt;</td>
<td>2.4%</td>
<td></td>
<td>4</td>
<td>23</td>
</tr>
<tr>
<td>JIK (Kenya), Robin Bleach (Nepal)</td>
<td>3.5%</td>
<td></td>
<td>6</td>
<td>34</td>
</tr>
<tr>
<td>12 °chlorum</td>
<td>3.6%</td>
<td></td>
<td>6</td>
<td>35</td>
</tr>
<tr>
<td>Household bleach (USA, Indonesia), ACE (Turkey), Eau de Javal (France) (15 °chlorum)</td>
<td>5%</td>
<td></td>
<td>9</td>
<td>49</td>
</tr>
<tr>
<td>Blanquedor, Cloro (Mexico)</td>
<td>6%</td>
<td></td>
<td>11</td>
<td>59</td>
</tr>
<tr>
<td>Lavandina (Bolivia)</td>
<td>8%</td>
<td></td>
<td>15</td>
<td>79</td>
</tr>
<tr>
<td>Chloros (UK)</td>
<td>10%</td>
<td></td>
<td>19</td>
<td>99</td>
</tr>
<tr>
<td>Chloros (UK), Extrait de Javel (France) (48 °chlorum)</td>
<td>15%</td>
<td></td>
<td>29</td>
<td>149</td>
</tr>
</tbody>
</table>

<sup>a</sup> Read as one part (e.g., cup or glass) concentrated bleach to x parts water (e.g., JIK [0.5% solution]—mix 1 cup bleach with 6 cups water for a total of 7 cups).

<sup>b</sup> Use boiled water when preparing a 0.1% chlorine solution for HLD because tap water contains microscopic organic matter that inactivates chlorine.

<sup>c</sup> In some countries, the concentration of sodium hypochlorite is expressed in chlorometric degrees (°chlorum); one °chlorum is approximately equivalent to 0.3% available chlorine.

Adapted from: WHO 1989.

### Notes:

**How to Make a Dilute Chlorine Solution**

Chlorine solutions made from sodium hypochlorite generally are the least expensive and the most rapid acting and effective products to use for decontamination.

**Formula for Making a Dilute Solution from a Concentrated Solution**

- Check concentration (% concentrate) of the chlorine product you are using. Determine total parts water needed using the formula below.

\[
Total\ Parts\ (TP)\ water = \left[\frac{\%\ Concentrate}{\%\ Dilute}\right] - 1
\]

- Mix 1 part concentrated bleach with the total parts water required.

**Example:** Make a dilute solution (0.5%) from 5% concentrated solution.

**STEP 1:** Calculate TP water: \[
\left[\frac{5.0\%}{0.5\%}\right] - 1 = 10 - 1 = 9
\]

**STEP 2:** Take 1 part concentrated solution and add to 9 parts water.

---

TABLE 4: PREPARING DILUTE CHLORINE SOLUTIONS FROM DRY POWDERS

<table>
<thead>
<tr>
<th>AVAILABLE CHLORINE REQUIRED</th>
<th>0.5%</th>
<th>0.1%b</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium hypochlorite (70% available chlorine)</td>
<td>7.1 g/La</td>
<td>1.4 g/L</td>
</tr>
<tr>
<td>Calcium hypochlorite (35% available chlorine)</td>
<td>14.2 g/L</td>
<td>2.8 g/L</td>
</tr>
<tr>
<td>NaDCCc (60% available chlorine)</td>
<td>8.3 g/L</td>
<td>1.5 g/L</td>
</tr>
<tr>
<td>Chloramine tabletsd (1 g of available chlorine per tablet)</td>
<td>20 g/L (20 tablets/liter)d</td>
<td>4 g/L (4 tablets/liter)d</td>
</tr>
<tr>
<td>NaDCC-based tablets (1.5 g of available chlorine per tablet)</td>
<td>4 tablets/liter</td>
<td>1 tablet/liter</td>
</tr>
</tbody>
</table>

a For dry powders, read x grams per liter (example: Calcium hypochlorite—7.1 grams mixed with 1 liter water).
b Use boiled water when preparing a 0.1% chlorine solution for HLD because tap water contains microscopic organic matter that inactivates chlorine.
c Sodium dichloroisocyanurate
d Chloramine releases chlorine at a slower rate than does hypochlorite. Before using the solution, be sure the tablet is completely dissolved.

Adapted from: WHO 1989.

Notes:

**Formula for Making Chlorine Solutions from Dry Powders**
Check concentration (% concentrate) of the powder you are using. Determine grams bleach needed using the formula below.

\[ \text{Grams/Liter} = \frac{\% \text{ Dilute}}{\% \text{ Concentrate}} \times 1000 \]

Mix measured amount of bleach powder with 1 liter of water.

**Example**: Make a dilute chlorine-releasing solution (0.5%) from a concentrated powder (35%).

**Step 1**: Calculate grams/liter: \[ \frac{0.5\%}{35\%} \times 1000 = 14.2 \text{ g/ L} \]

**Step 2**: Add 14.2 grams (~14 g) to 1 liter of water.

The approximate amounts (grams) needed to make 0.1% and 0.5% chlorine-releasing solutions from several commercially available chlorine-releasing compounds (dry powders) are listed in Table 4.
<table>
<thead>
<tr>
<th>Task or Activity</th>
<th>Are Masks Needed?</th>
<th>Preferred Masks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood pressure check by HCW on patient with no ARD symptoms in region with outbreak of avian flu.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature check by HCW on patient who is coughing and sneezing.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient with no ARD symptoms who is undergoing outpatient treatment for tuberculosis comes to district clinic for routine checkup with HCW.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical examination by HCW of patient with active tuberculosis in airborne precaution room.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transport of patient hospitalized with known avian flu outside of isolation area for chest x-ray.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HCW enters well-ventilated private room of patient with seasonal influenza virus.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient is coughing and sneezing while sitting in the waiting room waiting to see the doctor.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient is admitted to the hospital with cough and fever. The HCW obtains an induced sputum collection.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient is admitted to the hospital with asthma and ARD symptoms. The HCW administers nebulized drug therapy.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient is brought into the emergency department in cardiac arrest and undergoes resuscitation including intubation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HCW performs temperature check on patient with documented streptococcal pneumonia.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>There has been an outbreak of influenza associated with high mortality in the region. A patient who is coughing and sneezing is standing in line waiting to be seen by a HCW.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### TABLE 6: INFECTION CONTROL MEASURES FOR PROCEDURES ON PATIENTS WITH SUSPECTED OR CONFIRMED RESPIRATORY INFECTIONS

<table>
<thead>
<tr>
<th>Scenario: A patient with a respiratory infection undergoes a medical procedure</th>
<th>Nebulized Drug Therapy</th>
<th>Collection of an Induced Sputum Specimen</th>
<th>Resuscitation, Intubation, Suctioning and/or Extubation</th>
<th>Bronchoscopy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expected types of procedures/patient interactions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proximity to patient during the procedure</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Likelihood of contact with blood or body fluids</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measures to stop transmission of infection including types of PPE available</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infection control supplies required</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**TABLE 7: INFECTION CONTROL MEASURES FOR HEALTH CARE WORKERS CARING FOR PATIENTS WITH FEBRILE ACUTE RESPIRATORY DISEASES IN SPECIFIC CLINICAL SETTINGS AND PROCEDURES**

<table>
<thead>
<tr>
<th>SETTING OR PROCEDURE</th>
<th>Hand hygiene</th>
<th>Gloves</th>
<th>Gown</th>
<th>Medical mask for HCW</th>
<th>Particulate respirator for HCW</th>
<th>Eye protection</th>
<th>Respiratory etiquette</th>
<th>Adequately ventilated single room (≥12 ACH)³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reception⁵</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical exam/triage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General nursing care</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specimen collection</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(blood)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nebulization</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specimen collection</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(induced sputum)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aerosol-generating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>procedure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

HCW: Health care worker; ACH: Air changes per hour

¹ All spaces in the health facility should be well-ventilated, not only the single rooms used for isolation purposes.

² Without any direct contact with patient.

Explanatory notes

| No anticipated close contact with the patient. |
| Involves close contact (< 1 meter) with patient. |
| Aerosol-generating procedure associated with pathogen transmission—e.g., intubation; cardiopulmonary resuscitation and related procedures (e.g., manual ventilation, suction); bronchoscopy; and autopsy or surgery involving the use of high-speed devices. |
APPENDIX A: THE DISEASE TRANSMISSION CYCLE, TRANSMISSION TYPES AND PREVENTION

Microorganisms live everywhere in our environment. Humans normally carry them on their skin and in the upper respiratory, intestinal and genital tracts. In addition, microorganisms live in animals, plants, soil, air and water. Some microorganisms, however, are more pathogenic than others, that is, they are more likely to cause disease. Given the right circumstances, all micro-organisms may cause infection, such as when transmitted to an immuno-compromised patient with AIDS.

All humans are susceptible to bacterial infections and also to most viral agents. The number (dose) of organisms necessary to produce infection in a susceptible host varies with the location. When organisms come in contact with bare skin, infection risk is quite low, and all of us touch materials that contain some organisms every day. When the organisms come in contact with mucous membranes or nonintact skin, infection risk increases. Infection risk increases greatly when organisms come in contact with normally sterile body sites, and the introduction of only a few organisms may produce disease.

For bacteria, viruses and other infectious agents to survive and spread, certain factors or conditions must exist. The essential factors in the transmission of disease-producing microorganisms from person to person are illustrated and defined in Figure 1.

Figure 1. The Disease Transmission Cycle

As shown in the above figure, a disease must have certain conditions in order to spread (be transmitted) to others:

- **There must be an agent**—something that can cause illness (virus, bacteria, etc.).
- The agent must have a place it can live (host or reservoir). Many microorganisms that cause disease in humans (pathogenic organisms) multiply in humans and are transmitted from person to person. Some are transmitted through contaminated food or water (typhoid), fecal matter (hepatitis A and other enteric viruses) or the bites of infected animals (rabies) and insects (malaria from mosquitoes).
- The agent must have the right environment outside the host to survive. After the microorganism leaves its host, it must have a suitable environment in which to survive until it infects another person. For example, the bacteria that cause tuberculosis can survive in sputum for weeks, but will be killed by sunlight within a few hours.
- **There must be a person who can catch the disease (susceptible host).** People are exposed to disease-causing agents every day but do not always get sick. For a person to catch an infectious disease (e.g., mumps, measles or chicken pox), he or she must be susceptible to that disease. The main reason most people do not catch the disease is that they have been previously exposed to it (i.e., vaccinated for it or previously had the disease) and their body’s immune system now is able to destroy the agents when they enter the body.
- An agent must have a way to move from its host to infect the next susceptible host. Infectious (communicable) diseases are spread mainly in the following ways:

### CONTACT TRANSMISSION

The most important and frequent mode of transmission of nosocomial infections, is divided into two subgroups: direct-contact transmission and indirect-contact transmission.

- **Direct-contact transmission** involves a direct body surface-to-body surface contact and physical transfer of microorganisms between a susceptible host and an infected or colonized person, such as occurs when a person turns a patient, gives a patient a bath or performs other patient care activities that require direct personal contact. Direct-contact transmission can also occur between two patients, with one serving as the source of the infectious microorganisms and the other as a susceptible host.

- **Indirect-contact transmission** involves contact of a susceptible host with a contaminated intermediate object, usually inanimate, such as contaminated instruments, needles or dressings, or contaminated hands that are not washed and gloves that are not changed between patients.

### DROPLET TRANSMISSION

Theoretically, is a form of contact transmission. However, the mechanism of transfer of the pathogen to the host is quite distinct from either direct- or indirect-contact transmission. Droplets are generated from the source person primarily during coughing, sneezing and talking, and during the performance of certain procedures such as suctioning and bronchoscopy. Transmission occurs when droplets containing microorganisms generated from the infected person are propelled a short distance (within 1 meter or 3 feet) through the air and deposited on the host’s conjunctivae, nasal mucosa or mouth. Because droplets do not remain suspended in the air, special air handling and ventilation are not required to prevent droplet transmission; that is, droplet transmission must not be confused with airborne transmission.
3. AIRBORNE TRANSMISSION

Particle residue [5 µm or smaller in size] of evaporated droplets containing microorganisms that remain suspended in the air for long periods of time) or dust particles containing the infectious agent. Microorganisms carried in this manner can be dispersed widely by air currents and may become inhaled by a susceptible host within the same room or over a longer distance from the source patient, depending on environmental factors; therefore, special air handling and ventilation are required to prevent airborne transmission.

Microorganisms are transmitted in hospitals by several routes, and the same microorganism may be transmitted by more than one route. Transmission-Based Precautions are designed to prevent transmission of microorganisms by these routes in hospitals. Because agent and host factors are more difficult to control, interruption of transfer of microorganisms is directed primarily at transmission.

PREVENTING TRANSMISSION OF INFECTION

Preventing the spread of infectious diseases requires removing one or more of the conditions necessary for transmission of the disease from host or reservoir to the next susceptible host by:

- Inhibiting or killing the agent (e.g., applying an antiseptic agent to the skin before surgery);
- Blocking the agent’s means of getting from an infected person to a susceptible person (e.g., handwashing or using a waterless, alcohol-based antiseptic handrub to remove bacteria or viruses acquired through touching an infected patient or contaminated surface);
- Making sure that people, especially health care workers, are immune or vaccinated; and
- Providing health care workers with the appropriate protective equipment to prevent contact with infectious agents (e.g., masks, face shields, gowns, heavy-duty gloves for housekeeping and waste removal staff).
## COURSE EVALUATION
(To be completed by **Participants**)

Please indicate on a 1–5 scale your opinion of the following course components:

<table>
<thead>
<tr>
<th>COURSE COMPONENT</th>
<th>RATING</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The initial knowledge assessment helped me to study more effectively.</td>
<td></td>
</tr>
<tr>
<td>2. The case studies were helpful in learning respiratory infection control practices.</td>
<td></td>
</tr>
<tr>
<td>3. I am now confident in applying respiratory infection control practices for avian or pandemic influenza.</td>
<td></td>
</tr>
<tr>
<td>4. I am now confident in applying respiratory infection control practices for tuberculosis.</td>
<td></td>
</tr>
<tr>
<td>5. There was sufficient time scheduled for development of a plan for prevention of transmission of avian or pandemic influenza in my health care facility.</td>
<td></td>
</tr>
<tr>
<td>6. There was sufficient time scheduled for development of a plan for prevention of transmission of tuberculosis in my health care facility.</td>
<td></td>
</tr>
<tr>
<td>7. The training approach used in this course made it easier for me to learn infection prevention and control practices for avian or pandemic influenza.</td>
<td></td>
</tr>
<tr>
<td>8. The training approach used in this course made it easier for me to learn infection prevention and control practices for tuberculosis.</td>
<td></td>
</tr>
<tr>
<td>9. The trainers clearly stated the learning objectives.</td>
<td></td>
</tr>
<tr>
<td>10. The trainers communicated clearly and effectively.</td>
<td></td>
</tr>
<tr>
<td>11. The information presented in the course was new to me.</td>
<td></td>
</tr>
<tr>
<td>12. The trainers were interested in the subjects they taught.</td>
<td></td>
</tr>
<tr>
<td>13. The course content (or the content of the sessions) had sufficient theoretical knowledge.</td>
<td></td>
</tr>
<tr>
<td>14. The sessions were well organized.</td>
<td></td>
</tr>
<tr>
<td>15. The trainers asked questions and involved me in the sessions.</td>
<td></td>
</tr>
<tr>
<td>16. The content of the course was useful to my work.</td>
<td></td>
</tr>
<tr>
<td>17. The course made me feel more competent or skillful in my work.</td>
<td></td>
</tr>
<tr>
<td>18. I feel prepared for working with avian or pandemic influenza patients and know what needs to be done to prevent transmission of avian or pandemic influenza in my facility.</td>
<td></td>
</tr>
<tr>
<td>19. I feel prepared for working with tuberculosis patients and know what needs to be done to prevent transmission of tuberculosis in my facility.</td>
<td></td>
</tr>
</tbody>
</table>
Additional Comments (use additional pages if needed)
1. What topics, if any, should be added to improve the course? Why?

2. What topics, if any, should be deleted to improve the course? Why?

3. The length of the course (3 days) was: (circle one)
   - Too long
   - Too short
   - Just right
SECTION TWO: GUIDE FOR TRAINERS
The course outline presented here is a model plan of the training to be delivered. It presents topics and activities that will enable the participant to accomplish the learning objectives described in the course syllabus. For each topic/activity, there are suggestions regarding appropriate training/learning methods and resources and materials needed. The trainer may develop other practice activities and prepare case studies, role plays or other learning situations that are specific to the country or group of participants.

The course outline is divided into four columns.

- **Time.** This section of the outline indicates the approximate amount of time to be devoted to each learning activity.

- **Topics/Activities.** This column lists the topics and learning activities. The combination of the topics and activities (introductory activities, small-group exercises, clinical practice, breaks, etc.) outlines the flow of training.

- **Training/Learning Methods.** This column describes the various methods, activities, and strategies to be used to deliver the content and skills related to each enabling objective.

- **Resources/Materials.** The fourth column in the course outline lists the resources and materials needed to support the learning activities.

Note that the course schedule is based on the course outline. As such, changes or modifications to one should be reflected in the other.
## RESPIRATORY INFECTION CONTROL IN HEALTH CARE FACILITIES
### MODEL COURSE OUTLINE (3 DAYS, 6 SESSIONS)

<table>
<thead>
<tr>
<th>TIME</th>
<th>TOPICS/ACTIVITIES</th>
<th>TRAINING/LEARNING METHODS</th>
<th>RESOURCES/MATERIALS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Session 1: Day 1, Morning</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20 minutes</td>
<td><strong>Activity:</strong> Welcome participants Facilitate introductions of participants Explore participants’ expectations for the course</td>
<td>Word of welcome by organizers, MOH officials, lead trainers, etc. Facilitate the introductions of all participants, trainers and facilitators. Explore participants’ expectations for the course. Allow participants to freely explore their expectations. In the next session on review of the course objectives, address which expectations can be met and which cannot be met.</td>
<td>Prepared welcome sign Flipchart and markers Name tents or name badges</td>
</tr>
<tr>
<td>15 minutes</td>
<td><strong>Activity:</strong> Review course goals and objectives Review components of the learning resource package</td>
<td>Review the course goals, and objectives; the participant selection criteria and expected outcomes; Review the course schedule, including starting and ending times and times for breaks and lunch; Review the materials to be used in the course and ensure that participants understand the use of the different materials.</td>
<td>Full set of the learning resource package  ● RIC Summary Guidance  ● RIC Quick Reference Guide  ● Course Notebook for Participants  ● Course Notebook for Trainers  ● PowerPoint presentations</td>
</tr>
<tr>
<td>30 minutes</td>
<td><strong>Activity:</strong> Assess participants’ pre-course knowledge</td>
<td>Assign a number to each participant and ask them to write the number on the “Initial Knowledge Assessment” sheet. Ask participants to turn to the Initial Knowledge Assessment sheet in the “Participants Handbook” and answer each of the questions (or trainers may distribute copies of the Initial Knowledge Assessment sheet for the participants to complete). Ask the participants to close their handbooks or turn the Assessment sheet over when finished. Allow 15 minutes for the Pre-course Knowledge Assessment. Immediately review the correct responses – do not spend a long amount of time on any questions, but ensure the participants that the material will be covered during the course. Have participants grade their own papers and collect the papers after reviewing all the answers. Use the papers to prepare the Group and Individual Knowledge Matrix and then return the papers.</td>
<td>Participants Handbook: Initial Knowledge Assessment (or copies of the Initial Knowledge Assessment) Small pieces of paper with numbers Group and Individual Knowledge Matrix</td>
</tr>
</tbody>
</table>
## Respiratory Infection Control in Health Care Facilities

### Model Course Outline (3 Days, 6 Sessions)

<table>
<thead>
<tr>
<th>TIME</th>
<th>TOPICS/ACTIVITIES</th>
<th>TRAINING/LEARNING METHODS</th>
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| 40 minutes | **Presentation/Discussion:**  
- Update on transmission: Tuberculosis and Influenza | Use the PowerPoint slides to present information on the manner in which TB and Influenza are transmitted.  
Ask questions of the participants and engage them in the presentation of the information. | PowerPoint slides on  
- Transmission of Tuberculosis  
- Transmission of Influenza |
| 45 minutes | **Presentation/Discussion:**  
- Hierarchy of Respiratory Infection Control  
  - Administrative Controls  
  - Environmental Controls  
  - Personal Protective Equipment | Use the PowerPoint slides to review the overall system of infection control: the Hierarchy of Respiratory Infection Control.  
Ensure that participants understand the Hierarchy since other parts of the course won’t refer to it directly, but will be based upon the understanding of the Hierarchy. | PowerPoint slides on  
- Hierarchy of Respiratory Infection Control |
| 15 minutes | **Activity:** Review Group and Individual Knowledge Matrix | While one trainer is presenting the above presentation, another trainer should fill out the Group and Individual Knowledge Matrix. This is then presented to the participants to demonstrate where attention is needed. | Large format Group and Individual Knowledge Matrix. |
| 30 minutes | **Exercise One:**  
Infectious Disease Transmission Cycle | Briefly review the Infectious Disease Transmission Cycle with participants  
Break participants into 3 – 5 groups:  
- If course managers want to focus only on respiratory infections, break into 3 groups and address only TB, Influenza and SARS  
- If course managers want to address infection transmission more broadly, break into 5 groups.  
Give each group one of the following cards: 1. Tuberculosis; 2. Influenza; 3. SARS; 4. Hepatitis A; 5. Malaria  
Have participants work in their groups to answer the questions and draw the disease transmission cycle for their one organism (refer to Appendix A: “The Disease Transmission Cycle” in the Course Notebook for Participants). Ask them to describe measures to break the disease transmission cycle.  
Bring all participants back into the plenary and review the responses. | Exercise on Infectious Disease Transmission Cycle  
Flipcharts and markers  
Meta cards |
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<tr>
<td>30 minutes</td>
<td><strong>Presentation/Discussion:</strong></td>
<td>Use the PowerPoint slides to review the issues around early recognition of ill patients, how to isolate them within the facility and what is required regarding reporting. Address issues that are important in the local context regarding facilities and reporting requirements. Ask questions of the participants and engage them in the presentation of the information.</td>
<td>PowerPoint slides on Early Recognition, Isolation and Reporting</td>
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<td>- Early Recognition, Isolation and Reporting</td>
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<tr>
<td>30 minutes</td>
<td><strong>Presentation/Discussion:</strong></td>
<td>Use the PowerPoint slides to review the patient assessment and infection control procedures that should be undertaken during Screening, Education, Separation, Priority Services. Ask questions of the participants and engage them in the presentation of the information.</td>
<td>PowerPoint slides on Screening, Education, Separation, Priority Services</td>
</tr>
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<td></td>
<td>- Screening, Education, Separation, Priority Services</td>
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<td></td>
<td><strong>Session 2: Day 1, Afternoon</strong></td>
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<tr>
<td>50 minutes</td>
<td><strong>Presentation/Discussion:</strong></td>
<td>Use the PowerPoint slides to review the important elements of Environmental ventilation and patient placement and transport. Ask questions of the participants and engage them in the presentation of the information.</td>
<td>PowerPoint slides on Environmental ventilation and patient placement and transport</td>
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<td></td>
<td>- Environmental ventilation and patient placement and transport</td>
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<tr>
<td>20 minutes</td>
<td><strong>Exercise Two:</strong> Environmental Ventilation and Patient Placement</td>
<td>Present the photos and diagrams about ventilation to the participants. Present them either by projecting them on the screen using an LCD or overhead projector or by passing out copies of the illustrations. Ask participants to study the photos to identify the good or bad practices related to environmental ventilation. Ask them to describe why these are good or bad practices, and if bad, what simple steps can be taken to improve the ventilation. Then review the diagrams. If no diagrams are available, ask one or two participants to draw a typical examination room and a typical patient room in their facility. Identify the windows, the patient care areas and the entry/exit point for the room. Ask participants to describe how they can improve ventilation in these areas.</td>
<td>Photos and illustrations from the Course Notebook for Trainers. Flipchart paper and markers Meta cards can be used to create the patient beds, examination tables and chairs that can be moved around the space to maximize respiratory infection control.</td>
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</table>
### Model Course Outline (3 Days, 6 Sessions)

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<tr>
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</thead>
</table>
| 40 minutes   | **Presentation/Discussion:**  
- Isolation rooms  
- Health care workers or family entering/exiting | Use the PowerPoint slides to lead a discussion on isolation rooms and good practices of health care workers or family members who are entering or exiting an isolation room.  
Do not spend too much time talking about PPEs, but remind participants that use of PPEs will be presented tomorrow.  
Ask questions of the participants and engage them in the presentation of the information. | PowerPoint slides on:  
- Isolation rooms  
- Health care workers or family entering/exiting |
| 40 minutes   | **Exercise Three:**  
Early Recognition and Care of Patients with Suspected or Confirmed Respiratory Infections | Ask participants to turn to the exercise in their Course Notebook for Participants. Break participants into 3 groups and assign each group to answer the questions related to RIC Practices in one of the following scenarios:  
- Quick Reference Guide—Scenario One  
- Quick Reference Guide—Scenario Two  
- Quick Reference Guide—Scenario Three  
Give the groups 10–15 minutes to answer the questions. Then lead a discussion to have the participants report back their answers. Record their answers on a summary table like the one in the Course Notebook for Trainers. Note the similarities and differences in the RIC Practices.  
Direct the participants to the appropriate pages in the Quick Reference Guide for the answers to the questions. | Quick Reference Guide: Scenarios One, Two and Three.  
Exercise from Course Notebook for Participants  
Summary Table 1 from Course Notebook for Trainers |
| 45 minutes   | **Exercise Four:**  
Develop a job aid on Screening Patients with a Suspected Infectious Respiratory Disease of Potential Concern | Break participants into groups of 5–8 people  
Remind the participants of what a job aid is. (A job aid is a tool that helps health care workers do their job better, and according to some standard. Job aids give people the information that they need, at the moment that they need it.)  
Ask them to develop a one-page job aid that will help providers screen clients who may have an Infectious Respiratory Disease of concern. Tell them to draw the job aid on a piece of flipchart paper.  
Show all the job aids to the whole group. Have participants critique the job aid for: completeness, accuracy, clarity and ease of use. | Flipchart and markers. |
### RESPIRATORY INFECTION CONTROL IN HEALTH CARE FACILITIES

#### MODEL COURSE OUTLINE (3 DAYS, 6 SESSIONS)

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</thead>
</table>
| 15 minutes | Summary of Day                          | Do the exercise, “What's Right or Wrong with this picture?” Have several pictures/photos related to infection prevention (IP) practices, including good and poor practices. The pictures can be on presentation graphics, transparencies, or paper. The objective is to show participants different scenarios for IP practices and ask for their reactions. Ask the participants:  
- What are the positive IP practices that you see in these pictures?  
- What can be improved? How?  
- How are these pictures similar to or different from your workplace?  
- What can be done to improve them? Give participants the reading assignment for tomorrow. | Course Notebook for Trainers:  
Exercise Five—“What’s Right or Wrong with this picture?”  
Photos and illustrations from the Course Notebook for Trainers |

#### Session 3: Day 2, Morning

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<tbody>
<tr>
<td>10 minutes</td>
<td>Agenda and Warm-up</td>
<td>Have a warm-up activity to ensure that the participants are ready to learn and you have created a positive learning environment. Review agenda of the day.</td>
<td>Agenda of the day on a flipchart</td>
</tr>
</tbody>
</table>
| 100 minutes | Presentation/Demonstration and Discussion:  
- Hand hygiene—rationale and indications  
- PPE—rationale and indications | Set up 2 skills stations before the presentation—one on Hand Hygiene and one on Use of PPE  
Use the PowerPoint slides to present general background information on the rationale and indications for hand hygiene. Describe the different methods.  
Then immediately go to the demonstration station and demonstrate the proper technique for Hand Hygiene, first with soap and water and then with alcohol hand rub. Ask participants to follow along using Learning Guide One: Handwashing and Learning Guide Two: Handrub with Alcohol-Based Formulation  
Ask questions of the participants and assess their understanding of the technique. | PowerPoint slides on  
- Hand hygiene—rationale and indications  
- Personal protective equipment—rationale and indications  
Skill stations for two skills  
Hand Hygiene:  
- Bars of soap or containers of liquid soap  
- Containers of alcohol-based handrub  
- Paper towels  
- Personal hand towel  
- Utility sink or simulation |
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</table>
|           | Remind participants that they will have an opportunity to practice these skills (and be assessed for competency!) in the afternoon at that skill practice and assessment station. Then use the second set of PowerPoint slides to review the use and rationale for PPE. Then immediately go to the demonstration station and demonstrate the proper technique for Donning and Removing PPEs. Ask participants to follow along using Learning Guide Three: Donning and Removing PPEs. Ask questions of the participants and assess their understanding of the technique. Remind participants that they will have an opportunity to practice these skills (and be assessed for competency!) in the afternoon at that skill practice and assessment station. | - Waste receptacle  
- Plastic buckets  
- Small plastic pitcher  

Donning and Removing PPEs:  
- Box of clean/new examination gloves  
- Gowns  
- Protective eyewear: face shields or goggles/eye visors  
- Masks  
- Particulate respirators  
- Waste receptacle  
- Utility sink or simulation |
| 40 minutes| **Exercise Six:** Match the Mask to the Activity | Conduct the group exercise: “Match the Mask to the Activity” Divide participants into groups of about 4–5 participants per group. Ask participants to turn to the “Match the Mask to the Activity” Table 5 in their Course Notebook for Participants. Ask them to quickly fill in the table in discussion with each other. (10 minutes) In plenary, ask their opinion whether a mask should be used and which mask for each setting or procedure. Allow each group to respond to one or more situations. Encourage discussion and concurrence by all groups. | Participants Handbook: Blank “Match the Mask to the Activity” Table 5 |
| 15 minutes| **Presentation/Discussion:**  
- Respiratory hygiene/cough etiquette | Use the PowerPoint slides to review respiratory hygiene and cough etiquette. Ask questions of the participants and engage them in the presentation of the information. | PowerPoint slides on:  
- Respiratory hygiene/cough etiquette |
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</table>
| 60 minutes   | Presentation/Demonstration and Discussion:            | Set up a skills station before the presentation for cleaning and disinfecting respiratory equipment. Use the PowerPoint slides to present general background information on cleaning the patient care area, managing linens and waste and finally, cleaning and disinfecting respiratory equipment. After the presentations, go to the demonstration station and demonstrate the proper technique for cleaning and disinfecting respiratory equipment. Ask participants to follow along using Learning Guide Four: Cleaning and Disinfecting Respiratory Equipment. Ask questions of the participants and assess their understanding of the technique. Remind participants that they will have an opportunity to practice these skills (and be assessed for competency!) in the afternoon at that skill practice and assessment station. | PowerPoint slides on  
- Cleaning the patient care environment  
- Linens and waste disposal  

Skill station for cleaning and disinfecting respiratory equipment:  
- Respiratory equipment:  
  - Plastic airways  
  - Oxygen face masks  
  - Oxygen tubing  
  - Ambu bag  
  - Rubber or plastic suction catheter  
  - Ventilator tubing  
- Plastic buckets (4 for each station)  
  - One for soapy water  
  - One for clean water  
  - One for 0.5% chlorine solution  
  - One for waste  
- Utility (heavy rubber) gloves  
- Face shield  
- Rubber or plastic aprons  
- Gowns  
- Brush/toothbrush  
- Bottle of 60–90% alcohol (spirits)  
- Gauze pads  
- Drying rack |
**RESPIRATORY INFECTION CONTROL IN HEALTH CARE FACILITIES**

**MODEL COURSE OUTLINE (3 DAYS, 6 SESSIONS)**

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<tbody>
<tr>
<td>15 minutes</td>
<td><strong>Skill Practice and Assessment:</strong> Instructions for skill practice at skill stations</td>
<td>Explain how the stations will work:</td>
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<td>- There is a skill station for each Infection Control skill selected</td>
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<td>- Participants can request another demonstration of the technique by the trainer</td>
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<td>- Participants should use their skill learning guides for learning the skills and then the checklists for practicing the skills together.</td>
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<td>- Participants should practice together and coach each other, and assess each other’s performance against the checklist.</td>
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<td>- When they are ready (meaning that their colleagues assess them as being perfect on the skills assessment checklist), they can request that the trainer assess them for certification of competency.</td>
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<td>Explain that the participants will have the entire afternoon for practice and assessment of competency. They will have one hour at each station, and then will be requested to rotate to the next station.</td>
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<td>Session 4: Day 2, Afternoon</td>
<td><strong>Skill Practice and Assessment</strong>&lt;br&gt;All participants rotate between different skill stations for demonstration, discussion, practice and assessment for competency</td>
<td>Keep participants divided into 6 groups which will rotate through all three Skill Stations.&lt;br&gt;Allow participants to practice.&lt;br&gt;Assess for competency using checklists.</td>
<td>Fully equipped skill stations for:&lt;br&gt;  - Hand hygiene&lt;br&gt;  - Donning and removing personal protective equipment&lt;br&gt;  - Cleaning and disinfecting respiratory equipment&lt;br&gt;Learning Guides and Checklists for:&lt;br&gt;  - Hand hygiene&lt;br&gt;  - Donning and removing personal protective equipment&lt;br&gt;  - Cleaning and disinfecting respiratory equipment&lt;br&gt;Tally sheet so trainers can record who has achieved competency.</td>
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<tr>
<td>200 minutes</td>
<td><strong>Skill Stations in:</strong>&lt;br&gt;1. Hand hygiene&lt;br&gt;2. Donning and removing Personal Protective Equipment&lt;br&gt;3. Cleaning and disinfecting respiratory equipment</td>
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<td>10 minutes</td>
<td><strong>Summary of Day</strong>&lt;br&gt;Review and recap day’s activities.&lt;br&gt;Give participants the reading assignment for tomorrow.&lt;br&gt;Give participants a homework assignment for tonight: Tell them to fill in and complete Table 7 on Infection Control Measures for Health Care Workers in the Course Notebook for Participants. Tell them to compare their answers with the table on page 4 in the Quick Reference Guide.&lt;br&gt;Remind participants that Course Knowledge Assessment will be tomorrow morning.</td>
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<td>Session 5: Day 3, Morning</td>
<td>10 minutes Agenda and Warm-up</td>
<td>Review agenda of the day</td>
<td>Agenda of the day on a flipchart.</td>
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<td>30 minutes</td>
<td>Presentation/Discussion:</td>
<td>Use the PowerPoint slides to review transmission-based precautions. Ask questions of the participants and engage them in the presentation of the information.</td>
<td>PowerPoint Slides on: Transmission-Based Precautions</td>
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<td>• Transmission-Based Precautions</td>
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<td>– Contact/Airborne/Droplet</td>
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<td>Precautions</td>
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<td>20 minutes</td>
<td>Presentation/Discussion:</td>
<td>Use the PowerPoint slides to lead a discussion of respiratory infection control issues in mortuary care and post-mortem examination. Ask questions of the participants and engage them in the presentation of the information.</td>
<td>PowerPoint Slides on: Mortuary care and post-mortem examination</td>
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<td>• Mortuary care and post-mortem</td>
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<td>examination</td>
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<td>50 minutes</td>
<td>Exercise Seven:</td>
<td>As a summary exercise ask the participants to do case studies on RIC principles Break participants into three groups. Assign one scenario to each of the groups. Ask each group to read the scenario, discuss and prepare a response Ask one person from each group to present the group’s responses Ask other groups to respond</td>
<td>Case studies from the Course Notebook for Participants Flipcharts/markers</td>
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<td>45 minutes</td>
<td><strong>Exercise Eight:</strong>&lt;br&gt;Infection Control Measures for Procedures on Patients with Suspected or Confirmed Respiratory Infections</td>
<td>Ask participants to turn to the exercise in their Course Notebook for Participants. Break participants into 3 groups and assign each group to answer the questions related to RIC Practices in one of the following scenarios:&lt;br&gt;- Quick Reference Guide—Scenario Four&lt;br&gt;- Quick Reference Guide—Scenario Five&lt;br&gt;- Quick Reference Guide—Scenario Six&lt;br&gt;- Quick Reference Guide—Scenario Seven&lt;br&gt;Give the groups 10–15 minutes to answer the questions. Then lead a discussion to have the participants report back their answers. Record their answers on a summary table like the one in the Course Notebook for Trainers. Note the similarities and differences in the RIC Practices. Direct the participants to the appropriate pages in the Quick Reference Guide for the answers to the questions.</td>
<td>Quick Reference Guide: Scenarios Four, Five, Six and Seven.&lt;br&gt;Exercise from Course Notebook for Participants&lt;br&gt;Summary Table 6 from Course Notebook for Trainers</td>
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<td>30 minutes</td>
<td><strong>Exercise Nine:</strong>&lt;br&gt;Clinical Simulation: Effective Screening and Fast Tracking of a Patient with Coughing and Sneezing</td>
<td>To reinforce the concept of recognition of the specific needs of patients who may have an infectious respiratory illness of concern, review this clinical simulation.&lt;br&gt;Prepare a handout that is a photocopy of the clinical simulation from the Course Notebook for Trainers.&lt;br&gt;Break participants into small groups of 4 participants. Identify one person in the group as the leader of the simulation (typically the strongest person in the group). Give that person the photocopy of the simulation. That leader asks the question to a specific person in the group. One question for every person in the group.&lt;br&gt;The objective is to think quickly and respond quickly to the situation of a potential infectious respiratory illness.&lt;br&gt;The trainer(s) pass among the groups to assess performance and answer questions.</td>
<td>Hand out: photocopy of the clinical simulation from the Course Notebook for Trainers</td>
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<td>60 minutes</td>
<td>Course Knowledge Assessment Questionnaire</td>
<td>Make copies of the Course Knowledge Assessment Questionnaire and give each participant a copy. Ask participants to put their names on the first page. Review the instructions printed on the questionnaire. There is one single best answer for each question. Participants may silently leave the room and go for lunch when they have completed the questionnaire. The trainer(s) should score the questionnaire, mark the score on the top and be prepared to return the questionnaire to the participants when they return from lunch.</td>
<td>Course Knowledge Questionnaire Copies of the Course Knowledge Assessment Questionnaire</td>
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<td>Session 6: Day 3, Afternoon</td>
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<td>30 minutes</td>
<td>Review Knowledge Questionnaire</td>
<td>Answers should be reviewed with the entire group. The trainer will meet with those participants scoring less than 85%. After discussing the items missed, the participants should spend additional study time and then retake the questionnaire until they achieve a score of at least 85%.</td>
<td>Course Notebook for Trainers: Knowledge Assessment Questionnaire Answer Key</td>
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</table>
| 90 minutes   | Exercise Ten: Small Group Activity: Gap Identification, Implementation and Follow-up Planning Preparedness of your health care facility for management of avian flu cases  
- Standard Precautions  
- Transmission-Based Precautions  
- Facility:  
  - Triage/emergency care  
  - Private rooms/options for isolation of patients | Participants break into small groups by facility or like facilities. Participants discuss what information they have learned in the course and what actions they would like to take to improve Respiratory Infection Control activities at their own health care facilities. | Blank action plans                                                                   |
## RESPIRATORY INFECTION CONTROL IN HEALTH CARE FACILITIES
### MODEL COURSE OUTLINE (3 DAYS, 6 SESSIONS)

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<tr>
<td>20 minutes</td>
<td><strong>Exercise Ten (continued):</strong> Small Group Activity: Gap Identification, Implementation and Follow-up Planning</td>
<td>2–3 participants will present their individual/team implementation plans. This should generate a discussion about mechanisms for change management in the improvement of respiratory infection control</td>
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<td>20 minutes</td>
<td><strong>Program Summary and Discussions</strong></td>
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<tr>
<td>10 minutes</td>
<td><strong>Course Evaluation</strong></td>
<td>At the conclusion of the group work, participants fill out and turn in the course evaluation form.</td>
<td>Course evaluation forms</td>
</tr>
<tr>
<td>30 minutes</td>
<td><strong>Certificate Distribution and Closing</strong></td>
<td>Give participants their certificates</td>
<td>Completed certificates</td>
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</table>
INITIAL KNOWLEDGE ASSESSMENT

USING THE INDIVIDUAL AND GROUP ASSESSMENT MATRIX

The initial knowledge assessment is not intended to be a test but rather an assessment of what the participants, individually and as a group, know about the course topic. Participants, however, are often unaware of this and may become anxious and uncomfortable at the thought of being “tested” in front of their colleagues at the beginning of a course. The clinical trainer should be sensitive to this attitude and administer the assessment in a neutral and non-threatening way as the following guide illustrates:

- Participants draw numbers to assure anonymity (e.g., from 1 to 12 if there are 12 participants in the course).
- Participants complete the assessment.
- The clinical trainer gives the answers to each question.
- The clinical trainer passes around the individual and group assessment matrix for each participant to complete according to her/his number.
- The clinical trainer posts the completed matrix.
- The clinical trainer and participants discuss the results of the questionnaire as charted on the matrix and jointly decide how to allocate course time.
INITIAL KNOWLEDGE ASSESSMENT AND ANSWER KEY

INSTRUCTIONS
In the space provided, print a capital T if the statement is true or a capital F if the statement is false.

RESPIRATORY CONTROL PRACTICES IN HEALTH CARE FACILITIES

1. Patients who are coughing and sneezing while waiting to see the doctor should be asked to cover their nose and mouth with a cloth or tissue when coughing or sneezing.  TRUE

2. A patient who comes to the clinic coughing and sneezing should be told to have a seat in the common waiting room until the doctor is available.  FALSE

3. Particulate respirators provide good protection from infection, regardless of work practices or environmental controls.  FALSE

4. Standard Precautions are designed for the care of all persons, patients, clients and staff, regardless of whether or not they are known to be infectious.  TRUE

5. Standard Precautions include placing patients in protective isolation.  FALSE

6. Each disease has only one route of transmission.  FALSE

7. Transmission-Based Precautions are used instead of Standard Precautions for patients with serious respiratory infections.  FALSE

8. Droplet precautions include the use of a mask if within 1 meter of the infected patient.  TRUE

USE OF MASKS AND RESPIRATORS

9. Health care workers (HCWs) should wear particulate respirators when providing routine nursing care to human cases of avian influenza.  FALSE

10. A medical mask should be worn by all HCWs when providing routine care to patients with known tuberculosis.  FALSE

11. When obtaining an induced sputum collection from a patient, HCWs should wear a medical mask.  FALSE

12. When using a nebulizer on a patient, HCWs should always wear a particulate respirator.  FALSE

USE OF GLOVES AND HAND HYGIENE

13. Gloves must never be used as an alternative to hand hygiene.  TRUE

14. HCWs must use an alcohol-based hand rub when caring for patients with tuberculosis.  FALSE
ENVIRONMENTAL VENTILATION

15. In high-risk areas of health care facilities such as isolation rooms, the recommended minimal ventilation rate is 12 air changes per hour (ACH).

16. Environmental ventilation can eliminate the risk of infection from respiratory aerosols.

SAFE NEEDLE PRACTICES

17. Before placing a disposable (single-use) needle and syringe in a puncture-proof container or box, you should first carefully recap the needle.

CLEANING RESPIRATORY EQUIPMENT

18. Health care workers must wear gloves, gown, rubber apron, face protection and a medical mask when cleaning respiratory equipment.

MORTUARY CARE

19. Health care workers should follow Standard Precautions when handling the body of a deceased patient.

20. Any kind of fluid from a dead body may transmit disease.

PATIENT PLACEMENT AND TRANSPORT

21. Patients with avian influenza must be placed in Airborne Precaution Rooms (APRs).

22. When cohorting patients with the same suspected or confirmed diagnosis in one room, a distance of at least 1 meter must be maintained between each patient.

23. Patients with ARDs must wear a medical mask while being transported outside of cohorting or isolation areas.

PROTECTING THE HEALTH OF STAFF AND VISITORS

24. Family members who wish to view the body of a relative who has died of avian influenza should be required to wear personal protective equipment (PPE).

25. Hand hygiene is required after direct contact with every patient.
# RESPIRATORY INFECTION CONTROL TRAINING COURSE: INDIVIDUAL AND GROUP ASSESSMENT MATRIX

<table>
<thead>
<tr>
<th>Question Number</th>
<th>CORRECT ANSWERS (Participants)</th>
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<tbody>
<tr>
<td>1</td>
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<td>RESPIRATORY CONTROL PRACTICES IN HEALTH CARE FACILITIES</td>
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<td>10</td>
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<td>USE OF MASKS AND RESPIRATORS</td>
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<td>USE OF GLOVES AND HAND HYGIENE</td>
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</table>
EXERCISE ONE: INFECTIOUS DISEASE TRANSMISSION CYCLE

Objectives
The purpose of this activity is to:

- Review the conditions that allow infectious diseases to be spread.
- Help participants understand how to break the cycle according to different methods of transmission.

Resources/Materials Needed

- 3–5 cards with the names of different infectious diseases
- Flipchart and markers for each group

Instructions

- Prepare the cards in advance by selecting diseases with different routes of transmission; see examples below. Background information for each disease in the examples can also be found below. Prepare other examples specific to the prevalence or relevance of infectious diseases in the country in which you are working.
- Divide participants into three to five groups.
- Distribute one card with an infectious disease to each group.
- Ask each group to draw the transmission cycle of their specific disease on a flipchart.
- Ask each group to identify barriers or measures to break the transmission cycle and prevent the spread of the infectious disease.
SAMPLES OF CARDS

Pulmonary Tuberculosis

Influenza

Hepatitis A

Malaria

Severe Acute Respiratory Syndrome (SARS)

Background Information for Trainers: Examples of Infectious Diseases

Pulmonary Tuberculosis

Agent: *Mycobacterium tuberculosis*. The tubercle bacillus has a variable incubation period, and its period of communicability lasts as long as the bacillus is present in the sputum.

Reservoir: Primarily humans (client/patient, family, community and health care workers), rarely primates.

Method of transmission: Exposure to tubercle bacilli in *airborne* droplet nuclei produced by people with pulmonary or laryngeal tuberculosis. The tubercle bacilli can be transferred into the air, either as airborne droplets or dust particles containing the bacilli; can be produced by coughing, sneezing, talking or during procedures such as bronchoscopy or suctioning; can remain in the air for up to several hours; and can be spread widely within a room or over long distances.

Place of exit and entry: Superior respiratory tract

Susceptible host: Client/patient, family, community, and health care worker
Barriers/measures to break the cycle:

- Prompt detection of infectious patients and proper treatment with anti-TB drugs.
- Screening of patients for respiratory symptoms, education of patients identified during screening on cough hygiene, separation of patients identified through screening into a separate well-ventilated waiting area, provision of priority services to reduce potential exposures to others.
- Standard Precautions
- Airborne precautions including:
  - Quick assessment of clients/patients with suspected TB (empiric use) to implement airborne precautions.
  - Patient placement: Place patient in a single, well-ventilated room, or cohort patients with the same diagnosis in a well-ventilated area separate from other patients. If possible, place patient in a single airborne precaution room that has a minimum of \( >\text{= } 12 \) air changes per hour (ACH) plus control of airflow direction.
  - Aerosol-generating procedures associated with pathogen transmission should be performed using appropriate PPE in an airborne precaution room. If an airborne precaution room is not available, perform procedures in a single, well-ventilated room.
  - Facial protection (medical masks and eye protection) should be used in accordance with Standard Precautions by HCWs if activities are likely to generate splashes or sprays of blood, body fluids, secretions and excretions onto mucosa of eyes, nose or mouth. Use of a medical mask does not protect HCWs, other staff, patients or visitors against TB. If available, use a particulate respirator that is at least as protective as a U.S. National Institute for Occupational Safety and Health (NIOSH) certified N95 or equivalent when entering, and providing care within, specific high-risk areas in hospitals and referral centers, such as airborne precaution isolation rooms, rooms where bronchoscopy and other cough-inducing procedures are performed or in specialized settings where persons with multi-drug resistant tuberculosis are treated.
  - Patient transport: Limit transport of patient to essential purposes only, educate the patient about respiratory etiquette/cough hygiene and use a medical mask if transportation is needed. Notify area receiving the patient.

Influenza

Agent:

- Influenza virus (types A, B and C).
- Avian (or bird) flu is caused by the type A virus, and occurs naturally among wild birds. The H5N1 variant of this virus, which has caused human deaths in Asia and Africa, is deadly to domestic fowl and can be transmitted from birds to humans. There is no human immunity to it and vaccine availability is very limited. The major concern about H5N1 is that it may mutate enough to become easily transferable from one human to another and lead to a pandemic of respiratory illness. To date, no efficient or sustained human-to-human transmission of avian flu has been demonstrated.
Pandemic influenza is a virulent human influenza virus that causes a global outbreak (a pandemic) of serious illness. There is little natural immunity to the virus so it can easily spread from person to person. Pandemic flu is different from common or seasonal flu, to which humans have some immunity and for which a vaccine is typically available.

Reservoir:
- Avian (or bird) flu occurs naturally in all birds, especially wild water birds. Most reported cases of human infection by avian influenza have occurred from direct or close contact with infected poultry or contaminated surfaces.
- Humans are the primary reservoir for human infections (i.e., client/patient, family, community and HCW).

Method of transmission: Droplets spread predominates among crowded populations in enclosed spaces such as school buses; transmission can also occur through direct contact because influenza virus may persist for hours in cold weather and low humidity. Contact of the mucous membranes of the nose, mouth and conjunctiva of the eye with infectious particles—can be produced by coughing, sneezing, talking or procedures such as bronchoscopy and suctioning. Droplet transmission requires close contact between the source and susceptible host because particles remain airborne briefly and travel only about 3 feet (1 meter) or less. Among the possible human-to-human episodes of avian flu, transmission was associated with close and extensive unprotected contact, suggesting spread mainly through respiratory droplets and/or contact.

Place of exit and entry: Contact of the mucous membranes of the nose, mouth and conjunctiva of the eye with infectious particles

Susceptible host: Client/patient, family, community and health care worker

Duration of infection control precautions for avian and pandemic influenza:
- Adults and adolescents > 12 years of age—implement precautions at time of admission and continue for 7 days after symptoms have resolved.
- Infants and children < =12 years of age—implement precautions at time of admission and continue for 21 days after symptom onset.

Barriers/measures to break the cycle:
- Standard Precautions
- Droplet precautions:
  - Apply to patients with bird flu, seasonal flu and pandemic flu.
  - Quick assessment of clients/patients with suspected influenza (empiric use) to implement droplet precautions.
  - Patient placement: Single room, door open, adequately ventilated with >> 12 ACH; if private room is not available, place patient in room with a patient who has the same active infection or similar clinical diagnosis based on epidemiological risk factors and ensure that every patient is separated by at least one meter.
  - PPE to be worn when providing patient care: Gloves, respiratory protection (wear medical mask if working within 3 feet or 1 meter of patient), eye protection (goggles).
  - For practical purposes, use of a medical mask when entering a patient’s room is advised.
- Perform hand hygiene immediately after removing any item of PPE.
- Patient transport: Limit transport of patient to essential needs only, use a mask if transportation is needed and notify area receiving the patient.

**Contact precautions:**
- Apply to patients with bird/avian flu ONLY.
- Do a quick assessment of clients/patients with suspected avian flu (empiric use) to implement contact precautions.
- Patient placement: Place patients in single rooms or cohort patients with the same diagnosis to facilitate the application of infection control measures.
- Don PPE when entering the room, and remove PPE when leaving—regardless of whether close contact with the patient is anticipated.
- Gloving: Wear clean, nonsterile, latex examination gloves when entering the room; change gloves after contact with infective materials; and remove gloves before leaving the room. Gloves should be disposed of after each patient contact.
- Avoid touching potentially contaminated surfaces or other items before leaving the room.
- Avoid touching your face, eyes or mouth with either gloved or un-gloved hands because these may be contaminated.
- Wearing gowns and protective apparel: Wear a clean, nonsterile disposable gown made of synthetic fiber or a washable cloth gown. Ensure that gowns are of the appropriate size to fully cover the areas to be protected. If possible, gowns should be worn once and then placed in waste or laundry receptacles. Hand hygiene should always be performed after removal.
- To reduce fluid penetration, aprons should only be used when the gown is permeable. To prevent contact contamination, aprons should not be used alone.
- Equipment: If possible, use either disposable equipment or dedicate specific equipment for use with a single patient (blood pressure cuffs, thermometers, etc.). If equipment needs to be shared among patients, it must be cleaned and disinfected between each patient use.
- Patient transport: Limit patient movement; contact with other non-infected persons should be minimized.

**Severe Acute Respiratory Syndrome (SARS)**
**Agent:** SARS-assisted coronavirus (SARS-CoV). The SARS-CoV has an incubation period of two to 10 days.

**Reservoir:** Currently not circulating among humans; however, it could still be circulating in animal hosts and it may re-emerge in humans.

**Method of transmission:** Close person-to-person contact. The virus that causes SARS is transmitted easily by respiratory droplets produced when an infected person coughs or sneezes. Droplets from the cough or sneeze of an infected person are propelled a short distance through the air and deposited on the mucous membranes of the mouth, nose or eyes. Droplets can also
contaminate a patient’s hands, the hands of a HCW or an environmental surface, which can lead to disease transmission by hand contamination and self-inoculation onto conjunctival or nasal mucosa. Transmission through infectious respiratory aerosols of various sizes may occur at short range.

**Place of exit and entry:** Contact of the mucous membranes of the nose, mouth and conjunctiva of the eye with infectious particles.

**Susceptible host:** Client/patient, family, community and HCW.

**Duration of infection control precautions:** The duration of infectivity for SARS is not well defined. In SARS patients with normal immune systems, infection control precautions should be implemented while patients are symptomatic.

**Barriers/measures to break the cycle:**

- **Standard Precautions**
  - Transmission of SARS in HCWs during the 2003 outbreak was often associated with noncompliance with Standard Precautions.

- **Droplet precautions, including:**
  - Do a quick assessment of clients/patients with suspected SARS (empiric use) to implement droplet precautions.
  - Patient placement: Use a single room, with door open, adequately ventilated with \( \geq 12 \text{ ACH} \); if a private room is not available, place the patient in room with a patient who has the same active infection or a similar clinical diagnosis based on epidemiological risk factors, and ensure that every patient is separated by at least one meter.
  - PPE to be worn when providing patient care: Gloves, respiratory protection (wear medical mask if working within 3 feet or 1 meter of patient) and eye protection (goggles).
  - For practical purposes, use of a medical mask when entering a patient’s room is advised.
  - Perform hand hygiene immediately after removing any item of PPE.
  - Patient transport: Limit transport of patient to essential needs only, use a mask if transportation is needed and notify area receiving the patient.

- **Contact Precautions, including:**
  - Do a quick assessment of clients/patients with suspected SARS (empiric use) to implement contact precautions.
  - Patient placement: Place patients in single rooms or cohort patients with the same diagnosis to facilitate the application of infection control measures.
  - Don PPE when entering the room, and remove PPE when leaving regardless of whether close contact with the patient is anticipated.
  - Gloving: Wear clean, nonsterile, latex examination gloves when entering the room; change gloves after contact with infective materials; and remove gloves before leaving the room. Gloves should be disposed of after each patient contact.
  - Avoid touching potentially contaminated surfaces or other items before leaving the room.
- Avoid touching your face, eyes or mouth with either gloved or un-gloved hands because these may be contaminated.

- Wearing gowns and protective apparel: Wear a clean, nonsterile disposable gown made of synthetic fiber or a washable cloth gown. Ensure that gowns are of the appropriate size to fully cover the areas to be protected. If possible, gowns should preferably be worn once and then placed in waste or laundry receptacles. Hand hygiene should always be performed after removal.

- To reduce fluid penetration, aprons should only be used when the gown is permeable. To prevent contact contamination, aprons should not be used alone.

- Equipment: If possible, use either disposable equipment or dedicate specific equipment for use with a single patient (blood pressure cuffs, thermometers, etc.) If equipment needs to be shared among patients, it must be cleaned and disinfected between each patient use.

- Patient transport: Limit patient movement; contact with other non-infected persons should be minimized.

**Hepatitis A**

**Agent:** Hepatitis A virus (HAV). Incubation period is 15–50 days, with an average of 28–30 days. Period of communicability: studies show maximum infectivity during the latter half of the incubation period, continuing for a few days after onset of jaundice. Most cases are probably noninfectious after the first week of jaundice.

**Reservoir:** Humans (client/patient, family, community and health care workers), rarely captive chimpanzees.

**Method of transmission:** Transmission occurs directly or indirectly from one infected or colonized person to a susceptible host (patient), often on the contaminated hands of a health care worker. The fecal-oral route transmits HAV person-to-person. The infectious agent is found in feces, reaches peak levels the week or two before onset of symptoms and diminishes rapidly after liver dysfunction or symptoms appear.

**Place of exit and entry:** Direct or indirect contact (fecal-oral). Feces and mouth.

**Susceptible host:** Client/patient, family, community and health care worker. Susceptibility is general, and homologous immunity after infection probably lasts for life.

**Barriers/Measures to break the cycle:**
- Standard Precautions
- Contact including:
  - Quick assessment of clients/patients with suspected Hepatitis A (empiric use) to implement contact precautions
  - Maintaining contact precautions during the first 2 weeks of illness but not more than 1 week after onset of jaundice
  - Patient placement (private room, door open; if private room is not available, place patient in room with a patient who has the same active infection)
  - Gloving (wear clean, nonsterile examination gloves when entering the room; change gloves after contact with infective materials; and remove gloves before leaving the room)
• Handwashing (wash hands with antibacterial agent or use a waterless, alcohol-based handrub after removing the gloves)
• Avoiding touching potentially contaminated surfaces or other items before leaving the room
• Wearing gowns and protective apparel (wear clean, nonsterile gown when entering the room if you anticipate contact with patient or if patient is incontinent or has diarrhea; remove gown before leaving the room)
• Patient transport (limit transport of patient to essential needs only; ensure that precautions are maintained during transport and notify area receiving the patient)
• Patient care equipment (reserve noncritical patient care items for use with a single patient, if possible, or clean and disinfect any equipment shared among infected and noninfected patients)
• Control of patient, contacts and the immediate environment

Preventive measures:
• Education of the public and health care personnel in basic personal hygiene, especially on careful handwashing and sanitary disposal of feces
• Provision of proper water treatment and distribution system, and sewage disposal
• HAV immunization (effective after 2–4 weeks)
• Immunization: 70–80% protection in healthy young adults; may be less effective in elderly population but may reduce the severity of the disease and the incidence of complications by 50–60% and death by approximately 80%

Malaria
Agent: Parasites: Plasmodium vivax (vivax/benign tertian), P. malariae (malariae/quartan), P. falciparum (malignant tertian), and P. ovale (ovale). The time between the infective bite and the appearance of clinical symptoms is 8–14 days for P. vivax and ovale, 7–14 days for P. falciparum, and 7–30 days for P. malariae. Untreated or insufficiently treated patients may be a source of mosquito infection for more than 3 years in malariae, 1–2 years in vivax, and in general not more than 1 year in falciparum. The mosquito remains infective for life.
Reservoir: Humans are the only important reservoirs of human malaria.
Method of transmission: By the bite of an infective Anopheles female mosquito. Most species feed at dusk or early night hours; some, however, bite around midnight or early in the morning. Malaria can also be transmitted by injection or transfusion of blood of infected people or by use of contaminated needles and syringes (e.g., by drug users).
Place of exit and entry: Mosquito bites, injections, and blood transfusion
Susceptible host: Client/patient, family, community, and health care worker
Barriers/measures to break the cycle:
• Standard Precautions
• Additional precautions, including:
- Quick assessment of clients/patients with suspected malaria (empiric use) to implement precautions
- Sanitary improvements to permanently eliminate or reduce mosquito breeding habitats
- Nightly spraying of screened living and sleeping places with insecticides (e.g., pyrethrum)
- Installation of screens and use of bednets
- Wearing long sleeves and pants during the period from dusk until dawn
- Using insect repellent over uncovered skin (diethyltoluamide: Deet®)
- Screening blood donors
- Prompt and effective treatment of acute and chronic cases
- Prophylaxis for travelers who are traveling to endemic areas
- For hospitalized patients: Taking blood precautions and placing patients in mosquito-proof areas from dusk until dawn
EXERCISE TWO: ENVIRONMENTAL VENTILATION AND PATIENT PLACEMENT

Objectives

The purpose of this activity is to:

- Identify correct or incorrect/incomplete ventilation and patient placement practices in each photograph or diagram presented, and discuss how to implement correct practices at your own health care facility (HCF) or how to improve incorrect/incomplete practices.
- Help participants understand the basic principles of natural, mechanical and mixed mode ventilation.
- Help participants develop a cost-effective HCF strategy for implementation of adequate ventilation in critically important patient care areas: waiting rooms, examination rooms, corridors, procedure rooms (minor and major surgery, bronchoscopy, induced sputum collection), isolation rooms, cohorted patient wards.
- Help participants understand important principles of patient placement that can maximize benefits of adequate environmental ventilation, including location of patient beds and examination tables.

Resources/Materials Needed

- Photos and illustrations
- Flipchart paper and markers
- Meta cards to be used to create the patient beds, examination tables and chairs that can be moved around the space to maximize respiratory infection control

Instructions

- Present the photos and illustrations about ventilation to the participants using an LCD or overhead projector or by passing out copies of the illustrations.
- Ask participants to study the photos/illustrations/diagrams, which will be either projected or distributed, and identify good or bad practices related to environmental ventilation and patient placement. During the group discussion, ask them to describe why these are good or bad practices, and if bad, what simple steps can be taken to improve the ventilation.
- Ask one or two of the participants to draw a typical examination room and a typical patient room or ward in their HCF. Identify the windows, the patient care areas and the entry/exit point for the room. During the group discussion, ask participants to describe how they can improve ventilation in these areas.
EXERCISE THREE: EARLY RECOGNITION AND CARE OF PATIENTS WITH SUSPECTED OR CONFIRMED RESPIRATORY INFECTIONS

Objectives
The purpose of this activity is to:

- Review the principles of early recognition and care of a patient who presents to a typical health care facility with a suspected or confirmed respiratory infection.
- Help participants understand how to implement precautions in different clinical settings.
- Help participants understand how to prevent transmission of respiratory infections throughout the continuum of care in health care facilities using case scenarios that track a typical patient pathway from reception area or waiting room, through triage area, to admission requiring general nursing care.

Resources/Materials Needed

- See Quick Reference Guide: Scenarios One, Two and Four
- Flipchart and markers for each group
- Sample blank Summary Table 1 (a Summary Table 1 with the correct responses is included in the Course Notebook for Trainers). See the Course Notebook for Participants for scenario descriptions with questions

Instructions

- In advance of this session, prepare a flipchart with a blank Summary Table 1 (as shown in the Course Notebook for Trainers)
- Ask participants to turn to the exercise in the Course Notebook for Participants. Break participants into 3 groups and assign each group to answer the questions related to respiratory infection control practices in one of the following scenarios:
  - Quick Reference Guide—Scenario One: Patient Arrival at Reception
  - Quick Reference Guide—Scenario Two: Triage and Physical Exam
  - Quick Reference Guide—Scenario Three: General Nursing Care
- Give the groups 10 to 15 minutes to discuss and answer the questions and record their answers on a flipchart. Then lead a plenary discussion of all scenarios and questions with groups reporting back their answers.
- Have an assistant record their answers on the Summary Table on the flipchart (Table 1 in the Course Notebook for Trainers). Lead a discussion which highlights similarities and differences in the RIC practices.
- Direct the participants to the appropriate pages in the Quick Reference Guide for answers to the questions.
EXERCISE FOUR: DEVELOP A JOB AID FOR SCREENING PATIENTS WITH A SUSPECTED INFECTIOUS RESPIRATORY DISEASE OF POTENTIAL CONCERN

Objectives

The purpose of this activity is to:

- Help participants understand how evidence-based principles of patient screening using epidemiologic and clinical clues can enhance early recognition, isolation and reporting of patients with infectious respiratory diseases of potential concern such as SARS or avian influenza.

- Help participants develop a real-life tool or job aid that can assist facility health care workers to screen incoming patients for acute febrile respiratory illness or prolonged duration of cough more efficiently and effectively. Specific screening criteria may vary depending on the local setting and patient population.

Resources/Materials Needed

Flipchart and marker

Instructions

- Break participants into groups of 5–8 people. Remind the participants of what a job aid is. (A job aid is a tool that helps health care workers do their job better, and according to some standard. Job aids give people the information that they need, at the moment that they need it.)

- Ask each group to develop a one-page job aid that will help HCWs quickly and effectively screen and identify clients with an infectious respiratory disease of potential concern (SARS, human cases of avian influenza or novel—and as yet unreported—respiratory infections).

- Each group will either draw or describe the job aid on a piece of flipchart paper.

- Show and/or demonstrate all job aids to the plenary group. Have participants critique the job aids for: completeness, accuracy, clarity and ease of use.
EXERCISE FIVE: WHAT IS RIGHT OR WRONG WITH THIS PICTURE?

Objectives

- To help participants start seeing things with “different eyes”
- To enable participants to identify correct or incorrect/incomplete infection control practices in each photograph presented, and discuss how to implement correct practices in their own sites or how to improve incorrect/incomplete practices

Resources/Materials

Photographs (presentation graphics [see CD-ROM], real pictures, or overhead transparencies)

Instructions

- Have several pictures related to infection control practices including good and poor practices. Have the participants look at the photos and encourage discussion about what they see or do not see.
- Ask participants to start with the positive infection control practices seen and encourage discussion of how these practices are similar to or different from their own HCFs.
- Ask participants to think about how to improve the poor practices and how to implement the positive practices in their sites.
EXERCISE SIX: MATCH THE MASK TO THE ACTIVITY

Objectives
The participants will be able to identify:

- What task or activity requires a mask
- What types of masks are preferable and acceptable for the task

Time: 30 minutes

Resources/Materials Needed
- One copy of the blank Table 5: "Match the Mask to the Activity" in the Course Notebook for Participants
- Flipchart or transparency with the table listed above and markers
- Medical masks
- Particulate respirators

Instructions
Prepare a copy of the blank table on a flipchart. This exercise can be done individually or in small groups followed by, or directly in, a plenary discussion.

Procedure
1. Ask participants to review the table entitled “Match the Mask to the Activity.” Allow a few minutes for completion.
2. Using the flipchart, ask participants (volunteers) to answer the questions and select the appropriate types of masks until the table is complete.
3. Discuss the rationale for the answers. Refer to and review the choices.

Discussion Questions
1. Why is it important to identify when to wear masks and to know what types of masks are preferred and acceptable for different procedures?
2. What can we do in our facilities to assure an adequate supply of the appropriate types of masks?
Summarize the Main Points

- Medical masks and particulate respirators play an important role in control of respiratory infections.
- Medical masks provide protection against large aerosol particles (droplets) and particulate respirators provide protection against fine aerosols that are kept suspended in the air (droplet nuclei) and droplets.
- The type of mask selected should be appropriate for the anticipated procedures or activities that will be performed, and the HCW’s level of risk of having contact with respiratory secretions or other fluids associated with each procedure or activity.

“MATCH THE MASK TO THE ACTIVITY” ANSWER KEY

<table>
<thead>
<tr>
<th>Task or Activity</th>
<th>Are Masks Needed?</th>
<th>Preferred Masks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood pressure check by HCW on patient with no ARD symptoms in region with outbreak of avian flu.</td>
<td>No</td>
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</tr>
<tr>
<td>Temperature check by HCW on patient who is coughing and sneezing.</td>
<td>Yes</td>
<td>Medical mask worn by HCW and patient</td>
</tr>
<tr>
<td>Patient with no ARD symptoms who is undergoing outpatient treatment for tuberculosis comes to district clinic for routine checkup with HCW.</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Physical examination by HCW of patient with active tuberculosis in airborne precaution room.</td>
<td>Yes</td>
<td>Particulate respirator worn by HCW</td>
</tr>
<tr>
<td>Transport of patient hospitalized with known avian flu outside of isolation area for chest x-ray.</td>
<td>Yes</td>
<td>Medical mask worn by patient</td>
</tr>
<tr>
<td>HCW enters well-ventilated private room of patient with seasonal influenza virus.</td>
<td>Yes</td>
<td>Medical mask worn by HCW</td>
</tr>
<tr>
<td>Patient is coughing and sneezing while sitting in the waiting room waiting to see the doctor.</td>
<td>Yes</td>
<td>Medical mask worn by patient</td>
</tr>
<tr>
<td>Patient is admitted to the hospital with cough and fever. The HCW obtains an induced sputum collection.</td>
<td>Yes</td>
<td>Particulate respirator worn by HCW</td>
</tr>
<tr>
<td>Patient is admitted to the hospital with asthma and ARD symptoms. The HCW administers nebulized drug therapy.</td>
<td>Yes</td>
<td>Medical mask worn by HCW and by patient before and after nebulizer treatment</td>
</tr>
<tr>
<td>Patient is brought into the emergency department in cardiac arrest and undergoes resuscitation including intubation.</td>
<td>Yes</td>
<td>Particulate respirator worn by HCWs</td>
</tr>
<tr>
<td>HCW performs temperature check on patient with documented streptococcal pneumonia.</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>There has been an outbreak of influenza associated with high mortality in the region. A patient who is coughing and sneezing is standing in line waiting to be seen by a HCW.</td>
<td>Yes</td>
<td>Medical mask worn by HCW and patient</td>
</tr>
</tbody>
</table>
CHECKLISTS FOR INFECTION CONTROL SKILLS

SKILL STATION ONE

CHECKLIST FOR HAND HYGIENE

Objectives
This station is used to practice and demonstrate the procedure for:

- Washing hands with soap and water
- Using alcohol-based handrub to clean hands

Materials

- Bars of soap or containers of liquid soap
- Containers of alcohol-based handrub
- Paper towels
- Waste receptacle
- Utility sink or simulation

Using the Station

The trainer should:

1. Set up the station for demonstration of handwashing with soap and water and handrubbing with alcohol-based handrub.
2. Demonstrate the scenarios to the participants, according to the checklist.
3. Allow the participants to practice. Using the checklist below, the trainer (or participant taking the role of the trainer) should assess the participant’s ability to perform hand hygiene by washing with soap and water or handrubbing with alcohol-based handrubs.
### CHECKLIST FOR HAND HYGIENE

Place a “C” in case box if step is performed **competently** or an “N” if it is **not** performed competently or is omitted.

**Competent:** Performs the step according to the standard procedure or guidelines.

**Not Competent:** Unable to perform the step according to the standard procedure or guidelines, or does not perform the step at all.

<table>
<thead>
<tr>
<th>CASES</th>
</tr>
</thead>
</table>

#### SCENARIO ONE: HANDWASHING WITH SOAP AND WATER

**Note for the Trainer**

**Read the following information to the participant:**
You work in a hospital. You have just completed a minor surgical procedure and have removed your gloves. There is a small amount of blood on one of your hands from an apparent leak in the glove.

#### PREPARATION

1. Check flow of clean water (tap, shower) and waste water container if no drains.
   **Note:** Used water should be collected in a basin and discarded in a latrine if a drain is not available.

2. Ready personal towel or a single-use paper towel.

3. Locate soap.

#### WASHING HANDS

4. Moisten hands thoroughly with soap and running water.

5. Thoroughly wash all areas of hands and fingers for at least 10–15 seconds.

6. Rub hands palm to palm.

7. Rub right palm over back of left hand with interlaced fingers.

8. Rub left palm over back of right hand with interlaced fingers.

9. Rub palm to palm with fingers interlaced.

10. Rub back of fingers of right hand over palm of left hand with fingers interlocked.

11. Rub back of fingers of left hand over palm of right hand with fingers interlocked.

12. Rotationally rub right thumb while clasped in left palm.

13. Rotationally rub left thumb while clasped in right palm.

14. Rotationally rub backwards and forwards with clasped fingers of right hand in left palm.

15. Rotationally rub backwards and forwards with clasped fingers of left hand in right palm.

16. Rinse hands thoroughly with clean water.

17. Dry hands with a personal towel or a single-use paper towel and use the towel to turn off the faucet, or air dry hands.

18. Throw paper towel into the basket (if using personal towel, hang and allow to air dry).

**SKILL/ACTIVITY PERFORMED SATISFACTORILY**
## Checklist for Hand Hygiene

### Scenario Two: Handrub with Alcohol-Based Formulation

**Note for the Trainer**

Read the following information to the participant:

You work in a hospital. You have just finished examining a patient and are about to go see another. There is a container of alcohol-based handrub just outside the door.

### Preparation

1. If hands not visibly dirty, locate alcohol-based handrub container.

### Washing Hands

2. Apply a palmful of handrub product in a cupped hand and spread out to cover all surfaces.

3. Rub hands, palm to palm.

4. Rub right palm over back of left hand with interlaced fingers.

5. Rub left palm over back of right hand with interlaced fingers.

6. Rub palm to palm with fingers interlaced.

7. Rub back of fingers of right hand over palm of left hand with fingers interlocked.

8. Rub back of fingers of left hand over palm of right hand with fingers interlocked.

9. Rotationally rub right thumb while clasped in left palm.

10. Rotationally rub left thumb while clasped in right palm.

11. Rotationally rub backwards and forwards with clasped fingers of left hand in right palm.

12. Rotationally rub backwards and forwards with clasped fingers of left hand in right palm.

### Skill/Activity Performed Satisfactorily
SKILL STATION TWO

DONNING AND REMOVING PERSONAL PROTECTIVE EQUIPMENT (PPE)

Objectives
This station is used to practice and demonstrate the procedure for:

- Donning PPE in the correct sequence
- Removing PPE in the correct sequence

Materials
- Bars of soap or containers of liquid soap
- Containers of alcohol-based handrub
- Paper towels
- Waste receptacle
- Utility sink or simulation
- Gloves
- Gowns
- Protective eyewear: face shields or goggles/eye visors
- Masks

Using the Station
The trainer should:

1. Set up the station for demonstration of donning and removing PPE with appropriate hand hygiene.
2. Demonstrate the scenarios to the participants, according to the checklist.
3. Allow the participants to practice. Using the checklist below, the trainer (or participant taking the role of the trainer) should assess the participant’s ability to don and remove PPE in the proper sequence.
### CHECKLIST FOR DONNING AND REMOVING PPE

Place a “C” in case box if step is performed competently or an “N” if it is not performed competently or is omitted.

**Competent:** Performs the step according to the standard procedure or guidelines.

**Not Competent:** Unable to perform the step according to the standard procedure or guidelines, or does not perform the step at all.

<table>
<thead>
<tr>
<th>STEP/TASK</th>
<th>CASES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DONNING PPE</strong></td>
<td></td>
</tr>
<tr>
<td>1. Don before contact with the patient.</td>
<td></td>
</tr>
<tr>
<td>2. Check that all PPE and disposal bins are available.</td>
<td></td>
</tr>
<tr>
<td>3. Wash hands with soap or use alcohol-based handrub.</td>
<td></td>
</tr>
<tr>
<td>4. Don PPE in the following sequence:</td>
<td></td>
</tr>
<tr>
<td>* Gown first</td>
<td></td>
</tr>
<tr>
<td>* Mask or respirator covering nose and mouth</td>
<td></td>
</tr>
<tr>
<td>* Protective eyewear: visor, face shield or goggles</td>
<td></td>
</tr>
<tr>
<td>* Gloves</td>
<td></td>
</tr>
<tr>
<td><strong>REMOVING PPE</strong></td>
<td></td>
</tr>
<tr>
<td>1. Stand at patient’s room doorway.</td>
<td></td>
</tr>
<tr>
<td>2. Remove PPE in the following sequence (not touching contaminated parts):</td>
<td></td>
</tr>
<tr>
<td>* Gloves</td>
<td></td>
</tr>
<tr>
<td>* Protective eyewear</td>
<td></td>
</tr>
<tr>
<td>* Gown</td>
<td></td>
</tr>
<tr>
<td>3. Discard PPE in waste container.</td>
<td></td>
</tr>
<tr>
<td>4. Leave the patient’s room and close the door.</td>
<td></td>
</tr>
<tr>
<td>5. Remove mask or respirator.</td>
<td></td>
</tr>
<tr>
<td>6. Wash hands with soap or use alcohol-based handrub.</td>
<td></td>
</tr>
</tbody>
</table>

**SKILL/ACTIVITY PERFORMED SATISFACTORILY**

**Note:** Combination of PPE will affect sequence—be practical!
SKILL STATION THREE

CLEANING AND DISINFECTING RESPIRATORY EQUIPMENT

Objective
This station is used to practice and demonstrate the procedure for cleaning and disinfecting reusable respiratory equipment.

Materials
- Plastic buckets (4 for each station):
  - One for soapy water
  - One for clean water
  - One for 0.5% chlorine solution
  - One for waste
- Plastic airways, ambu bags, oxygen face masks and tubing, suction catheters (rubber and/or plastic), ventilator tubing
- Utility (heavy rubber) gloves
- Face shield or mask and protective eyewear
- Rubber or plastic aprons
- Gowns
- Brush/toothbrush
- Liquid or powder detergent
- Bottle of 60-90% alcohol (spirits)
- Supply of clean water
- Gauze pads
- 5% household liquid bleach
- Hand soap
- Alcohol-based handrub
- Drying rack

Note: If it is not possible to obtain an item, you may use a card labeled with the name of the item that it is supposed to represent.
Using the Station

The trainer should:

1. Set up the station for cleaning and disinfecting reusable respiratory equipment.
2. Demonstrate the scenario to the participants, according to the checklist.
3. Allow participants to practice. Using the checklist below, the trainer (or participant taking the role of trainer) should assess the participant’s ability to clean and disinfect reusable respiratory equipment.
# Checklist for Cleaning and Disinfecting Reusable Respiratory Equipment

Place a “C” in case box if step is performed **competently** or an “N” if it is **not** performed **competently** or is omitted.

**Competent:** Performs the step according to the standard procedure or guidelines.

**Not Competent:** Unable to perform the step according to the standard procedure or guidelines, or does not perform the step at all.

## Scenario

Note for the Trainer

Read the following information to the participant:

You work in a hospital. You have just collected the decontamination buckets containing suction catheters and plastic airways. You have also been given respiratory equipment from the operating theatre, including ventilator tubing, Ambu bags and CPR face masks. You need to clean them. The suction catheters and plastic airways have already been soaked in 0.5% chlorine solution for 10 minutes and then rinsed in clean water. The ventilator tubing, Ambu bags and CPR face masks do not require decontamination before cleaning.

## Preparation

1. Perform routine hand hygiene.
2. Put on the proper PPE:
   - a gown
   - a rubber apron
   - face shield or medical mask and protective eyewear
   - rubber utility gloves

## Cleaning and Disinfecting Suction Catheters

1. Fill a plastic container (or utility sink) with clean water.
2. Using a brush and liquid or powder detergent, scrub tubing under the surface of the water, removing all blood and other foreign matter.
3. Pass soapy water through the catheters three times.
4. Thoroughly rinse the instruments and other items with clean water three times (inside and outside).
5. Select an appropriate method of HLD
6. Air dry before use or storage.

**Skill/activity performed satisfactorily**
### CHECKLIST FOR CLEANING AND DISINFECTING REUSABLE RESPIRATORY EQUIPMENT

<table>
<thead>
<tr>
<th>STEP/TASK</th>
<th>CASES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CLEANING AND DISINFECTING PLASTIC AIRWAYS</strong></td>
<td></td>
</tr>
<tr>
<td>1. Wash all surfaces with soap and water.</td>
<td></td>
</tr>
<tr>
<td>2. Rinse with clean water until no soap remains.</td>
<td></td>
</tr>
<tr>
<td>3. Select an appropriate method of HLD.</td>
<td></td>
</tr>
<tr>
<td>4. Air dry before use or storage.</td>
<td></td>
</tr>
<tr>
<td><strong>SKILL/ACTIVITY PERFORMED SATISFACTORILY</strong></td>
<td></td>
</tr>
<tr>
<td><strong>CLEANING AND DISINFECTING VENTILATOR TUBING</strong></td>
<td></td>
</tr>
<tr>
<td>1. Using a brush, wash with soap and water.</td>
<td></td>
</tr>
<tr>
<td>2. Rinse in clean water until no soap remains.</td>
<td></td>
</tr>
<tr>
<td>3. Select an appropriate method of HLD.</td>
<td></td>
</tr>
<tr>
<td>4. Air dry before use or storage.</td>
<td></td>
</tr>
<tr>
<td><strong>SKILL/ACTIVITY PERFORMED SATISFACTORILY</strong></td>
<td></td>
</tr>
<tr>
<td><strong>CLEANING AND DISINFECTING AMBU BAGS AND CPR FACE MASKS</strong></td>
<td></td>
</tr>
<tr>
<td>1. Wipe exposed surfaces with a gauze pad soaked in 60–90% alcohol or 0.5% chlorine. If surfaces are soiled with organic substances such as blood or other body fluids, use 0.5% chlorine solution. Alcohol is not effective in the presence of organic matter.</td>
<td></td>
</tr>
<tr>
<td>2. Rinse immediately.</td>
<td></td>
</tr>
<tr>
<td>3. Wash exposed surfaces with soap and water.</td>
<td></td>
</tr>
<tr>
<td>4. Rinse with clean water.</td>
<td></td>
</tr>
<tr>
<td>5. Select an appropriate method of HLD.</td>
<td></td>
</tr>
<tr>
<td>6. Air dry before use or storage.</td>
<td></td>
</tr>
<tr>
<td><strong>SKILL/ACTIVITY PERFORMED SATISFACTORILY</strong></td>
<td></td>
</tr>
<tr>
<td><strong>PPE AND HAND HYGIENE AFTER CLEANING</strong></td>
<td></td>
</tr>
<tr>
<td>1. Remove all PPE without touching contaminated areas.</td>
<td></td>
</tr>
<tr>
<td>2. Wash hands with soap and running (or poured) water. Dry with a clean, individual towel or paper towel, or allow hands to air dry. OR Rub hands with an alcohol-based solution until the hands are dry (if hands are not visibly soiled).</td>
<td></td>
</tr>
<tr>
<td><strong>SKILL/ACTIVITY PERFORMED SATISFACTORILY</strong></td>
<td></td>
</tr>
</tbody>
</table>
EXERCISE SEVEN: SMALL GROUP WORK—CASE STUDIES

Case Study Scenarios

1. Identify the triage/emergency room requirements for evaluating patients presenting with cough and fever in an area where ARD is of potential concern (e.g., SARS, human cases of avian flu, other new influenza viruses causing human infection, novel ARDs not previously reported that can cause large scale outbreaks and outbreaks with high morbidity and mortality) is present.

2. Identify the types of PPE needed to care for patients with an ARD of potential concern, and the number of each item needed to care for a patient during his/her stay at the health care facility.

3. Identify the activities that a facility should conduct to prepare for the care of patients with ARDs of potential concern.

Notes for the Trainer

- As a summary exercise, ask the participants to discuss case studies that demonstrate respiratory infection control principles.

- Break participants into three groups and assign one scenario to each group. Ask each group to read the scenario, discuss and prepare a response. Ask one person from each group to present the group’s response at the plenary session for further discussion.

Case Study Scenario One

Identify the triage/emergency room requirements for evaluating patients presenting with cough and fever in an area where an ARD of potential concern is present.

As soon as a person presents with a cough and fever, you need to think of the worst case scenario and apply appropriate precautions:

1. If the patient is coughing, place a mask on him/her.

2. Assign specific area/room(s) for evaluation of patients presenting with cough and fever; the area or rooms should be equipped with adequate ventilation, a door and handwashing facilities (or provide alcohol handrub).

3. Make sure that PPE is readily available in this area for staff and is used properly (masks, goggles or face shields, gloves and gowns).

4. If no such area is available, place the patient away from the people in the waiting room or ask the patient to wait in the open (outside of the facility building).

5. Have the patient evaluated as soon as possible.
6. Limit the number of staff having contact with the patient. Assign health care providers specifically trained in the identification and management of ARDs of potential concern.

**Case Study Scenario Two**

Identify the types of PPE needed to care for patients with an ARD of potential concern, and the number of each item needed to care for a patient during his/her stay at the health care facility.

Participants will need to develop a plan to stockpile PPE for one patient for 7 days, based on the following considerations:

1. What physical care the patient needs (if the person needs a respirator, suctioning, assistance with activities of daily living, etc.).
2. Based on the type of physical care, how many health care providers will be assigned to this patient in a 24-hour period (needs to be limited to the minimum).
3. How often the health care provider(s) will go in and out of the isolation room when providing care.
4. Types of PPE needed and which ones can be reused.

**Case Study Scenario Three**

Identify the activities that a facility should conduct to prepare for the care of patients with an ARD of potential concern.

In planning for future patients, activities include, but are not limited to, the following:

1. Identify who in the facility has the responsibility for developing an overall plan to prevent transmission of infectious respiratory illnesses in the health care facility.
2. Identify a core team that will evaluate and care for patients with an ARD of potential concern.
3. Train the core team in:
   - Transmission-Based Precautions
   - Use of PPE (donning and removing)
   - Medical care required for patients who present with an ARD of potential concern (not covered in this course)
4. Identify adequately ventilated isolation room(s) or areas with the capacity to hold many patients.
5. Identify and procure PPE.
6. Develop a facility-wide notification system for cases of ARDs of potential concern.
7. Set up an emergency response team (not necessarily health care providers) to handle media, answer questions from the families, and direct patients away from the isolation areas.
8. Develop a plan for stockpiling post-exposure prophylaxis and treatment for staff.
9. Train the remaining health care staff in:
PPE use

Early identification of ARDs of potential concern using epidemiologic (travel, occupational exposure, contact with other infected patients) and clinical clues (fever in excess of 38 degrees C with cough and shortness of breath).
EXERCISE EIGHT: INFECTION CONTROL MEASURES FOR PROCEDURES ON PATIENTS WITH SUSPECTED OR CONFIRMED RESPIRATORY INFECTIONS

Objectives
The purpose of this activity is to:

- Review infection control measures for health care workers caring for patients with suspected or confirmed respiratory infections during specific clinical procedures: nebulized drug therapy, collection of an induced sputum specimen, resuscitation/intubation/suctioning/extubation, bronchoscopy
- Help participants understand how to implement precautions during different kinds of medical procedures.
- Help participants understand how to prevent transmission of respiratory infections throughout the continuum of care in health care facilities using case scenarios that describe common medical procedures performed on patients with suspected or confirmed respiratory infections.

Resources/Materials Needed
- See Quick Reference Guide: Scenarios Four, Five, Six and Seven
- Flipchart and markers for each group
- Sample blank Summary Table 6 (Summary Table 6 with the correct responses is included in this section, see page 66). See the Course Notebook for Participants for scenario descriptions with questions.

Instructions

- In advance of this session, prepare a flipchart with a Blank Summary Table 6 (as shown in the Course Notebook for Participants).
- Ask participants to turn to the exercise in the Course Notebook for Participants. Break participants into four groups and assign each group to answer the questions related to respiratory infection control practices in one of the following scenarios:
  - Quick Reference Guide—Scenario Four: Nebulized Drug Therapy
  - Quick Reference Guide—Scenario Five: Collection of an Induced Sputum Specimen
  - Quick Reference Guide—Scenario Six: Resuscitation, Intubation, Suctioning and/or Extubation
  - Quick Reference Guide—Scenario Seven: Bronchoscopy
- Give the groups 10 to 15 minutes to discuss and answer the questions and record their answers on a flipchart. Then lead a plenary discussion of all scenarios and questions with groups reporting back their answers.

- Have an assistant record their responses on the Summary Table on the flipchart (Table 6 in the Course Notebook for Trainers). Lead a discussion which highlights similarities and differences in RIC practices.

- Direct the participants to the appropriate pages in the Quick Reference Guide for answers to the questions.
EXERCISE NINE: CLINICAL SIMULATION: EFFECTIVE SCREENING AND FAST TRACKING OF A PATIENT WITH COUGHING AND SNEEZING

Purpose
The purpose of this activity is to provide a simulated experience for learners to practice problem-solving and decision-making skills in screening patients for signs and symptoms of infectious respiratory illnesses and fast tracking their pathway through the health care facility.

Instructions
The activity should be carried out in the most realistic setting possible:

- One learner should play the role of patient and a second learner the role of health care worker (HCW). Other learners may be called on to assist the HCW.
- The trainer will give the learner playing the role of HCW information about the patient’s condition and ask pertinent questions, as indicated in the left-hand column of the chart on the next page.
- The learner will be expected to think quickly and react (intervene) rapidly when the teacher provides information and asks questions. Key reactions/responses expected from the learner are provided in the right-hand column of the chart on the next page.
- Initially, the teacher and learner will discuss what is happening during the simulation in order to develop problem-solving and decision-making skills. The italicized questions in the simulation are for this purpose. Further discussion may take place after the simulation is completed.
- As the learner’s skills become stronger, the focus of the simulation should shift to providing appropriate care in a quick, efficient and effective manner. All discussion and questioning should take place after the simulation is over.
<table>
<thead>
<tr>
<th>SCENARIO 1</th>
<th>KEY REACTIONS/RESPONSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Information provided and questions asked by the trainer)</td>
<td>(Expected from learner)</td>
</tr>
<tr>
<td>1. Mrs. B. is 26 years old and is sitting on a bench in the district clinic waiting area, which is very full with many other patients. She appears flushed and is occasionally coughing and sneezing.</td>
<td>• Ask Mrs. B. why she has come to clinic, how long she has been sick and what her symptoms are.</td>
</tr>
<tr>
<td></td>
<td>• Instruct Mrs. B. on the use of respiratory etiquette supplies, including tissues/medical mask and hand hygiene solution. Provide her with tissues or a cloth to cover her nose and mouth when coughing and sneezing if she does not have them herself.</td>
</tr>
<tr>
<td></td>
<td>• If Mrs. B. can tolerate it, give her a medical mask to wear.</td>
</tr>
<tr>
<td>Discussion Question 1: What are the most important elements of an effective screening program for patients with suspected respiratory infections?</td>
<td>Expected Response:</td>
</tr>
<tr>
<td></td>
<td>• Key staff members assigned to identify and screen patients immediately after arrival at the HCF.</td>
</tr>
<tr>
<td></td>
<td>• Develop specific screening criteria depending on the local setting and patient population.</td>
</tr>
<tr>
<td></td>
<td>• Develop waiting area signage to educate patients about respiratory etiquette, cough and hand hygiene.</td>
</tr>
<tr>
<td>2. Mrs. B. meets the screening criteria protocol at the HCF for having a potential infectious respiratory infection.</td>
<td>• Route Mrs. B. to either a separate well-ventilated waiting area or clinical exam room. If these options are unavailable, have her sit near a window or outside until she can be seen by clinical staff. Ask Mrs. B. to sit at least 1 meter away from any other patients to minimize transmission of her infection.</td>
</tr>
<tr>
<td></td>
<td>• After placing Mrs. B. appropriately, ask her to stay there until she is called to see a member of the clinical staff.</td>
</tr>
<tr>
<td></td>
<td>• Consider putting a medical mask on yourself depending on the physical space and proximity to patient.</td>
</tr>
<tr>
<td></td>
<td>• Perform hand hygiene before and after any contact.</td>
</tr>
<tr>
<td>Discussion Question 2: What are the most important considerations in separating patients with suspected respiratory infections from other patients and HCWs while waiting for evaluation by clinical staff?</td>
<td>Expected Response:</td>
</tr>
<tr>
<td></td>
<td>• Advanced facility planning with identification of “best pathways” and “best spaces” for effective and humane isolation of patients with suspected ARDs.</td>
</tr>
<tr>
<td></td>
<td>• Identification of HCF areas with optimal ventilation.</td>
</tr>
<tr>
<td>3. Mrs. B has been asked to stand outside because no separate well-ventilated waiting area is available.</td>
<td>• Notify registration or other appropriate personnel that Mrs. B. may have an ARD and needs to see the next available clinical provider who is experienced in providing medical care to patients with respiratory infections.</td>
</tr>
<tr>
<td></td>
<td>• Alert the clinical provider assigned to see Mrs. B. that she may have an ARD.</td>
</tr>
<tr>
<td></td>
<td>• When the provider and examination room are available, escort the patient through the waiting area and into the exam room.</td>
</tr>
<tr>
<td></td>
<td>• Ensure that there are appropriate supplies of PPE for clinical providers.</td>
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</tbody>
</table>

Respiratory Infection Control in Health Care Facilities
Learning Resource Package
<table>
<thead>
<tr>
<th>SCENARIO 1</th>
<th>KEY REACTIONS/RESPONSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Information provided and questions asked by the trainer)</td>
<td>(Expected from learner)</td>
</tr>
<tr>
<td><strong>Discussion question 3</strong>: What factors should be considered in the design and implementation of an effective “fast track system” to expedite provision of medical services to patients with ARDs?</td>
<td><strong>Expected Response</strong>:</td>
</tr>
<tr>
<td></td>
<td>● Type of patient registration system</td>
</tr>
<tr>
<td></td>
<td>● Patient volume</td>
</tr>
<tr>
<td></td>
<td>● Length of wait times</td>
</tr>
<tr>
<td></td>
<td>● Available waiting areas/configuration of waiting areas</td>
</tr>
<tr>
<td></td>
<td>● Number and types of available HCWs including staff most available to screen as well as experienced clinical providers</td>
</tr>
<tr>
<td></td>
<td>● Numbers and availability of exam rooms</td>
</tr>
<tr>
<td></td>
<td>● Availability of PPE supplies and hand hygiene facilities</td>
</tr>
<tr>
<td></td>
<td>● HCW training and education</td>
</tr>
</tbody>
</table>
COURSE KNOWLEDGE QUESTIONNAIRE

Instructions: Circle the best answer.

1. Infectious ARDs of potential international public health concern are:
   a. Human cases of avian influenza
   b. SARS
   c. Novel, previously unreported ARDs, that can cause large-scale outbreaks with high morbidity and mortality
   d. All of the above

2. A patient is seen in your HCF with a suspected case of avian influenza. You should:
   a. Have the patient’s family take the patient by car to a HCF with an airborne precaution room
   b. Isolate the patient in a room away from other patients and inform public health authorities immediately
   c. Order all HCWs in the facility to wear particulate respirators when caring for the patient
   d. None of the above

3. Clinical clues that suggest an ARD of potential concern include:
   a. An abnormal chest x-ray
   b. High fever, cough and shortness of breath
   c. Green sputum
   d. All of the above

4. The first step in an effective respiratory infection control protocol is:
   a. Screening patients for a suspected or confirmed respiratory infection upon arrival at the HCF
   b. Buying adequate amounts of supplies for PPE
   c. Building at least one airborne precaution room
   d. Training all staff in the use of particulate respirators

5. A patient is observed coughing while waiting to be seen by the doctor at the district clinic. There has been a recent outbreak of avian influenza in the area. The patient should be:
   a. Given a tissue and told the doctor won’t be much longer
   b. Given a medical mask and told the doctor won’t be much longer
   c. Given a medical mask and placed in a separate, well-ventilated waiting area
   d. None of the above
6. A naturally ventilated airborne precaution room:
   a. Can eliminate the risk of infection from respiratory aerosols
   b. Should have air flow that is directed from patient care areas toward transit-free areas
   c. Should have doors and windows that are always kept closed
   d. All of the above

7. Standard Precautions are intended for use with which kinds of patients?
   a. Only patients who are admitted for surgery
   b. Only patients with HIV/AIDS or hepatitis B
   c. All patients, regardless of whether or not they are infected
   d. Only patients who are sick and require admission to the hospital

8. Which of the following actions prevents spread of infections among clients, patients and health care workers?
   a. Wearing gloves before touching anything wet
   b. Using antiseptic agents for cleansing the skin or mucous membranes
   c. Processing instruments, gloves and other items after use
   d. All of the above

9. Hands should be washed with soap and water:
   a. When hands are visibly dirty
   b. Only if there are no gloves available
   c. Only if there is no alcohol-based handrub available
   d. None of the above

10. Hand hygiene should be performed every time the HCW:
    a. Sees a patient
    b. Removes gloves
    c. Blows his nose
    d. All of the above

11. Using gloves correctly includes:
    a. Using them only for patients with an infectious disease
    b. Using them to change a blood-soaked dressing
    c. Using them any time you touch a patient’s skin
    d. Using them to check a blood pressure on a patient

12. When there is a risk of splashes of blood on the body and face, the following PPE items should be worn:
    a. Gown and face shield
    b. Gown and eye goggles
    c. Gown, gloves, medical mask and eye visor
    d. Gown, gloves and medical mask
13. It is very important that PPE items are:
   a. Kept in a locked closet to prevent overuse
   b. Kept at the entrance to any area where patients are being kept in isolation
   c. Kept on the other side of the room from hand hygiene facilities
   d. None of the above

14. When performing a procedure in which there will be a risk of splashes of body fluids on the HCW’s body, the HCW should:
   a. Always wear a disposable gown
   b. Always wear a gown made of thick cotton
   c. Always wear a plastic apron
   d. Always wear a plastic or rubber apron over the gown

15. The same gown can be used when providing care to more than one patient if:
   a. There is no visible staining on the gown
   b. Gloves are changed and hand hygiene is performed between patients
   c. All patients are in the same cohort area and there is no direct patient contact
   d. All of the above

16. Cough etiquette and respiratory hygiene are required:
   a. Only during outbreaks of SARS or influenza
   b. Only in HCFs where there are patients with drug-resistant tuberculosis
   c. Only in the waiting room of the HCF
   d. For anyone coughing and sneezing in the community

17. An important way to prevent needle-sticks is:
   a. Always carefully recap needles before placing in the sharps container
   b. Always remove needles from syringes before placing in the sharps container
   c. Never re-use needles
   d. All of the above

18. When cleaning and disinfecting respiratory equipment, the HCW should wear:
   a. A gown and gloves
   b. A gown, rubber apron and gloves
   c. A gown, rubber apron, gloves and face mask
   d. A gown, rubber apron, gloves, goggles and face mask

19. A key principle of environmental cleaning is:
   a. Don’t dust with a dry cloth
   b. Clean patient areas regularly
   c. Only surfaces that have been in contact with the patient’s skin/mucosa require disinfection after cleaning
   d. All of the above
20. PPE for cleaning the environment includes:
   a. Sturdy closed footwear, gown, rubber apron and rubber gloves
   b. Paper shoe covers, rubber gloves and gown
   c. Sturdy closed footwear, rubber apron and rubber gloves
   d. Rubber gloves, gown and face mask

21. Soiled linen from an airborne precaution room must be:
   a. Double-bagged
   b. Disinfected in dilute chlorine before being washed
   c. Placed immediately into a laundry bag in the patient area
   d. None of the above

22. An important consideration in the management of waste from an airborne precaution room is:
   a. To classify it carefully to ensure proper handling and disposal
   b. To always double bag
   c. To always wear full PPE including gown, gloves and face mask when handling
   d. All of the above

23. The following set of precautions applies to all patients with known or suspected tuberculosis:
   a. Standard plus droplet precautions
   b. Standard plus droplet plus airborne precautions
   c. Standard plus airborne precautions
   d. Standard plus droplet plus contact precautions

24. The following set of precautions applies to all patients with known or suspected avian influenza:
   a. Only standard precautions
   b. Standard plus contact plus airborne precautions
   c. Standard plus airborne precautions
   d. Standard plus droplet plus contact precautions

25. The following set of precautions applies to all patients with seasonal influenza:
   a. Standard plus droplet precautions
   b. Standard plus contact plus airborne precautions
   c. Standard plus airborne precautions
   d. Standard plus droplet plus contact precautions

26. The following set of precautions applies to all patients with SARS:
   a. Only Standard Precautions
   b. Standard plus contact plus airborne precautions
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27. Particulate respirators should be used by HCWs:
   a. During bronchoscopy
   b. During induced sputum collections
   c. In airborne precaution rooms
   d. All of the above

28. If an airborne precaution room is not available for admission of a patient with active tuberculosis disease, it is best to put the patient in:
   a. A general medical ward with a screen around the bed
   b. An adequately ventilated single room
   c. A semi-private room with another patient who also has an infectious respiratory illness
   d. None of the above

29. When providing medical care to a patient with avian influenza:
   a. Always place the patient in an airborne precaution room
   b. Wear a particulate respirator
   c. Wear a medical mask when within a 1-meter range of the patient
   d. Wear a medical mask when obtaining an induced sputum collection

30. When providing medical care to a patient with active tuberculosis:
   a. Always wear a medical mask
   b. Have the patient wear a medical mask when outside isolation areas
   c. Wear a gown whenever the patient’s room is entered
   d. Allow the patient to take long walks in the corridors
COURSE KNOWLEDGE QUESTIONNAIRE ANSWER KEY

Instructions: Circle the best answer.

1. Infectious ARDs of potential international public health concern are:
   a. Human cases of avian influenza
   b. SARS
   c. Novel, previously unreported ARDs, that can cause large-scale outbreaks with high morbidity and mortality
   d. All of the above

2. A patient is seen in your HCF with a suspected case of avian influenza. You should:
   a. Have the patient’s family take the patient by car to a HCF with an airborne precaution room
   b. Isolate the patient in a room away from other patients and inform public health authorities immediately
   c. Order all HCWs in the facility to wear particulate respirators when caring for the patient
   d. None of the above

3. Clinical clues that suggest an ARD of potential concern include:
   a. An abnormal chest x-ray
   b. High fever, cough and shortness of breath
   c. Green sputum
   d. All of the above

4. The first step in an effective respiratory infection control protocol is:
   a. Screening patients for a suspected or confirmed respiratory infection upon arrival at the HCF
   b. Buying adequate amounts of supplies for PPE
   c. Building at least one airborne precaution room
   d. Training all staff in the use of particulate respirators

5. A patient is observed coughing while waiting to be seen by the doctor at the district clinic. There has been a recent outbreak of avian influenza in the area. The patient should be:
   a. Given a tissue and told the doctor won’t be much longer
   b. Given a medical mask and told the doctor won’t be much longer
   c. Given a medical mask and placed in a separate, well-ventilated waiting area
   d. None of the above
6. A naturally ventilated airborne precaution room:
   a. Can eliminate the risk of infection from respiratory aerosols
   b. **Should have air flow that is directed from patient care areas toward transit-free areas**
   c. Should have doors and windows that are always kept closed
   d. All of the above

7. Standard Precautions are intended for use with which kinds of patients?
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EXERCISE TEN: SMALL GROUP ACTIVITY—GAP IDENTIFICATION, IMPLEMENTATION AND FOLLOW-UP PLANNING

Notes for the Trainer
Participants will need to identify gaps specific to their site, comparing their existing situation with required respiratory infection control measures. The plans should be as detailed as possible and preferably include names and positions of people, and drawings or plans for rooms and floors of the facility.

In the process of identifying gaps and further developing their implementation plans and follow-up activities, the participants should consider the following:

- Types and quantity of PPE
- Where (source) and how (budget) they are going to get the PPE
- Availability of isolation rooms or identification of rooms/areas that can be used or adapted for isolation of patients with infectious respiratory illnesses
- Location of the isolation room(s), including handwashing and toilet facilities
- Set-up of the isolation room and required patient-care equipment (sphygmomanometers, stethoscopes, thermometers, suction equipment, oxygen, etc.)
- Number of staff required to provide care in the isolation room, types of providers (physician, nurse, housekeeper), and identification of staff by name (consider appropriateness of staff selected for such positions)
- Requirements for transporting patient if needed
- Information the patient and the family should know for preventing the spread of infectious respiratory illnesses (type of transmission, PPE, hand hygiene, respiratory hygiene and cough etiquette) and ways of delivering this information to the patients and their families (e.g., posters, printed materials, informational lectures, TV/radio, individual counseling)
## ANSWER KEYS FOR TABLES

### TABLE 1: EARLY RECOGNITION AND CARE OF PATIENTS WITH SUSPECTED OR CONFIRMED RESPIRATORY INFECTIONS ANSWER KEY

<table>
<thead>
<tr>
<th>Scenario: A patient arrives at the HCF with coughing and fever</th>
<th>Reception</th>
<th>Physical Exam/Triage</th>
<th>Nursing Care</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Types of procedures/interactions</strong></td>
<td>Exchange of administrative info</td>
<td>Clinical assessment</td>
<td>General nursing care excluding aerosol-generating procedures</td>
</tr>
<tr>
<td></td>
<td>Referral to clinical staff</td>
<td>Physical exam</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Taking a history</td>
<td></td>
</tr>
<tr>
<td><strong>Proximity to patient</strong></td>
<td>No close contact</td>
<td>Close contact, expect to be within one meter</td>
<td>Repeated close contact (expect to be within one meter) with the patient, their immediate care environment and equipment used in patient care</td>
</tr>
<tr>
<td></td>
<td>Maintain at least one meter separation</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Likelihood of contact with body fluids</strong></td>
<td>Minimal</td>
<td>Patient may sneeze or cough</td>
<td>Patient may sneeze or cough</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Patient secretions on contaminated surfaces, used equipment, tissues or linen</td>
<td>Patient secretions on contaminated surfaces, used equipment, tissues or linen</td>
</tr>
</tbody>
</table>
**Scenario:**
A patient arrives at the HCF with coughing and fever

| Measures in place to stop transmission of infection |
|---------------------------------|---------------------------------|---------------------------------|
| **Reception**                    | **Physical Exam/Triage**         | **Nursing Care**                |
| **Environment:**                 | **Environment:**                 | **Environment:**                |
| - Encourage pt to maintain distance of at least one meter from other patients and visitors |
| - Limit the number of staff in patient room |
| - Keep spaces well ventilated |
| **Patient**                      | **Patient**                      | **Patient**                     |
| - Instruct on use of respiratory etiquette supplies |
| - A medical mask should be worn |
| - Restrict patient movement |
| **HCW**                          | **HCW**                          | **HCW**                         |
| - If any close contact without a barrier, use a medical mask |
| **Infection control supplies required** | **Infection control supplies required** | **Infection control supplies required** |
| - Tissues                         | - Tissues                         | - Tissues                        |
| - Medical masks                   | - Medical masks                   | - Medical masks                  |
| - Hand hygiene products           | - Hand hygiene products           | - Hand hygiene products          |
| - Hand hygiene products           | - Hand hygiene products           | - Hand hygiene products          |
| - Tissues                         | - Tissues                         | - Tissues                        |
| - Medical masks                   | - Medical masks                   | - Medical masks                  |
| - Hand hygiene products           | - Hand hygiene products           | - Hand hygiene products          |
| - Tissues                         | - Tissues                         | - Tissues                        |
| - Medical masks                   | - Medical masks                   | - Medical masks                  |
| - Hand hygiene products           | - Hand hygiene products           | - Hand hygiene products          |
| - Tissues                         | - Tissues                         | - Tissues                        |
| - Medical masks                   | - Medical masks                   | - Medical masks                  |
| - Hand hygiene products           | - Hand hygiene products           | - Hand hygiene products          |
| - Gloves                          | - Gloves                          | - Gloves                         |
| - Gowns                           | - Gowns                           | - Gowns                          |
| - Eye protection                  | - Eye protection                  | - Eye protection                 |
| - Particulate respirator          | - Particulate respirator          | - Particulate respirator         |
### TABLE 5: “MATCH THE MASK TO THE ACTIVITY” ANSWER KEY

<table>
<thead>
<tr>
<th>Task or Activity</th>
<th>Are Masks Needed?</th>
<th>Preferred Masks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood pressure check by HCW on patient with no ARD symptoms in region with outbreak of avian flu.</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Temperature check by HCW on patient who is coughing and sneezing.</td>
<td>Yes</td>
<td>Medical mask worn by HCW and patient</td>
</tr>
<tr>
<td>Patient with no ARD symptoms who is undergoing outpatient treatment for tuberculosis comes to district clinic for routine checkup with HCW.</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Physical examination by HCW of patient with active tuberculosis in airborne precaution room</td>
<td>Yes</td>
<td>Particulate respirator worn by HCW</td>
</tr>
<tr>
<td>Transport of patient hospitalized with known avian flu outside of isolation area for chest x-ray.</td>
<td>Yes</td>
<td>Medical mask worn by patient</td>
</tr>
<tr>
<td>HCW enters well-ventilated private room of patient with seasonal influenza virus.</td>
<td>Yes</td>
<td>Medical mask worn by HCW</td>
</tr>
<tr>
<td>Patient is coughing and sneezing while sitting in the waiting room waiting to see the doctor.</td>
<td>Yes</td>
<td>Medical mask worn by patient</td>
</tr>
<tr>
<td>Patient is admitted to the hospital with cough and fever. The HCW obtains an induced sputum collection.</td>
<td>Yes</td>
<td>Particulate respirator worn by HCW</td>
</tr>
<tr>
<td>Patient is admitted to the hospital with asthma and ARD symptoms. The HCW administers nebulized drug therapy.</td>
<td>Yes</td>
<td>Medical mask worn by HCW and by patient before and after nebulizer treatment</td>
</tr>
<tr>
<td>Patient is brought into the emergency department in cardiac arrest and undergoes resuscitation including intubation.</td>
<td>Yes</td>
<td>Particulate respirator worn by HCWs</td>
</tr>
<tr>
<td>HCW performs temperature check on patient with documented streptococcal pneumonia.</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>There has been an outbreak of influenza associated with high mortality in the region. A patient who is coughing and sneezing is standing in line waiting to be seen by a HCW.</td>
<td>Yes</td>
<td>Medical mask worn by HCW and patient</td>
</tr>
</tbody>
</table>
TABLE 6: INFECTION CONTROL MEASURES FOR PROCEDURES ON PATIENTS WITH SUSPECTED OR CONFIRMED RESPIRATORY INFECTIONS ANSWER KEY

<table>
<thead>
<tr>
<th>Scenario: A patient with a respiratory infection undergoes a medical procedure</th>
<th>Nebulized Drug Therapy</th>
<th>Collection of an Induced Sputum Specimen</th>
<th>Resuscitation, Intubation, Suctioning and/or Extubation</th>
<th>Bronchoscopy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expected types of procedures/patient interactions</td>
<td>Placement and adjustment of nebulizer around patient face and nose</td>
<td>Chest physiotherapy</td>
<td>Insertion laryngoscope, Endotracheal tube (ETT), suction catheter</td>
<td>Insertion and removal of bronchoscope</td>
</tr>
<tr>
<td></td>
<td>Contact with oxygen tank or outlet</td>
<td>Sputum collection</td>
<td>Ambu bag connection</td>
<td>Normal saline lavage</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Normal saline lavage</td>
<td>Biopsy or specimen collection</td>
</tr>
<tr>
<td>Proximity to patient during the procedure</td>
<td>Close contact: expect to be within one meter</td>
<td>Repeated close contact within one meter and very close to airway and respiratory secretions</td>
<td>Repeated close contact within one meter and very close to airway and respiratory secretions</td>
<td>Repeated close contact within one meter and very close to airway and respiratory secretions</td>
</tr>
<tr>
<td>Likelihood of contact with blood or body fluids</td>
<td>Patient may cough/sneeze</td>
<td>HCWs with likely exposure to respiratory secretions</td>
<td>HCWs with likely exposure to respiratory secretions and tiny aerosols</td>
<td>HCWs with likely exposure to respiratory secretions and tiny aerosols</td>
</tr>
<tr>
<td></td>
<td>HCW may be exposed to patient secretions on contaminated surfaces including equipment, tissues or linen</td>
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### Scenario:
A patient with a respiratory infection undergoes a medical procedure

<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>Environment</strong></td>
</tr>
<tr>
<td>- Limit number of staff in patient’s room</td>
</tr>
<tr>
<td>- Keep spaces well ventilated</td>
</tr>
<tr>
<td><strong>Patient</strong></td>
</tr>
<tr>
<td>- Instruct on use of respiratory etiquette supplies (tissues, mask, hand hygiene solution)</td>
</tr>
<tr>
<td>- Medical mask to be removed only during the nebulizer treatment</td>
</tr>
<tr>
<td><strong>HCW</strong></td>
</tr>
<tr>
<td>- Use a medical mask</td>
</tr>
<tr>
<td>- Hand hygiene</td>
</tr>
<tr>
<td><strong>Infection control supplies required</strong></td>
</tr>
<tr>
<td>- Tissues</td>
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<td>- Medical masks</td>
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<td>- Use gloves, gown, eye protection, particulate respirator</td>
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<tr>
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**Respiratory Infection Control in Health Care Facilities**  
**Learning Resource Package**
TABLE 7: INFECTION CONTROL MEASURES FOR HEALTH CARE WORKERS CARING FOR PATIENTS WITH FEBRILE ACUTE RESPIRATORY DISEASES IN SPECIFIC CLINICAL SETTINGS AND PROCEDURES ANSWER KEY

<table>
<thead>
<tr>
<th>Setting or Procedure</th>
<th>Infection Control Measures</th>
<th>Hand hygiene</th>
<th>Gloves</th>
<th>Gown</th>
<th>Medical mask for HCW</th>
<th>Particulate respirator for HCW</th>
<th>Eye protection</th>
<th>Respiratory etiquette</th>
<th>Adequately ventilated single room (≥12 ACH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receptionb</td>
<td></td>
<td></td>
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<tr>
<td>Physical exam/ triage</td>
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<tr>
<td>General nursing care</td>
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<tr>
<td>Specimen collection (blood)</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
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<tr>
<td>Nebulization</td>
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<tr>
<td>Specimen collection (induced sputum)</td>
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<td>✓</td>
<td>✓</td>
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</tr>
<tr>
<td>Aerosol-generating procedure</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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</tr>
</tbody>
</table>

HCW: Health care worker; ACH: Air changes per hour

a All spaces in the health facility should be well-ventilated, not only the single rooms used for isolation purposes.
b Without any direct contact with patient.

Explanatory notes

<table>
<thead>
<tr>
<th>Infection Control Measures</th>
<th>Hand hygiene</th>
<th>Gloves</th>
<th>Gown</th>
<th>Medical mask for HCW</th>
<th>Particulate respirator for HCW</th>
<th>Eye protection</th>
<th>Respiratory etiquette</th>
<th>Adequately ventilated single room (≥12 ACH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No anticipated close contact with the patient.</td>
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<tr>
<td>Involves close contact (&lt; 1 meter) with patient.</td>
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<tr>
<td>Aerosol-generating procedure associated with pathogen transmission—e.g., intubation; cardiopulmonary resuscitation and related procedures (e.g., manual ventilation, suction); bronchoscopy; and autopsy or surgery involving the use of high-speed devices.</td>
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