State of Kuwait
Ministry of Health
Infection Control Directorate

Isolation policy

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I. Introduction

It is usually well recognized that certain infected patient need isolation precautions. Nevertheless, how this can be accomplished most efficiently, safely and economically for both patients and health –care personnel is often a very controversial subject.

Throughout history, few aspects of patient care have been surrounded by as much emotionalism, ritualism, and heated debate as the isolation and management of patients with serious and potentially transmissible infectious diseases. In the last few decades, the regular emergence of newly described and often rapidly fatal syndromes such as acquired immune deficiency syndrome (AIDS), and the increasing problem of multi–drug resistant microorganisms (MDR) such as methicillin resistant staphylococcus aureus (MRSA) and multiple drug resistant tuberculosis and recently the emergence of severe acute respiratory distress syndrome (SARS) have added fuel to the flame of controversy.

However many studies showed that isolation system (i.e., hand washing, barrier precaution, cohorting, use of private room and the use of dedicated equipment) is effective in preventing or reducing nosocomial transmission of certain pathogen. Isolation practices have been shown to be important components of control of outbreaks or endemic infections caused by number of pathogens.

II. Aim of the Isolation Policy

The policy aims at providing basic information concerning the care and management of all patients on the aspect of prevention and control of infectious disease, as well as MDR bacterial infections.

Equally, patient with lowered resistance to infection need to be protected from attending hospital staff and visitors. The policy is based mainly on the *most recent CDC Guidelines for Isolation Procedures In Hospitals.*

III. Rationale for Isolation Precautions In Hospitals

Transmission of infection within a hospital requires three elements: -

1. Source of infecting microorganism.
2. A susceptible host.
3. Means of transmission for the microorganism.

1. Source of infecting microorganism:

A. Human sources of the infecting microorganisms in the hospitals may be: -

- Patient himself or his endogenous flora.
- Health care personnel.
- Visitors.
- Persons with infectious disease.
- Persons with colonization.
- Persons in incubation period.
- Chronic carriers.

B. Environmental sources:

- Equipment, medication and working surfaces.

2. A susceptible Host

Resistance among persons to pathogenic microorganisms varies greatly, some persons may resist infection or colonization, others exposed to the same agent may establish commensal relationship and become asymptomatic carriers, and others may develop clinical disease.

Host factors that render patients more susceptible to infection include:

- Extremes of age.
- Underlying diseases.
- Treatment with antimicrobials, corticosteroids, or immune suppressive agents.
- Irradiation.
- Break in the first line of defense by surgery, anesthesia, or indwelling catheter.
- Long hospital stay.

3. Transmission

Microorganisms are transmitted in hospitals by several routes, and the same microorganism may be transmitted by more than one route.

There are five main routes for transmission:

3.1 Contact Transmission

Contact Transmission is the most important and frequent mode of transmission of microorganisms.

Organisms can be transmitted by: -

a) Direct contact

Direct contact with the patient hand or skin-to-skin contact that occur when performing patient-care activities, or between two patients.

b) Indirect contact

Indirect contact through touching contaminated environmental surfaces or patient-care items in the patient's environment e.g. contaminated instruments, needles, or dressing.

3.2 Airborne Transmission

Microorganisms can be transmitted by:

a) Airborne droplet nuclei, which are small particle residue [5 micron or smaller in size] of evaporated droplets containing microorganisms that remain suspended in the air for long periods of time.

b) Dust particles containing the infectious agent. Microorganisms carried in this manner can be dispersed widely by air current within a room or over a long distance from the source patient, depending on environmental factors. Special air handling and ventilation are required to prevent airborne transmissible diseases e.g. TB, measles and chickenpox.

3.3 Droplet Transmission

Microorganisms can be transmitted by large-particle droplets [>5 microns in size] that can be generated by the patient during coughing, sneezing, talking, or during the performance of certain procedures such as suctioning and bronchoscopy.

Because droplets do not remain suspended in the air, special air handling and ventilation are not required.

3.4 Common Vehicle Transmission.

Microorganisms may be transmitted by contaminated items (e.g.: food, water, medications, devices and equipment).

3.5 Vector Borne Transmission

Microorganisms can be transmitted through vectors such as mosquitoes, flies or rats.

IV. Types of Isolation Precautions.

A. Standard Precautions

Use Standard Precautions for the care of all patients as a basic requirement. All patients are considered to be potentially infectious until proved otherwise. Standard precautions include:-

1. Hand washing

- Wash hands after touching blood, body fluids, secretions, excretions, non-intact skin, mucosal surface, and contaminated items, whether or not gloves are worn.
- Wash hands immediately after gloves are removed, between patient contacts, and when otherwise indicated to avoid transfer of microorganisms to other patients or environments.
- It may be necessary to wash hands between tasks and procedures on the same patient to prevent cross-contamination of different sites.

2. Gloves

- Wear gloves when touching blood, body fluids, secretions, excretions and contaminated items.
- Put on clean gloves immediately before touching mucous membranes and non-intact skin.
- Change gloves between tasks and procedures on the same patient after contact with material that may contain a high concentration of microorganisms.
- Remove gloves promptly after use, before touching non-contaminated items and environmental surfaces, and before going to another patient, then wash hands immediately to avoid transfer of microorganisms to other patients or environments.

3. Mask, Eye protection and Face shield

Wear a mask and eye protection or a face shield to protect mucous membranes of the eyes, nose, and mouth during procedures and patient care activities that are likely to generate splashes or sprays of blood, body fluids, secretions, and excretions.

4. Gown

- Wear gown to protect skin and to prevent soiling of clothing during procedures and patient-care activities that are likely to generate splashes or sprays of blood, body fluids, secretions or excretions.
- Select a gown that is appropriate for the activity and amount of fluid likely to be encountered.
- Remove the soiled gown as promptly as possible and discard properly then wash hands to avoid transfer of microorganisms to other patients or environments.

5. Patient Care Equipment

- Handle used patient-care equipment soiled with blood, body fluids, secretions, and excretions in a manner that prevents skin and mucous membrane exposure, contamination of clothing, and transmission of microorganisms to other patients and environments.
- Ensure that reusable equipment is not used for the care of another patient until it has been cleaned and reprocessed appropriately.
- Ensure that single-use items are discarded properly.

6. Environmental Control

Ensure that the hospital has adequate procedures for the routine care, cleaning, and disinfection of environmental surfaces, beds, bedrails, bedside equipment, and other frequently touched surfaces, and ensure that these procedures are being followed.

7. Linen

Handle, transport, and process used linen soiled with blood, body fluids, secretions, and excretions, in a manner that prevents skin and mucous membrane exposures and contamination of clothing, and that avoids transmission of microorganisms to other patients and environments.

8. Occupational Health and Blood Borne Pathogens

- Handle sharp instruments and devices such as needles, scalpels..etc, carefully to avoid injury.
- Never recaps used needles, or use any other technique that involves directing the point of a needle toward any part of the body, rather, use a one-handed 'scoop' or 'spooning' technique.
- Do not remove used needles from disposable syringes by hand, and do not bend, break, or manipulate used needles by hand.
- Place used disposable syringes and needles, scalpel blades, and other sharp items in appropriate puncture-resistant containers, which are located as close as practical to the area in which the items were used, and place reusable syringes and needles in a puncture-resistant container for transport to the reprocessing area.
- Wrap the sharp box in yellow Biohazard bag for disposal.

9. Patient Placement

Place a patient who may contaminate the environment, or who does not assist in maintaining appropriate hygiene or environmental control in a single room.

B. Transmission Based Precautions

1. Airborne Precautions

a) Patient Placement

- Place the patient in a single room. (Refer to standard requirements for isolation room).
- Keep the room door closed while the patient inside the room.
- When a single room is not available, keep the patient who are infected or colonized with the same microorganism in one room (cohort isolation).

b) Respiratory Protection

- Wear particulate respirator (N-95) when entering the room of a patient with known or suspected infectious pulmonary tuberculosis or SARS.
- Susceptible persons should not enter the room of patients known or suspected to have measles or varicella (chickenpox) if other immune caregivers are available.
- Susceptible persons, who may enter the room of a patient known or suspected to have measles or varicella, should wear (N-95) mask.

c) Patient Transport

- Movement and transportation of the patient outside the room should be limited to essential purposes only.
- If transport or movement is necessary, minimize patient dispersal of droplet nuclei by placing a surgical mask on the patient, if possible.

2. Droplet Precautions

a) Patient Placement

- Place the patient in a single room.
- When single room is not available, place the patient in a room with a patient(s) who has active infection or colonization with the same microorganisms but with no other infection (cohorting).
- When a single room is not available and cohorting is not achievable, maintain spatial separation of at least 3 feets between the infected patient and other patients and visitors.
- Special air handling and ventilation are not necessary.

b) Mask

In addition to standard precautions, wear a mask when working within 3 feet of the patient.

c) Patient Transport

- Movement and transportation of the patient outside the room should be limited to essential purposes only.
- If transport or movement is necessary, minimize patient dispersal of droplet nuclei by masking the patient, if possible.

3. Contact Precautions

a) Patient Placement

- Ideally place the patient in single room, if available.
- Corner bed can be used if single room is not available.
- Consider cohorting in designated cubicle for clustering of cases.
- Discharge the patient as soon as his medical condition allows.

b) Gloves and Hand washing

- In addition to wearing gloves as outlined under Standard Precautions, wear gloves while handling infective materials.
- During the course of providing care for the patient, change gloves after having contact with infective material that may contain high concentrations of microorganisms (fecal material and wound drainage).
- Remove gloves before leaving the patient's environment and wash hands immediately with proper antiseptic agent.
- After glove removal and hand washing, ensure that hands do not touch potentially contaminated environmental surfaces or items in the patient's room to avoid transfer of microorganisms to other patients or environments.

c) Gown

- In addition to wearing a gown as outlined under Standard Precautions, wear a gown when entering the room if you anticipate that your clothing will have substantial contact with the patient, environmental surfaces, or items in the patient's room, or if the patient is incontinent or has diarrhea, an ileostomy, a colostomy, or wound drainage not contained by a dressing.
- Remove the gown before leaving the patient's room.
- After gown removal, ensure that clothing does not contact potentially contaminated environmental surfaces to avoid transfer of microorganisms to other patients or environments.

d) Patient Transport

- Movement and transportation of the patient outside the room should be limited to essential purposes only.
- If the patient is to be transported out of the room, ensure that precautions are maintained to minimize the risk of transmission of microorganisms to other patients and contamination of environmental surfaces or equipment.

e) Patient-Care Equipment

- When possible, dedicate the use of noncritical patient-care equipment to a single patient (or cohort of patients infected or colonized with the pathogen requiring precautions) to avoid sharing between patients.
- If use of common equipment or items is unavoidable, then adequately clean and disinfect them before use for another patient.

V. Standard Requirements of Isolation Room

i. An isolation room should be equipped with:
   1) An anteroom with hand basin (elbow operated) and Aluminum shelves.
   2) Built in toilet.
   3) Shower.
   4) Hand basin for patient, and a separate basin for staff.
   5) Foot-operated refuse disposal bin.
   6) Individual medical equipment.
   7) Disposable paper hand towels and antiseptic hand cleanser in an appropriate wall- mounted dispenser.

ii. All surfaces should be washable.

iii. The door should be kept closed, except for necessary entrance and exits.

iv. Cleaning equipment should be individual and not for communal use.

Infection control and ventilation requirements for Airborne Infection Isolation (AII) rooms

A. Incorporate certain specifications into the planning and construction or renovation of all (AII) rooms:

1) Maintain continuous negative air pressure (2.5 Pa0.01- inch water gauge) in relation to the air pressure in the corridor.
2) Ensure that the rooms are well sealed.
3) Install self-closing devices on all rooms exit doors.
4) Provide ventilation to ensure ≥ 12 air changes per hour (ACH) for renovated rooms and new rooms and ≥ 6 ACH for existing (AII) rooms.
5) Direct exhaust air to the outside away form air intake and populated areas.
6) Air from AII room in new or renovated facilities should not be re-circulated into the general ventilation system. In case that re-circulation of air into the general ventilation system from such room is unavoidable i.e. in existing facilities, in such cases, HEPA filter should be installed in the exhaust duct.
7) Negative pressure in the room should be monitored daily while the room is being used.

B. Implement environmental infection control measures for persons with diagnosed or suspected airborne infectious diseases.

1) Use (AII) rooms for patients with or suspected of having an airborne infection that require cough-inducing procedures.
2) Although airborne spread of viral hemorrhagic fever (VHF) has not been documented in health-care setting, prudence dictates placing a (VHF) patient in a (AII) room, preferably with an anteroom, to reduce the risk of occupational exposure to aerosolized infectious material in blood, vomitus, liquid stool, and respiratory secretions present in large amounts during the end stage of the patient's illness.
    - If anteroom is not available, use portable industrial grade HEPA filters in the patient's room to provide additional (ACH) equivalents for removing airborne particulates.
    - Ensure that health-care workers wear face shields or goggles with appropriate respirators when entering the rooms of (VHF) patients with prominent cough, vomiting, diarrhea, or hemorrhage.

3) Maintain backup ventilation equipment for emergency provision of required ventilation for AII rooms, and take immediate steps to restore the fixed ventilation system.

VI. Protective Isolation

Immunocompromised patients (e.g. solid-organ transplant reciepient, or allogeneic graft, neutropenic patients) vary in their susceptibility to nosocomial infections, depending on the severity and duration of immune suppression. They are generally at increased risk for bacterial, fungal, parasitic and viral infections from both endogenous and exogenous sources. The aim of protective isolation is to prevent or delay acquisition by these patients of institutionally acquired bacteria from other patients and environments.

The immunocompromised patients should be cared in a specific protective environment (PE).

Infection Control and Ventilation Requirements of Protective Environment (PE):

A. Minimize exposures of severely immunocompromised patients to activities that might cause aerosolization of fungal spores (e.g.; vacuuming or disruption of ceiling tiles)

B. Minimize the time that immunocompromised patients are outside their rooms for diagnostic procedures and other activities.

C. Provide Respiratory protection for severely immunocompromised patients when they must leave their rooms for diagnostic procedures and other activities.

D. Incorporate ventilation engineering specifications and dust-controlling processes into the planning and construction of new protective environment units:

1) Install central or point of use HEPA filter for supply air.
2) Ensure that rooms are well sealed.
3) Maintain ≥ 12 air changes per hour (ACH).
4) Maintain positive air pressure (≥ 2.5 Pa [0.01 –inch water gauge]) in relation to the corridor.
5) Locate air supply and exhaust grilles so that clean filtered air enters from one side of the room, flows across the patient's bed and exits from the opposite side of the room.
6) An airflow patterns should be maintained and monitored on a daily basis.
7) Install self-closing devices on all room exits doors.

E. Do not use laminar airflow systems in newly constructed PE rooms.

F. To protect immunocompromised patients who also have an airborne infectious disease:

1) Ensure that the room is designed to maintain a positive pressure.
2) Use an anteroom to ensure appropriate air-balance relationships and provide independent exhaust of contaminated air to the outside, or place an HEPA filter in the exhaust duct if the return air must be re-circulated.
3) If an anteroom is not available, place the patient in airborne infection isolation and use portable, industrial-grade HEPA filters to enhance filtration of spores in the room.

G. Maintain backup ventilation equipment for emergency provision of required ventilation for PE area and take immediate steps to restore the fixed ventilation system.

VII. Isolation Precautions for Patient Infected or Colonized with Multiple Drug Resistant Organisms (MDROs)

All healthcare settings constitute important environments for the emergence and transmission of antimicrobial resistant microbes. MDROs are defined as microorganisms-predominantly bacteria- that are resistant to one or more classes of antimicrobial agents. Although the names of certain MDROs suggest resistance to only one agent (e.g., methicillin –resistant *Staphylococcus aureus* [MRSA] vancomycin resistant enterococcus [VRE]), these pathogens are usually resistant to all but one or two commercially available antimicrobial agents. Other MDROs of current concern include nonsusceptible *Streptococcus pneumoniae* (NSSP) which is resistant to pencillin and other broad-spectrum agents such as macrolides and fluoquinolones, multidrug-resistant gram-negative bacilli (MDR-GNB), especially those producing extended spectrum beta-lactamases (ESBLs); and strains of *S.aureus* [VISA], vancomycin resistant *S. aureus* [VRSA]). The terminology for *M. tuberculosis* is a special case, where multidrug-resistant strains are defined as those resistant to at least isoniazid and rifampin (the two most important and potent of the first line drugs) with or without resistance to other drugs.

MDROs are complex multifactorial problem with major cost implications requiring urgent action. Some examples of the antimicrobial resistance are illustrated in Appendix- 4.

Increasing emergence and spread of MDROs, threatens disease treatment and prevention programs. Concerted action for containment of resistance is needed now.

Patients infected or colonized with multiple antibiotic resistant organisms should be placed on Contact Precautions. The following isolation precautions should be followed to minimize the nosocomial MDROs:

- A single room, preferably with a self-contained bathroom is the first choice.
- Room sharing by cohorting of patients infected or colonized with the same strain of micro organisms is a second choice.
- Maintain appropriate staffing levels to provide adequate patient care for whatever means of placement is chosen.
- Use the physical barriers appropriately to reduce the risk of transmission of MDROs between the patients.
- Wear clean, non-sterile gloves when touching the patient or potentially contaminated environmental sources: -
  - Change gloves between patients, on touching contaminated surfaces or equipments, and between tasks on the same patient when contamination has occurred.
  - Wash hands after removing gloves.
- Use gowns or plastic aprons to protect the skin or clothing from gross contamination.

VII. Visitors of isolated patients

Visitors can be a good medicine for patient. Family members and friends are welcomed to play a role in patient care and the hospital is seen as an extension of the home environment. There are advantages to devolving some patient care to sensible attentive relative effectively without jeopardizing the principles of infection control. However patient interest is the utmost concern and in order to enhance the quality of care and to protect both visitors and patients, specific regulations have been established for those visiting isolated patient.

- Visitors are requested to report to nurse station for instructions before entering patient room.
- Visitors should follow instructions on the patient bed or door.
- Not more than two visitors are allowed at bedside at one time.
- Visits should be kept short.
- People with cold, sore throat or contagious disease should not visit.
- No gifts of food or drink should be brought.
- Visitors may be requested to wear protective barriers depending on the type of isolation:
  - These barriers should be worn and taken off in specific order.
  - The order of putting on the barriers is gown, mask / respirator, goggles / face-shield, gloves.
  - The order of taking the barriers off is gloves, goggles / face-shield, gown, mask/ respirator.
- Wash hands or rub it with antiseptic solution before and after the visits.
- Do not touch the patient or patient items such as I.V. set, catheter or E.T tube.
- Keep the door closed at all times.
- At the end of visit, dispose the barriers as instructed with the avoidance of touching the outer contaminated surfaces of these barriers.

Appendix – 1

LIST OF DISEASES IN WHICH INFECTION CONTROL UNIT SHOULD BE INFORMED: -

1. Acute Poliomyelitis
2. Amoebic dysentery
3. Bacillary dysentery
4. Chickenpox
5. Cholera
6. Creutzfeldt- Jacob Disease
7. Dengue fever
8. Diphtheria
9. Food poisoning
10. Frunclosis- Staphylococcal in newborns
11. *Hemophilus influenza* meningitis
12. Hepatitis B, C, D
13. Herpes Simplex- disseminated or neonatal
14. Human Immunodeficiency Virus (HIV) (including suspected and diagnosed)
15. Japanese B. encephalitis
16. Leptospirosis
17. Legionnaires' disease
18. Leprosy
19. Malaria
20. Measles
21. Meningococcal infections
22. Methicillin Resistant *Staphylococcus aureus* (MRSA)
23. Mumps
24. Paratyphoid fever
25. Pediculosis
26. Plague
27. Rabies
28. Relapsing fever
29. Rubella
30. SARS

31. Scabies
32. Scarlet fever
33. Smallpox
34. *Streptococcus pyogenes* infections
35. Syphilis
36. Tetanus Neonatorum
37. Tuberculosis
38. Typhoid fever
39. Typhus
40. Vancomycin Intermediate Resistant *Staphylococcus aureus* (VISA)
41. Vancomycin Resistant *Staphylococcus aureus* (VRSA)
42. Vancomycin Resistant Enterococci (VRE)
43. Multiply resistant gram negative (MRGN) organisms.
44. Outbreaks of salmonellosis
45. Whooping cough
46. Yellow fever.
47. Any other clustering of infectious diseases for which the Infection Control Professional as an interim measure before the next infection control committee meeting orders special precautions can be held.

Appendix - 2

SYNOPSIS OF THE TYPES OF PRECATIONS AND PATIENTS REQUIRING THESE PRECAUTIONS.

STANDARD PRECAUTIONS

Use standard precautions for the care of all patients.

AIRBORNE PRECAUTIONS

In addition to standard precautions, use airborne precautions for patients known or suspected to have serious illnesses transmitted by airborne droplet nuclei. Examples of such illness include:

1. Measles.
2. Varicella (including disseminated zoster)+
3. Tuberculosis.

DROPLET PRECAUTIONS

In addition to standard precautions, use droplet precautions for patients known or suspected to have serious illnesses transmitted by large particle droplets. Example of such illness include:

1. Invasive *Haemophilus influenza* type B disease, including meningitis, pneumonia, epiglottitis, and sepsis.
2. Invasive *Neisseria meningitides* disease, including meningitis, pneumonia, and sepsis
3. Other serious bacterial respiratory infections spread by droplet transmission, including:

   Diphtheria (pharyngeal)

   Mycoplasma pneumonia

   Pertussis

   Pneumonic plague

Streptococcal (group A) pharyngitis, pneumonia, or scarlet fever in infants and young children.

4. Serious viral infection spreads by droplet transmission, including:
   a) Adenovirus
   b) Influenza
   c) Mumps
   d) Parvovirus B19
   e) Rubella

CONTACT PRECAUTIONS

In addition to standard precautions, use contact precautions for patients known or suspected to have serious illness easily transmitted by direct patient contact or by contact with items in the patient's environments. Examples of such illnesses include:

1. Gastrointestinal, respiratory, skin, or wound infections or colonization with multi-drug-resistant bacteria judged by the infection control program, based on current state, regional, or national recommendations, to be of special clinical and epidemiological significance.
2. Enteric infections with a low infectious dose or prolonged environmental survival, including:
   a) Clostridium difficile.
   b) For diapered or incontinent patients: enterohemorrhagic *Escherichia coli* O157:H7, Shigella, Hepatitis A, or Rotavirus.
3. Respiratory syncytial virus, Parainfluenza virus, or Enteroviral infections in infants and young children.
4. Skin infections that are highly contagious or that may occur on dry skin, including:
   a) Diphtheria (cutaneous)
   b) Herpes simplex virus (neonatal or mucocutaneous)
   c) Impetigo
   d) Major (noncontained) abscesses, cellulitis, or decubitous ulcer
   e) Pediculosis
   f) Scabies
   g) Staphylococcal frunculosis in infants and young children.
   h) Zoster (disseminated or in the immunocompromised host)[+]
5. Viral / hemorrhagic conjunctivits
6. Viral hemorrhagic infections (Ebola, Lassa, or Marburg)*

+ Certain infections require more than one type of precaution.

* See Table –2 for a complete listing of infections requiring precautions, including appropriate footnotes.

Appendix – 3

Table –(1)

CLINICAL SYNDROMES OR CONDITIONS WARRANTING ADDITIONAL EMPIRIC PRECATUIONS TO PREVENT TRANSMISSION OF EPIDEMIOLOGICALLLY IMPORTANT PATHOGENS PENDING CONFIRMATION OF DIAGNOSIS.

Clinical Syndromes or Conditions*	Potential Pathogens**	Empiric Precautions
Diarrhea		
Acute diarrhea with a likely infectious cause in an incontinent or diapered patient.	Enteric pathogens.	Contact.
Diarrhea in an adult with a history of recent antibiotic use.	*Clostridium difficile*	Contact.
Meningitis	*Neisseria meningitides*	Droplet
Rash or exanthems, generalized, etiology unknown		
Petechial / ecchymotic with fever	*Neisseria meningitides*	Droplet
Vesicular	Varicella	Airborne and contact
Maculopapular with coryza and fever	Rubeola (measles)	Airborne
Respiratory infections		
Cough/fever/upper pulmonary infiltrate in an HIV-infected patient or a patient at high risk for HIV infection	*Mycobacterium tuberculosis*	Airborne
Cough/fever/upper pulmonary infiltrate in any lung location in a HIV-infected patient or a patient at high risk for HIV infection	*Mycobacterium tuberculosis*	Airborne
Paroxysmal or severe persistent cough during periods of pertussis activity	*Bordetella perutssis*	Droplet
Respiratory infections, particularly bronchiolitis and croup, in infants and young children	Respiratory syncytial or parainfluenza virus.	Contact.
Risk of multi-drug resistant microorganism History of infection or colonization with multi-drug-resistant organisms.	Resistant bacteria	Contact.
Skin, wound, or urinary tract infection in a patient with a recent hospital or nursing home stay in a facility where multi-drug resistant organisms are prevalent.	Resistant bacteria	Contact.
Skin or wound Infections.		
Abscess or draining wound that cannot be covered by dressing.	*Staphylococcus arueus, Group A streptococcus.*	Contact.

- Infection control professionals are encouraged to modify or adapt this table according to local conditions. To ensure that appropriate empiric precautions are implemented always, hospitals must have systems in place to evaluate patients routinely according to these criteria as part of their preadmission and admission care.

* Patient with the syndromes or conditions listed above may present with atypical signs or symptoms (eg, pertussis in neonates and adults may not have paroxysmal or severe cough). The clinician's index of suspicion should be guided by the prevalence of specific conditions in the community, as well as clinical judgment.

** The organisms listed under the column "Potential Pathogens" are not intended to represent the complete, or even most likely, diagnosis, but rather possible etiologic agents that require additional precautions beyond Standard Precaution until they can be ruled out. These pathogens include enterohemorrhagic Escherichial coli O157:H7, Shigella, hepatitis A, and rotavirus.

Resistant bacteria judged by the infection control program, based on current state, regional, or national recommendations, to be of special clinical or epidemiological significance

Table – (2)

Type and duration of precautions needed for selected infections and conditions:

Infection/ Condition	Precautions	
	Type	Duration
Abscess		
Draining, major [a]	C	DI
Draining, minor or limited [b]	S	
Acquired immunodeficiency syndrome [c]	S	
Actinomycosis	S	
Adenovirus infection, in infants and young children	D, C	DI
Amebiasis	S	
Anthrax		
Cutaneous	S	
Pulmonary	S	
Antibiotic-associated colitis (see *Clostridium difficile*)		
Arthropod borne viral encephalitides (Eastern, Western, Venezuelan equine encephalomyelitis, St. Louis, California encephalitis)	S[d]	
Arthropod borne viral fevers (dengue, yellow fever, Colorado tick fever)	S[d]	
Ascariasis	S	
Aspergillosis	S	
Babesiosis	S	
Blastomycosis, North American, cutaneous or pulmonary	S	
Botulism	S	
Bronchiolitis (see respiratory infections in infant and young children.)		
Brucellosis (undulant, Malta, Mediterranean fever)	S	
Campylobacter gastroenteritis (see gastroenteritis)		
Candidiasis, all forms including mucocutaneous	S	
Cat-scratch fever (benign inoculation lymphoreticulosis)	S	
Cellulitis, uncontrolled drainage.	C	DI
Chancroid (soft chancre)	S	
Chickenpox (varicella; see F[e] for varicella exposure)	A, C	F[e]

Infection/ Condition	Precautions	
	Type	Duration
Chlamydia trachomatis		
Conjunctivitis	S	
Genital	S	
Respiratory	S	
Cholera (see gastroenteritis)		
Closed-cavity infection		
Draining, limited or minor	S	
Not draining	S	
Clostridium		
C. botulinum	S	
C. difficile	C	DI
C. perfringens		
Food poisoning	S	
Gas gangrene	S	
Coccidioidomycosis (valley fever)		
Draining lesions	S	
Pneumonia	S	
Colorado tick fever	S	
Congenital rubella	C	F[f]
Conjunctivitis		
Acute bacterial	S	
Chlamydia	S	
Gonococcal	S	
Acute viral (acute hemorrhagic)	C	DI
Coxsackievirus disease (see enteroviral infection)		
Creutzfeldt-Jakob disease	S	
Croup (see respiratory infections in infants and young children)		
Cryptococcosis	S	
Cryptosporidiosis (see gastroenteritis)		
Cysticercosis	S	

Infection/ Condition	Precautions	
	Type	**Duration**
Cytomegalovirus infection, neonatal or immunosuppressed	S	
Decubitus ulcer, infected		
Major [a]	C	DI
Minor or limited [b]	S	
Dengue	S[d]	
Diarrhea, acute-infective etiology suspected (see gastroenteritis)		
Diphtheria		
Cutaneous	C	CN[h]
Pharyngeal	D	CN[h]
Ebola viral hemorrhagic fever	C[i]	DI
Echinococcosis (hydatidosis)	S	
Echovirus (see enteroviral infection)		
Encephalitis or encephalomyelitis (see specific etiologic agents)		
Endometritis	S	
Enterobiasis (pinworm disease, oxyuriasis)	S	
Enterococcus species (see multi-drug resistant organisms if epidemiologically significant, or vancomycin resistant)		
Enterocolitis, *clostridium difficile*	C	DI
Enteroviral infections		
Adults	S	
Infants and young children	C	DI
Epiglottitis, due to *haemophilus influenzae*	D	U (24hrs)
Epstein-Barr virus infection, including infectious mononucleosis	S	
Erythema infectiousum (also see Parvovirus B19)	S	
Escherichia coli gastroenteritis (see gastroenteritis)		
Food poisoning		
Botulism	S	
Clostridium perfringens or *welchii*	S	
Staphylococcal	S	

Infection/ Condition	Precautions	
	Type	Duration
Furunculosis-staphylococcal		
Infants and young children	C	DI
Gangrene (gas gangrene)	S	
Gastroenteritis *Campylobacter* species	S[j]	
Cholera	S[j]	
Clostridium difficile	C	DI
Cryptosportidium species	S[j]	
Escherichia coli		
- Enterohemorrhagic O157:H7	S[j]	
- Diapered and incontinent	C	DI
- Other species	S[j]	
Gardia lamblia	S[j]	
Rotavirus	S[j]	
- Diapered or incontinent	C	DI
Salmonella species (including S *typhi*)	S[j]	
Shigella species	S[j]	
- Diapered or incontinent	C	DI
Vibrio parahaemolyticus	S[j]	
Viral (if not covered elsewhere)	S[j]	
Yersinia enterocolitica	S[j]	
German measles (rubella)	D	F[v]
Giardiasis (see gastroenteritis)		
Gonococcal ophthalmia neonatorum (Gonorrheal ophthalmia, acute conjunctivitis of newborn)	S	
Gonorrhea	S	
Granuloma inguinale (donovanosis, granuloma venerum)	S	
Guillain –Barre syndrome	S	
Hand, foot, and mouth disease (see enteroviral infection)		
Hantavirus pulmonary syndrome	S	

Infection/ Condition	Precautions	
	Type	Duration
Helicobacter pylori	S	
Hemorrhagic fevers (for example, Lassa and Ebola)	C[i]	DI
Hepatitis, viral		
Type A	S	
- Diapered or incontinent patients	C	F[k]
Type B-HbsAg positive	S	
Type C and other unspecified non-A, non-B	S	
Type E	S	
Herpangina (see enteroviral infection)		
Herpes simplex *(Herpesvirus hominis)*		
Encephalitis	S	
Neonatal [l] (see F[l] for neonatal exposure)	C	DI
Mucocutaneous, disseminated or primary, severe	C	DI
Mucocutaneous, recurrent (skin, oral, genital)	S	
Herpes zoster (varicella-zoster)		
Localised in immunocompromised patient, or disseminated	A, C	DI[m]
Localised in normal patient	S[m]	
Histoplasmosis	S	
HIV (see human immunodeficiency virus)	S	
Hookworm disease (ancylostomiasis, uncinariasis)	S	
Human immunodeficiency virus (HIV) infection [c]	S	
Impetigo	C	U (24 hrs)
Infectious mononucleosis	S	
Influenza	D[n]	DI
Kawasaki syndrome	S	
Lassa fever	C[i]	DI
Legionnaires' disease	S	
Leprosy	S	
Leptospirosis	S	

Infection/ Condition	Precautions	
	Type	**Duration**
Lice (pediculosis)	C	U (24 hrs)
Listeriosis	S	
Lyme disease	S	
Lymphocytic choriomeningitis	S	
Lymphogranuloma venereum	S	
Malaria	S[d]	
Marburg virus disease	C[i]	DI
Measles (rubeola), all presentations	A	DI
Meliodosis, all forms	S	
Meningitis	S	
Aseptic (non bacterial or viral meningitis; also see enteroviral infections)		
Bacterial, gram –negative enteric, in neonates	S	
Fungal	S	
Haemophilus influenzae, known or suspected.	D	U (24 hrs)
Listeria monocytogenes	S	
Neisseria meningitidis (meningococcal) known or suspected.	D	U (24 hrs)
Pneumococcal	S	
Tuberculosis [o]	S	
Other diagnosed bacterial meningitis	S	
Meningococcal pneumonia	D	U (24 hrs)
Meningococcemia (meningococcal sepsis)	D	U (24 hrs)
Molluscum contagiosum	S	
Mucormycosis	S	
Multi-drug resistant organism, infection or colonization [p]		
Gastrointestinal	C	CN
Respiratory	C	CN
Pneumococcal	S	
Skin, wound or burn	C	CN
Mumps (infectious parotitis)	D	F [q]

Infection/ Condition	Precautions	
	Type	Duration
Mycobacteria, non-tuberculosis (atypical)		
Pulmonary	S	
Wound	S	
Mycoplasma pneumonia	D	DI
Necrotizing enterocolitis	S	
Nocardiosis, draining lesions or other presentation	S	
Norwalk agent gastroenteritis (see viral gastroenteritis)		
Orf	S	
Parainfluenza virus infection, respiratory in infants and young children	C	DI
Parvovirus B19	D	F[r]
Pediculosis (lice)	C	U (24 hrs)
Pertussis (whooping cough)	D	F[s]
Pinworm infection	S	
Plague		
Bubonic	S	
Pneumonic	D	U (72 hrs)
Pleurodynia (see enteroviral infection)		
Pneumonia		
Adenovirus	D, C	DI
Bacterial not listed elsewhere (including gram-negative bacterial)	S	
Burkholderia cepacia in cystic fibrosis (CF) patients, including respiratory tract Colonization.	S[t]	
Chlamydia	S	
Fungal	S	
Haemophilus influenza		
- Adults	S	
- Infant and children (any age)	D	U (24 hrs)
Legionella	S	
Meningococcal	D	U (24 hrs)

Infection/ Condition	Precautions	
	Type	Duration
Multi-drug resistant bacterial (see multi-drug resistant organisms)		
Mycoplasma (primary atypical pneumonia)	D	DI
Pneumococcal		
Multi-drug resistant bacterial (see multi-drug resistant organisms)		
Pneumocystis carinii	S[u]	
Pseudomonas cepacia (see *Burkholderia* cepacia)	S[t]	
Staphylococcus aureus	S	
Streptococcus, Group A		
- Adults	S	
- Infants and young children	D	U (24 hrs)
Viral		
- Adults	S	
- Infants and young children (see respiratory infectious disease, acute)		
Poliomyelitis	S	
Psittacosis (ornithosis)	S	
Q fever	S	
Rabies	S	
Rat-bite fever (*Streptobacillus moniliformis* disease, *Spirillum minus* disease)	S	
Relapsing fever	S	
Resistant bacterial infection or colonization (see multidrug resistant organisms)		
Respiratory infectious disease, acute (if not covered elsewhere)		
Adults	S	
Infants and young children [c]	C	DI
Respiratory syncytial virus infection, in infants and young children, and immunocompromised adults.	C	DI
Reye's syndrome	S	
Rheumatic fever	S	
Rickettsial fevers, tick borne (Rocky Mountain spotted fever, tick borne typhus fever)	S	
Rickettsialpox (vesicular rickettsiosis)	S	

Infection/ Condition	Precautions	
	Type	**Duration**
Ringworm (dermatophytosis, dermatomycosis, tinea)	S	
Ritter's disease (staphylococcal scalded skin syndrome)	S	
Rocky mountain spotted fever	S	
Roseola infantum (exanthem subirum)	S	
Rotavirus infection (see gastroenteritis)		
Rubella (German measles; also see congenital rubella)	D	F[v]
Salmonellosis (see gastroenteritis)		
Scabies	C	U (24 hrs)
Scalded skin syndrome, staphylococcal (Ritter's disease)	S	
Schistosomiasis (bilharziasis)	S	
Shigellosis (see gastroenteritis)		
Sporotrichosis	S	
Spirillum minus disease (rat-bite fever)	S	
Staphylococcal disease (*S aureus*)		
Skin, wound or burn:		
- Major [a]	C	DI
- Minor or limited [b]	S	
Enterocolitis	S[j]	
Multi-drug resistant (see multi-drug resistant organisms)		
Pneumonia	S	
Scalded skin syndrome	S	
Toxic shock syndrome	S	
Streptobacillus moniliformis disease (rat-bite fever)	S	
Streptococcal disease (group A streptococcus)		
Skin, wound or burn:		
- Major [a]	C	U (24 hrs)
- Minor or limited [b]	S	
Endometritis (puerperal sepsis)	S	
Pharyngitis in infants and young children	D	U (24 hrs)

Infection/ Condition	Precautions	
	Type	Duration
Pneumonia in infants and young children	D	U (24 hrs)
Scarlet fever in infants and young children	D	U (24 hrs)
Streptococcal disease (group B streptococcus), neonatal	S	
Streptococcal disease (not group A or B) unless covered elsewhere	S	
Multi-drug resistant (see multi-drug resistant organisms)		
Strongyloidiasis	S	
Syphilis		
Skin and mucous membrane, including congenital, primary, secondary	S	
Latent (tertiary) and seropositivity without lesions	S	
Tape worm disease		
Hymenolepis nana	S	
Taenia solium (pork)	S	
Others	S	
Tetanus	S	
Tinea (fungus infection dermatophytosis, dermatomycosis, ringworm)	S	
Toxoplasmosis	S	
Toxic shock syndrome (staphylococcal disease)	S	
Trachoma, acute	S	
Trench mouth (Vincent's angina)	S	
Trichinosis	S	
Trichomoniasis	S	
Trichuriasis (whipworm disease)	S	
Tuberculosis		
Extrapulmonary, draining lesion (including scrofula)	S	
Extrapulmonary, meningitis [o]	S	
Pulmonary, confirmed or suspected or laryngeal disease	A	F[w]
Skin test positive with no evidence of current pulmonary disease	S	
Tularemia		
Draining lesion	S	

Infection/ Condition	Precautions	
	Type	**Duration**
Pulmonary	S	
Typhoid fever (*salmonella typhi*) (see gastroenteritis)		
Typhus, endemic and epidemic	S	
Urinary tract infection (including pyelonephritis), with or without urinary catheter	S	
Varicella (chickenpox)	A, C	F[e]
Vibrio parahaemolyticus (see gastroenteritis)		
Vincent's angina (Trenchmouth)	S	
Viral disease		
Respiratory (if not elsewhere)		
- Adults	S	
- Infants and young children (see respiratory infection disease, acute)		
Whooping cough (pertussis)	D	F[s]
Wound infections		
Major [a]	C	DI
Minor or limited [b]	S	
Yersinia enterocolitica gastroenteritis (see gastroenteritis)		
Localized in immunocompromised patient, disseminated.	A, C	DI[m]
Localized in normal patient	S	
Zygomycosis (plycomycosis, mucormycosis)	S	
Zoster (see Varicella-zoster)		

ABBREVIATIONS

Types of Precautions:

A: Airborne.

C: Contact.

D: Droplet.

S: Standard; when A, C and D are specified, also use S.

Duration of precautions:

CN: until off antibiotics and culture-negative

DI: duration of illness (with wound lesions, DI means until they stop draining)

U: until time specified in hours (hrs) after initiation of effective therapy

Footnote - F

a. No dressing or inadequate dressing.

b. Dressing covers and contains drainage adequately.

c. Also see syndromes or conditions listed in Table 2.

d. Install screens in window and doors in endemic areas.

e. Maintain precaution until all lesions are crusted. The average incubation period for varicella is 10 to 16 days, with a range of 10 to 21 days. After exposure, use varicella zoster immune globulin (VZIG) when appropriate, and discharge susceptible patients if possible. Place exposed susceptible patients on Airborne Precaution beginning 10 days after exposure and continuing until 21days after last exposure (up to 28 days if VZIG has been given). Susceptible persons should not enter the room of patient son precautions if other immune caregivers are available.

f. Place infant on precautions during any admission until 1 year of age, unless nasopharyngeal and urine cultures are negative for virus after age 3 months.

g. Additional special precautions are necessary for handling and decontamination of blood, body fluids and tissues, and contaminated items from patients with confirmed or suspected disease. See latest College of American Pathologists (Northfield, Illinois) guidelines or other references.

h. Until two cultures taken at least 24 hours apart are negative.

i. Inform infection control department.

j. Use contact Precautions for diapered or incontinent children < 6 years of age for duration of illness.

k. Maintain precautions in infants and children < 3 years of age for duration of hospitalization; in children 3 to 14 years of age, until 2 weeks after onset of symptoms; and in others, until 1week after onset symptoms.

l. For infants delivered vaginally or by C-section and if mother has active infection and membranes have been ruptured for more than 4 to 6 hours.

m. Persons susceptible to varicella are also at risk for developing varicella when exposed to patients with herpens zoster lesions; therefore, susceptible should not enter the room if other immune caregivers are available.

n. Surveillance, vaccination, antiviral agents, and use of private rooms with negative air pressure are recommended as much as feasible for patients for whom influenza is suspected or diagnosed.

o. Patient should be examined for evidence of current (active) pulmonary tuberculosis. If evidence exists, additional precautions are necessary.

p. Resistant bacteria judged by the infection control program, based on current state, regional, or national recommendations, to be of special clinical and epidemiologic significance.

q. For 9 days after onset of swelling.

r. Maintain precautions for duration of hospitalization when chronic disease occurs in an immune deficient patient. For patients with transient aplastic crisis or red-cell crisis, maintain precautions for 7 days.

s. Maintain precautions until 5 days after patient is placed on effective therapy.

t. Avoid cohorting or placement in the same room with a cystic fibrosis patient who is not infected or colonized with *B cepacia*. Persons with CF who visits or provide care and are not infected or colonized with *B cepacia* may elect to wear a mask within 3ft of a colonized or infected patient.

u. Avoid placement in the same room with an immuno-compromised patient.

v. Until 7 days after onset of rash.

w. Discontinue precautions only when TB patient is on effective therapy, which is improving clinically. And has three consecutive negative sputum smears collected on different days, or TB is ruled out.

Appendix – 4

BACTERIAL INFECTIONS PREVIOUSLY SUSCEPTIBLE ARE NOW RESISTANT TO ANTIBIOTICS

TABLE – 1

Community Acquired Infections

No:	Disease	Causative Microorganism	Antibiotic Resistant
1	Pneumonia	Strep. Pneumoniae	Pencillin resistant
2	Dysentery	Shigella Dysenteriae	Multi resistant
3	Typhoid	Salmonella Typhi	Multi resistant
4	Gonorrhoea	Neisseria Gonorrhoeae	Pencillin and tetracillin resistant
5	Tuberculosis	Mycobacterium Tuberculosis	Rifampicin and INH resistant

TABLE – 2

Nosocomial Infection

No:	Causative Microorganism	Antibiotic Resistant
1	Staphylococcus Aureus	Methicillin and Vancomycin resistant
2	Enterococcus spp.	Vancomycin resistant
3	Klebseilla Pseudomonas	Multi resistant