YALE UNIVERSITY INFECTION CONTROL MANUAL

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Foreword

In the mid 1990's, concerns over the lack of uniformity of infection control practices across Yale University's clinical areas not monitored by Yale-New Haven Hospital prompted the Deputy Provost to request the establishment of an Infection Control Work Group. Infection control coordinators, nurses, doctors from various clinical locations, and representatives from Yale Environmental Health and Safety were selected to participate in the work group.
The group conducted an initial assessment of infection control programs in University clinical areas. The Yale University Infection Control Work Group prepared this manual to inform the Yale clinical community of standard infection control issues and practices. Since the development of this manual, Yale Environmental Health and Safety has edited and revised the guidance to include additional tools, protocols, and strategies to mitigate risks and ensure a safe environment for all. From routine hygiene practices to response measures for spills and exposures, this manual is a cornerstone for building and maintaining a culture of safety and accountability.

The guidelines contained herein are not merely policies—they are the embodiment of Yale University's collective commitment to excellence in healthcare delivery. By adhering to these practices, we safeguard not only individual health but also the trust placed in us by our communities.

This manual is a living document, designed to adapt as new challenges emerge and best practices evolve. Yale Environmental Health and Safety encourages staff at all levels to engage with its content, integrate its principles into daily operations, and offer feedback for continuous improvement. Together, we can ensure that our ambulatory care sites remain at the forefront of infection control.

Thank you for your dedication to upholding the highest standards of safety and quality.

SECTION 1: Staff Orientation and Education Information

1.1 Introduction

This manual has been prepared to provide current guidelines for the prevention and control of infections among patients, employees and visitors. These guidelines provide a rational approach to isolation and other infection control practices, balancing the theoretical with what is practical and cost-effective.

All personnel (physicians, nurses, technicians, support staff and others) are responsible for complying with isolation precautions and other infection control procedures, and for tactfully calling observed infractions to the attention of offenders. Compliance with infection control procedures cannot be effectively dictated and enforced by a committee or administration but must arise from a personal sense of responsibility to the patient and others in the healthcare environment. Unfortunately, infractions by some are sufficient to negate the conscientious efforts of others, so constant vigilance is important.

Thus, professional responsibility is the key to detecting and correcting breaches in aseptic techniques and setting an example of a philosophy of total patient care. Physicians, nurses and others in leadership positions have an excellent opportunity to teach by example. Acting as role models, they influence the practice of others a great deal. Patients and their visitors are also responsible for complying with infection control procedures. Physicians and nurses responsible for their care should inform them of appropriate infection control procedures. Everyone in contact with patients must practice hand washing, the single most effective procedure in preventing cross-infection. Even routine activities, such as examining a patient or taking a blood pressure reading, can transfer organisms to the hands of the healthcare personnel. Hence, it is essential that hands be washed before touching a patient, during patient care when going from one body site to another, after contact with infective material such as blood, secretions and excretions, after handling articles and equipment contaminated with body fluids, and before touching another patient. Patients must also be encouraged to wash their hands at regular intervals.

Spread of infection requires three elements: a source of infecting organism, a susceptible host and a means of transmission for the organism. The source of the infecting agent may be patients, personnel, or, on occasion, visitors, and may include persons with acute diseases, persons in the incubation period of a disease, or persons who are colonized by the infectious agent, but have no apparent disease. Another source of infection can be the person's own endogenous flora (autogenous infection). Other potential sources are inanimate objects in the environment that have become contaminated, including equipment and medications.

Patient's resistance to pathogenic microorganisms varies greatly. Some patients may be immune to, or able to resist colonization by an infectious agent; others exposed to the same agent may establish a commensal relationship with the infecting organism and become asymptomatic carriers; still others may develop clinical disease. Host resistance may be compromised by illness, as in patients with diabetes mellitus, neoplasia, HIV-infection, leukemia and lymphoma, uremia, traumatic injury or burns. Alternatively, resistance may be decreased by iatrogenic physical intervention, most commonly urethral and intravenous catheters, respiratory tract manipulation and surgical procedures, or medical measures, especially steroids and other immunosuppressive medication.

Microorganisms are transmitted by various routes, and the same microorganism may be transmitted by more than one route. For example, varicella-zoster virus (chicken pox) can be spread either by the airborne route (droplet

nuclei) or by direct contact. The differences in infectivity and in the mode of transmission of the various agents form the basis for the differences in isolation precautions recommended in this guideline.

1.2 Routes of Transmissions

There are four main routes of transmission — contact, vehicle, airborne, and vector-borne.

1.2.1 Contact Transmission

The most important and frequent means of transmission of nosocomial (hospital acquired) infections can be divided into three subgroups: direct, indirect and droplet contact.

- **Direct contact:** Direct physical transfer between a susceptible host and an infected or a colonized person, as occurs when personnel turn patients, give baths, change dressings or perform other procedures involving direct personal contact.
- **Indirect contact:** This involves personal contact with the susceptible host with a contaminated intermediate object, usually inanimate, such as bed linens, clothing, instruments and dressings.
- **Droplet contact:** Infectious agents may come in contact with the conjunctiva, nose, or mouth of a susceptible person as a result of coughing, sneezing or talking by an infected person who has clinical disease or is a carrier of the organism. This is considered "contact" transmission rather than airborne since droplets usually travel no more than about three feet.

1.2.2 Vehicle Route

The vehicle route applies in diseases transmitted through such contaminated items as:

- Food (e.g., salmonellosis)
- Water (e.g., giardiasis)
- Drugs (e.g., bacteremia from an infusion of contaminated product)
- Blood (e.g., Hepatitis B, Hepatitis C, HIV).

1.2.3 Airborne Transmission

Airborne transmission occurs by the inhalation of aerosols containing an infectious agent. Organisms carried in this manner can be widely dispersed by air currents before being inhaled by or deposited on a susceptible host. Tuberculosis is spread via airborne transmission.

1.2.4 Vector-Borne Transmission

Vector-borne transmission occurs when an infected vector bites a susceptible host, most commonly arthropods (e.g., ticks, mosquitoes). Worldwide, it is of special concern in tropical countries where mosquito-transmitted malaria is endemic. In the United States, Lyme Disease and Rocky Mountain Spotted Fever are examples of diseases transmitted by tick vectors, and Eastern Equine Encephalitis (EEE) and West Nile Virus by mosquitoes.

1.3 Standard Precautions

Standard Precautions are a philosophy for providing medical care that assumes patients may be infectious. It must be applied to all patients receiving care in University facilities regardless of diagnostic or infection status. Standard Precautions apply to blood; all body fluids; secretions and excretions (except sweat), regardless of whether or not they contain visible blood; non-intact skin; and mucous membranes.

Standard Precautions state that gloves must be used whenever contact is anticipated, changed between patients, and hands washed after gloves are removed. In addition, gowns (impermeable to liquids) and shoe covers must be worn when splashes of body fluids or blood are anticipated to reduce the risk of exposure to blood borne pathogens. Masks, face shields, or goggles must also be worn during procedures that are likely to generate splashes or sprays of blood, body fluids, or secretions.

1.4 Transmission-Based Precautions

These precautions are designed for patients who are documented or suspected to be infected with highly transmissible or epidemiologically - important pathogens. These precautions are designed to be implemented in addition to Standard Precautions:

1.4.1 Airborne Precautions

These precautions are designed for infections transmitted by airborne droplet nuclei <5 microns in diameter) that can remain suspended in the air. Examples of infectious agents that fall into this category include Tuberculosis, Rubeola (measles), and Varicella (chickenpox).

In addition to Standard Precautions:

- Patients should be placed in a private room with monitored negative air pressure in relation to surrounding areas.
- The room should have 6-12 air changes per hour with appropriate discharge of air outdoors or through a high efficiency filtration system before the air is recirculated to other areas of the building. The door must be kept closed with the patient kept in the room. If a private room is not available, another patient with the same active infection may be placed in the room (cohorting).
- Personnel who enter the isolation room should be immune to the infection. Non-immune personnel must wear a respirator (N-95 or better) before entering the room.
- Patient transport should be limited to what is necessary. Patients should wear surgical masks if transported outside of the room.
- Refer to 1.7 TB Exposure Control Plan for additional information on this agent

1.4.2 Droplet Precautions

Droplet precautions are designed to prevent the transmission of organisms that are transmitted by large droplet contact with conjunctiva or mucous membranes of the nose or mouth. Droplets greater than 5 microns in diameter are usually generated with coughing, sneezing, talking, and during procedures such as bronchoscopy or suctioning. These larger droplets generally travel only short distances (3 feet or less). Examples of organisms in this category include influenza, mycoplasma, strep pneumonia, mumps, and whooping cough.

- Patients should be placed in a private room or, if not available, they may be placed in a room with a patient who has an active infection with the same organism.
- Gloves, gown, face mask, and eye protection must be worn when working within 3 feet of the patient.
- Patient transport should be limited to what is necessary. A surgical mask should be placed on the patient during transport.

1.4.3 Contact Precautions

These should be used for patients infected with organisms transmitted by direct skin to skin contact or by indirect contact with environmental surfaces or patient care items.

These precautions are also used for patients colonized with organisms that are epidemiologically important. Examples of contact precaution organisms include herpes simplex, scabies, streptococcus, and gastrointestinal colonization by drug resistant organisms.

In addition to Standard Precautions,

- Patients must be placed in a private room or with another patient who has an active infection with the same organism.
- Gloves must be worn when entering the patient's room. Gloves should be changed after handling material that may have high concentrations of organisms. Gloves must be removed before leaving the patient's room and hands washed with an antimicrobial soap.
- Caregivers must ensure that hands do not touch potentially contaminated environmental surfaces after glove removal.
- A gown should be worn if substantial contact with the patient or environmental surfaces is anticipated or if the patient is incontinent, has diarrhea, an ostomy site, or other drainage not contained by a dressing. The gown should be removed prior to leaving the room and care taken to avoid touching surfaces after removing the gown.
- Patient transport should be limited to what is necessary. Care should be taken during transport to minimize contact with other patients or environmental surfaces.
- Non-critical patient care equipment should be used only for a single patient. If sharing of common equipment is necessary, the equipment must be adequately cleaned and disinfected before using it for another patient. (See sections on Sterilization of Reusable medical Instruments/Devices and section on Housekeeping/Decontamination)

  Note: Please see Guidelines for VRE and MRSA in addition to Contact Precautions.

1.4.4 Table of Precautions and Personal Protective Equipment

Table 1: Precautions and Personal Protective Equipment

Transmission Based Precaution*	Gloves	Gown	Face Protection	N-95 or higher level respirator
Standard Precautions				
Contact Precautions				
Droplet Precautions				
Airborne Precautions				

*Don gloves, gown, and face protection if splashes or contact with body fluid is anticipated or during aerosol generating procedures

1.5 Types and Duration of Precautions Recommended for Selected Infections and Conditions

Table 2: Types and Duration of Precautions Recommended for Selected Infections and Conditions

Infection/Condition	Type of Precaution	Duration of Precaution	Precautions/Comments
Abscess • Draining, major	Contact + Standard	Duration of illness	• Until drainage stops or can be addressed by dressing
Abscess • Draining, minor or limited	Standard		• If dressing covers and contains drainage
Acquired human immunodeficiency syndrome (HIV)	Standard		• Postexposure chemoprophylaxis for some blood exposures
Actinomycosis	Standard		• Not transmitted from person to person
Adenovirus infection *(see agent-specific guidance under gastroenteritis, conjunctivitis, pneumonia)*			
Amebiasis	Standard		• Person to person transmission is rare • Transmission in settings for the mentally challenged and in a family group has been reported • Use care when handling diapered infants and mentally challenged persons
Andes virus	See comments		• Duration of precautions should be determined on a case-by-case basis, in conjunction with local, state, and federal health authorities. Factors that should be considered include, but are not limited to, presence of symptoms, date symptoms resolved, other conditions that would require specific precautions (e.g. tuberculosis, *Clostridium difficile*) and available laboratory information • Patient Placement: AIIR • PPE: Gown, gloves, eye protection, N95 respirator or higher
Anthrax	Standard		• Infected patients do not generally pose a transmission risk
Anthrax • Cutaneous	Standard		• Transmission through non-intact skin contact with draining lesions possible,

			therefore use Contact Precautions if large amount of uncontained drainage • Handwashing with soap and water preferable to use of waterless alcohol-based antiseptics since alcohol does not have sporicidal activity
Anthrax • Pulmonary	Standard		• Not transmitted from person to person
Anthrax • Environmental (aerosolizable spore-containing powder or other substance)		Until environment completely decontaminated	• Until decontamination of environment complete. Wear respirator (N95 mask or PAPRs), protective clothing; decontaminate persons with powder on them (Notice to Readers: Occupational Health Guidelines for Remediation Workers at Bacillus anthracis-Contaminated Sites — United States, 2001–2002) • Hand hygiene: Handwashing for 30-60 seconds with soap and water or 2% chlorhexidine gluconate after spore contact (alcohol handrubs inactive against spores) • Post-exposure prophylaxis following environmental exposure: 60 days of antimicrobials (either doxycycline, ciprofloxacin, or levofloxacin) and Postexposure vaccine under IND
Antibiotic-associated colitis *(see Clostridium difficile)*			
Arthropod-borne • Viral encephalitides**:** Eastern, western, Venezuelan equine encephalomyelitis; St Louis, California encephalitis; West Nile Virus • Viral fevers: Dengue, Yellow Fever, Colorado tick fever	Standard		• Not transmitted from person to person except rarely by transfusion, and for West Nile virus by organ transplant, breastmilk or transplacentally • Install screens in windows and doors in endemic areas. Use DEET-containing mosquito repellants and clothing to cover extremities.
Ascariasis	Standard		• Not transmitted from person to person
Aspergillosis	Standard		• Contact Precautions and Airborne if massive soft tissue infection with copious drainage and repeated irrigations required
Avian influenza *(see Influenza, Avian below)*			
Babesiosis	Standard		• Not transmitted from person to person, except rarely by transfusion.

Blastomycosis, North American, cutaneous or pulmonary	Standard		• Not transmitted from person to person
Botulism	Standard		• Not transmitted from person to person
Bronchiolitis *(see respiratory infections in infants and young children)*	Contact + Standard	Duration of illness	• Use mask according to Standard Precautions
Brucellosis (undulant, Malta, Mediterranean fever)	Standard		• Not transmitted from person to person except rarely via banked spermatozoa and sexual contact • Provide antimicrobial prophylaxis following laboratory exposure
Campylobacter gastroenteritis *(see gastroenteritis)*	Standard		
Candidiasis, all forms including mucocutaneous	Standard		
Cat-scratch fever (benign inoculation lymphoreticulosis)	Standard		• Not transmitted from person to person
Cellulitis	Standard		
Chancroid (soft chancre) *(H. ducreyi)*	Standard		• Transmitted sexually from person to person
Chickenpox *(see Varicella)*			
Chlamydia trachomatis • Conjunctivitis	Standard		
Chlamydia trachomatis • Genital (lymphogranuloma venereum)	Standard		
Chlamydia trachomatis • Pneumonia (infants ≤ 3 mos. of age)	Standard		
Chlamydia pneumoniae	Standard		• Outbreaks in institutionalized populations reported, rarely
Cholera *(see gastroenteritis)*			
Closed-cavity infection • Open drain in place; limited or minor drainage	Standard		• Contact Precautions if there is copious uncontained drainage present
Closed-cavity infection • No drain or closed drainage system in place	Standard		
Clostridium botulinum	Standard		• Not transmitted from person to person
Clostridium difficile *(see gastroenteritis, C. difficile)*	Contact + Standard	Duration of illness	

Clostridium perfringens • Food poisoning	Standard		• Not transmitted from person to person
Clostridium perfringens • Gas gangrene	Standard		• Transmission from person to person rare; one outbreak in a surgical setting reported • Use Contact Precautions if wound drainage is extensive
Coccidioidomycosis (valley fever) • Draining lesions	Standard		• Not transmitted from person to person except under extraordinary circumstances, because the infectious arthroconidial form of *Coccidioides immitis* is not produced in humans

Coccidioidomycosis (valley fever)
• Pneumonia
	Standard		• Not transmitted from person to person except under extraordinary circumstances, for example:
			  ○ inhalation of aerosolized tissue phase endospores during necropsy,
			  ○ transplantation of infected lung
			• The infectious arthroconidial form of Coccidioides immitis is not produced in humans

Colorado tick fever	Standard		• Not transmitted from person to person
Congenital rubella	Contact + Standard	Until 1 yr of age	• Standard Precautions if nasopharyngeal and urine cultures repeatedly neg. after 3 mos. of age
Conjunctivitis • Acute bacterial	Standard		
Conjunctivitis • Acute bacterial • *Chlamydia*	Standard		
Conjunctivitis • Acute bacterial • Gonococcal	Standard		
Conjunctivitis • Acute viral (acute hemorrhagic)	Contact + Standard	Duration of illness	• Adenovirus most common; enterovirus 70 Coxsackie virus A24 also associated with community outbreaks • Highly contagious; outbreaks in eye clinics, pediatric and neonatal settings, institutional settings reported • Eye clinics should follow Standard Precautions when handling patients with conjunctivitis. • Routine use of infection control measures in the handling of instruments and

			equipment will prevent the occurrence of outbreaks in this and other settings
Corona virus associated with SARS (SARS-CoV) *(see severe acute respiratory syndrome)*			
Coxsackie virus disease *(see enteroviral infection)*			
Creutzfeldt-Jakob disease (CJD, vCJD)	Standard		• Use disposable instruments or special sterilization/disinfection for surfaces, objects contaminated with neural tissue if CJD or vCJD suspected and has not been R/O • No special burial procedures
Croup *(see respiratory infections in infants and young children)*			
Crimean-Congo Fever *(see Viral Hemorrhagic Fever)*	Standard		
Cryptococcosis	Standard		• Not transmitted from person to person, except rarely via tissue and corneal transplant
Cryptosporidiosis *(see gastroenteritis)*			
Cysticercosis	Standard		• Not transmitted from person to person
Cytomegalovirus infection, including in neonates and immunosuppressed patients	Standard		• No additional precautions for pregnant HCWs
Decubitus ulcer *(see Pressure Ulcer)*			•
Dengue fever	Standard		• Not transmitted from person to person
Diarrhea, acute-infective etiology suspected *(see Gastroenteritis)*			•
Diphtheria • Cutaneous	Contact + Standard	Until off antimicrobial treatment and culture-negative	• Until 2 cultures taken 24 hours apart negative
Diphtheria • Pharyngeal	Droplet + Standard	Until off antimicrobial treatment and culture-negative	• Until 2 cultures taken 24 hours apart negative
Ebola virus *(see viral hemorrhagic fevers)*			
Echinococcosis (hydatidosis)	Standard		• Not transmitted from person to person
Echovirus *(see enteroviral infection)*			

Encephalitis or encephalomyelitis *(see specific etiologic agents)*			
Endometritis (endomyometritis)	Standard		
Enterobiasis (pinworm disease, oxyuriasis)	Standard		
Enterococcus species *(see Multidrug-Resistant Organisms if epidemiologically significant or vancomycin-resistant)*			
Enterocolitis, *C. difficile* *(see C. difficile, gastroenteritis)*			
Enteroviral infections (i.e., Group A and B Coxsackie viruses and Echo viruses) (excludes polio virus)	Standard		• Use Contact Precautions for diapered or incontinent children for duration of illness and to control institutional outbreaks
Epiglottitis, due to *Haemophilus influenza*e type b	Droplet + Standard	Until 24 hours after initiation of effective therapy	• See specific disease agents for epiglottitis due to other etiologies
Epstein-Barr virus infection, including infectious mononucleosis	Standard		
Erythema infectiosum *(see Parvovirus B19)*			
Escherichia coli gastroenteritis *(see gastroenteritis)*			
Food poisoning • Botulism	Standard		• Not transmitted from person to person
Food poisoning • *C. perfringens* or *welchii*	Standard		• Not transmitted from person to person
Food poisoning • Staphylococcal	Standard		• Not transmitted from person to person
Furunculosis, staphylococcal	Standard		• Contact if drainage not controlled. Follow institutional policies if MRSA
Furunculosis, staphylococcal • Infants and young children	Contact + Standard	Duration of illness (with wound lesions, until wounds stop draining)	
Gangrene (gas gangrene)	Standard		• Not transmitted person to person
Gastroenteritis	Standard		• Use Contact Precautions for diapered or incontinent persons for the duration of illness or to control institutional outbreaks for gastroenteritis caused by all of the

			agents below
Gastroenteritis • Adenovirus	Standard		• Use Contact Precautions for diapered or incontinent persons for the duration of illness or to control institutional outbreaks
Gastroenteritis • *Campylobacter* species	Standard		• Use Contact Precautions for diapered or incontinent persons for the duration of illness or to control institutional outbreaks
Gastroenteritis • Cholera *(Vibrio cholerae)*	Standard		• Use Contact Precautions for diapered or incontinent persons for the duration of illness or to control institutional outbreaks
Gastroenteritis • *C. difficile*	Contact + Standard	Duration of illness	• Discontinue antibiotics if appropriate. Do not share electronic thermometers • Ensure consistent environmental cleaning and disinfection. Hypochlorite solutions may be required for cleaning if transmission continues • Handwashing with soap and water is preferred because of absence of sporicidal activity of alcohol in waterless antiseptic hand scrubs
Gastroenteritis • *Cryptosporidium* species	Standard		• Use Contact Precautions for diapered or incontinent persons for the duration of illness or to control institutional outbreaks
Gastroenteritis • *E. coli* • Enteropathogenic O157:H7 and other Shiga toxin-producing strains	Standard		• Use Contact Precautions for diapered or incontinent persons for the duration of illness or to control institutional outbreaks
Gastroenteritis • *E. coli* • Other species	Standard		• Use Contact Precautions for diapered or incontinent persons for the duration of illness or to control institutional outbreaks
Gastroenteritis • *Giardia lamblia*	Standard		• Use Contact Precautions for diapered or incontinent persons for the duration of illness or to control institutional outbreaks
Gastroenteritis • Noroviruses	Contact + Standard		• Use Contact Precautions for a minimum of 48 hours after the resolution of symptoms or to control institutional outbreaks. • Persons who clean areas heavily contaminated with feces or vomitus may benefit from wearing masks since virus can be aerosolized from these body substances

			• Ensure consistent environmental cleaning and disinfection with focus on restrooms even when apparently unsoiled. Hypochlorite solutions may be required when there is continued transmission. Alcohol is less active, but there is no evidence that alcohol antiseptic handrubs are not effective for hand decontamination • Cohorting of affected patients to separate airspaces and toilet facilities may help interrupt transmission during outbreaks. • **Gastroenteritis, Noroviruses Precaution Update [May 2019]:** The Type of Precaution was updated from "Standard" to "Contact + Standard" to align with Guideline for the Prevention and Control of Norovirus Gastroenteritis Outbreaks in Healthcare Settings (2011)
Gastroenteritis • *Rotavirus*	Contact + Standard	Duration of illness	• Ensure consistent environmental cleaning and disinfection and frequent removal of soiled diapers. • Prolonged shedding may occur in both immunocompetent and immunocompromised children and the elderly
Gastroenteritis • *Salmonella* species (including *S. typhi*)	Standard		• Use Contact Precautions for diapered or incontinent persons for the duration of illness or to control institutional outbreaks
Gastroenteritis • *Shigella* species (Bacillary dysentery)	Standard		• Use Contact Precautions for diapered or incontinent persons for the duration of illness or to control institutional outbreaks
Gastroenteritis • *Vibrio parahaemolyticus*	Standard		• Use Contact Precautions for diapered or incontinent persons for the duration of illness or to control institutional outbreaks
Gastroenteritis • Viral (if not covered elsewhere)	Standard		• Use Contact Precautions for diapered or incontinent persons for the duration of illness or to control institutional outbreaks
Gastroenteritis • *Yersinia enterocolitica*	Standard		• Use Contact Precautions for diapered or incontinent persons for the duration of illness or to control institutional outbreaks
German measles *(see rubella; see congenital rubella)*			

Giardiasis *(see gastroenteritis)*			
Gonococcal ophthalmia neonatorum (gonorrheal ophthalmia, acute conjunctivitis of newborn)	Standard		
Gonorrhea	Standard		
Granuloma inguinale (Donovanosis, granuloma venereum)	Standard		
Guillain-Barre' syndrome	Standard		• Not an infectious condition
Haemophilus influenzae *(see disease- specific recommendations)*			
Hand, foot, and mouth disease *(see Enteroviral Infection)*			
Hansen's Disease *(see Leprosy)*			
Hantavirus pulmonary syndrome	Standard		• Not transmitted from person to person
Helicobacter pylori	Standard		
Hepatitis, viral • Type A	Standard		• Provide hepatitis A vaccine postexposure as recommended
Hepatitis, viral • Type A-Diapered or incontinent patients	Contact + Standard		• Maintain Contact Precautions in infants and children <3 years of age for duration of hospitalization, for children 3-14 yrs. of age for 2 weeks after onset of symptoms; >14 yrs. of age for 1 week after onset of symptoms
Hepatitis, viral • Type B-HBsAg positive; acute or chronic	Standard		• See specific recommendations for care of patients in hemodialysis centers
Hepatitis, viral • Type C and other unspecified non-A, non-B	Standard		• See specific recommendations for care of patients in hemodialysis centers
Hepatitis, viral • Type D (seen only with hepatitis B)	Standard		
Hepatitis, viral • Type E	Standard		• Use Contact Precautions for diapered or incontinent individuals for the duration of illness
Hepatitis, viral • Type G	Standard		
Herpangina *(see enteroviral infection)*			
Hookworm	Standard		

Herpes simplex *(Herpesvirus hominis)* • Encephalitis	Standard		
Herpes simplex *(Herpesvirus hominis)* • Mucocutaneous, disseminated or primary, severe	Contact + Standard	Until lesions dry and crusted	
Herpes simplex *(Herpesvirus hominis)* • Mucocutaneous, recurrent (skin, oral, genital)	Standard		
Herpes simplex *(Herpesvirus hominis)* • Neonatal	Contact + Standard	Until lesions dry and crusted	• Also, for asymptomatic, exposed 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 until infant surface cultures obtained at 24-36 hours of age negative after 48 hours of incubation
Herpes zoster (varicella-zoster) (shingles) • Disseminated disease in any patient • Localized disease in immunocompromised patient until disseminated infection ruled out	Airborne + Contact + Standard	Duration of illness	• Susceptible HCWs should not enter room if immune caregivers are available; no recommendation for protection of immune HCWs; no recommendation for type of protection, (i.e. surgical mask or respirator) for susceptible HCWs
Herpes zoster (varicella-zoster) (shingles) • Localized in patient with intact immune system with lesions that can be contained/covered	Standard	Until lesions dry and crusted	• Susceptible HCWs should not provide direct patient care when other immune caregivers are available
Histoplasmosis	Standard		• Not transmitted from person to person
Human immunodeficiency virus (HIV)	Standard		• Post-exposure chemoprophylaxis for some blood exposures
Human metapneumovirus	Contact + Standard	Duration of illness	• HAI reported, but route of transmission not established. Assumed to be Contact transmission as for RSV since the viruses are closely related and have similar clinical manifestations and epidemiology • Wear masks according to Standard Precautions
Impetigo	Contact +	Until 24 hours after	

	Standard	initiation of effective therapy	
Infectious mononucleosis	Standard		
Influenza • Human (seasonal influenza)			• See Prevention Strategies for Seasonal Influeza in Healthcare Settings
Influenza • Avian (e.g., H5N1, H7, H9 strains)			• See Avian Influenza (Bird Flu)
Influenza • Pandemic Influenza (also a human Influenza virus)	Droplet + Standard		• See Pandemic Influenza | Pandemic Influenza (Flu) | CDC
Kawasaki syndrome	Standard		• Not an infectious condition
Lassa fever *(see viral hemorrhagic fevers)*			
Legionnaires' disease	Standard		• Not transmitted from person to person
Leprosy	Standard		
Leptospirosis	Standard		• Not transmitted from person to person
Lice • Head (pediculosis)	Contact + Standard	Until 24 hours after initiation of effective therapy	• See CDC's About Head Lice | Lice | CDC
Lice • Body	Standard		• Transmitted from person to person through infested clothing • Wear gown and gloves when removing clothing; bag and wash clothes according to CDC guidance • See CDC's About Body Lice | Lice | CDC
Lice • Pubic	Standard		• Transmitted person to person through sexual contact. See CDC's About Pubic "Crab" Lice | Lice | CDC
Listeriosis *(Listeria monocytogenes)*	Standard		• Person-to-person transmission rare; cross-transmission in neonatal settings reported
Lyme disease	Standard		• Not transmitted person to person
Lymphocytic choriomeningitis	Standard		• Not transmitted person to person
Lymphogranuloma venereum	Standard		
Malaria	Standard		• Not transmitted from person to person except through transfusion rarely and through a failure to follow Standard Precautions during patient care • Install screens in windows and doors in endemic areas

			• Use DEET-containing mosquito repellants and clothing to cover extremities
Marburg virus disease *(see Viral Hemorrhagic Fevers)*			
Measles (rubeola)	Airborne + Standard	4 days after onset of rash; duration of illness in immune compromised	• Susceptible healthcare personnel (HCP) should not enter room if immune care providers are available; regardless of presumptive evidence of immunity, HCP should use respiratory protection that is at least as protective as a fit tested, NIOSH-certified N95 respirator upon entry into the patient's room or care area • For exposed susceptibles, postexposure vaccine within 72 hours or immune globulin within 6 days when available Place exposed susceptible patients on Airborne Precautions and exclude susceptible healthcare personnel
Melioidosis, all forms	Standard		• Not transmitted from person to person
Meningitis • Aseptic (non-bacterial or viral; also see enteroviral infections)	Standard		• Contact for infants and young children
Meningitis • Bacterial, gram-negative enteric, in neonates	Standard		
Meningitis • Fungal	Standard		
Meningitis • *Haemophilus Influenzae,* type b known or suspected	Droplet + Standard	Until 24 hours after initiation of effective therapy	
Meningitis • *Listeria monocytogenes* (See Listeriosis)	Standard		
Meningitis • *Neisseria meningitidis* (meningococcal) known or suspected	Droplet + Standard	Until 24 hours after initiation of effective therapy	• See Meningococcal Disease below
Meningitis • *Streptococcus pneumoniae*	Standard		
Meningitis • *M. tuberculosis*	Standard		

Meningitis • Other diagnosed bacteria	Standard		
Meningococcal disease: sepsis, pneumonia, Meningitis	Droplet + Standard	Until 24 hours after initiation of effective therapy	• Postexposure chemoprophylaxis for household contacts, HCWs exposed to respiratory secretions; postexposure vaccine only to control outbreaks
Molluscum contagiosum	Standard		
Mpox			• See CDC's Mpox
Mucormycosis	Standard		
Multidrug-resistant organisms (MDROs), infection or colonization (e.g., MRSA, VRE, VISA/VRSA, ESBLs, resistant *S. pneumoniae*)	Contact + Standard		• MDROs judged by the infection control program, based on local, state, regional, or national recommendations, to be of clinical and epidemiologic significance • Contact Precautions recommended in settings with evidence of ongoing transmission, acute care settings with increased risk for transmission or wounds that cannot be contained by dressings • See recommendations for management options in Management of Multidrug-Resistant Organisms In Healthcare Settings, 2006 (cdc.gov) • Contact the state health department for guidance regarding new or emerging MDROs.
Mumps (infectious parotitis)	Droplet + Standard	Until 5 days after the onset of swelling	• **Mumps Update [October 2017]:** The Healthcare Infection Control Practices Advisory Committee (HICPAC) voted to change the recommendation of isolation for persons with mumps from 9 days to 5 days based on a 2008 MMWR report • After onset of swelling; susceptible HCWs should not provide care if immune caregivers are available
Mycobacteria, nontuberculosis (atypical)			• Not transmitted person-to-person
Mycobacteria, nontuberculosis (atypical) • Pulmonary	Standard		
Mycobacteria, nontuberculosis (atypical)	Standard		

• Wound			
Mycoplasma pneumonia	Droplet + Standard	Duration of illness	
Necrotizing enterocolitis	Standard		• Contact Precautions when cases clustered temporally
Nipah virus	See comments	Duration of precautions should be determined on a case-by-case basis, in conjunction with local, state, and federal health authorities. Factors that should be considered include, but are not limited to, presence of symptoms, date symptoms resolved, other conditions that would require specific precautions (e.g. tuberculosis, *Clostridium difficile*) and available laboratory information	• Patient Placement: AIIR • PPE: If suspect Nipah case and clinically stable: gown, gloves, eye protection, N95 respirator or higher • If suspect Nipah and clinically unstable (e.g. hemodynamic instability, vomiting) OR confirmed Nipah case regardless of clinical stability: use PPE according to guidance for confirmed patients and clinically unstable patients suspected to have VHF
Nocardiosis, draining lesions, or other presentations	Standard		• Not transmitted person-to-person
Norovirus *(see Gastroenteritis)*			
Norwalk agent Gastroenteritis *(see Gastroenteritis)*			
Orf	Standard		
Parainfluenza virus infection, respiratory in infants and young children	Contact + Standard	Duration of illness	• Viral shedding may be prolonged in immunosuppressed patients • The reliability of antigen testing to determine when to remove patients with prolonged hospitalizations from Contact

			Precautions uncertain
Parvovirus B19 (Erythema infectiosum)	Droplet + Standard		• Maintain precautions for duration of hospitalization when chronic disease occurs in immunocompromised patients • For patients with transient aplastic crisis or red- cell crisis, maintain precautions for 7 days • Duration of precautions for immunosuppressed patients with persistently positive PCR not defined, but transmission has occurred
Pediculosis (Lice)	Contact + Standard	Until 24 hours after initiation of effective therapy after treatment	
Pertussis (whooping cough)	Droplet + Standard	Until 5 days after initiation of effective antibiotic therapy	• Single patient room preferred. Cohorting an option. • Postexposure chemoprophylaxis for household contacts and HCWs with prolonged exposure to respiratory secretions • **Tdap Vaccine Recommendations Update [2018]:** Current recommendations can be found at ACIP Recommendations: DTaP/Tdap/Td
Pinworm infection (Enterobiasis)	Standard		
Plague (*Yersinia pestis*) • Bubonic	Standard		
Plague (*Yersinia pestis*) • Pneumonic	Droplet + Standard	Until 48 hours after initiation of effective antibiotic therapy	• Antimicrobial prophylaxis for exposed HCW
Pneumonia • Adenovirus	Droplet + Contact + Standard	Duration of illness	• Outbreaks in pediatric and institutional settings reported • In immunocompromised hosts, extend duration of Droplet and Contact Precautions due to prolonged shedding of virus
Pneumonia • Bacterial not listed elsewhere (including gram-negative bacterial)	Standard		

Pneumonia • *B. cepacia* in patients with CF, including respiratory tract colonization	Contact + Standard	Unknown	• Avoid exposure to other persons with CF; private room preferred. Criteria for D/C precautions not established. See the Cystic Fibrosis Foundation guideline
Pneumonia • *B. cepacia* in patients without CF *(see Multidrug-Resistant Organisms)*			
Pneumonia • *Chlamydia*	Standard		
Pneumonia • Fungal	Standard		
Pneumonia • *Haemophilus influenzae,* type b Adults	Standard		
Pneumonia • *Haemophilus influenzae*, type b Infants and children	Droplet + Standard	Until 24 hours after initiation of effective therapy	
Pneumonia • *Legionella spp.*	Standard		
Pneumonia • Meningococcal	Droplet + Standard	Until 24 hours after initiation of effective therapy	• See meningococcal disease above
Pneumonia • Multidrug-resistant bacterial *(see Multidrug-Resistant Organisms)*			
Pneumonia • *Mycoplasma* (primary atypical Pneumonia)	Droplet	Duration of illness	
Pneumonia • Pneumococcal pneumonia	Standard		• Use Droplet Precautions if evidence of transmission within a patient care unit or facility
Pneumonia • *Pneumocystis jiroveci* • *(Pneumocystis carinii)*	Standard		• Avoid placement in the same room with an immunocompromised patient
Pneumonia • *Staphylococcus aureus*	Standard		• For MRSA, see MDROs
Pneumonia • *Streptococcus*, group A • Adults	Droplet + Standard	Until 24 hours after initiation of effective therapy	• See Streptococcal Disease (group A Streptococcus) below • Contact Precautions if skin lesions present

Pneumonia • *Streptococcus*, group A • Infants and young children	Droplet + Standard	Until 24 hours after initiation of effective therapy	• Contact Precautions if skin lesions present
Pneumonia • Varicella-zoster *(See Varicella- Zoster)*			
Pneumonia • Viral • Adults	Standard		
Pneumonia • Viral • Infants and young children *(see Respiratory Infectious Disease, acute, or specific viral agent)*			
Poliomyelitis	Contact + Standard	Duration of illness	
Pressure ulcer (decubitus ulcer, pressure sore) infected • Major	Contact + Standard	Duration of illness	• Until drainage stops or can be contained by dressing
Pressure ulcer (decubitus ulcer, pressure sore) infected • Minor or limited	Standard		• If dressing covers and contains drainage
Prion disease *(See Creutzfeld-Jacob Disease)*			
Psittacosis (ornithosis) *(Chlamydia psittaci)*	Standard		• Not transmitted from person to person
Q fever	Standard		
Rabies	Standard		• Person to person transmission rare; transmission via corneal, tissue and organ transplants has been reported • If patient has bitten another individual or saliva has contaminated an open wound or mucous membrane, wash exposed area thoroughly and administer postexposure prophylaxis
Rat-bite fever (*Streptobacillus moniliformis* disease, *Spirillum minus* disease)	Standard		• Not transmitted from person to person
Relapsing fever	Standard		• Not transmitted from person to person

Resistant bacterial infection or colonization *(see Multidrug-Resistant Organisms)*			
Respiratory infectious disease, acute (if not covered elsewhere) • Adults	Standard		
Respiratory infectious disease, acute (if not covered elsewhere) • Infants and young children	Contact + Standard	Duration of illness	
Respiratory syncytial virus infection, in infants, young children and immunocompromised adults	Contact + Standard	Duration of illness	• Wear mask according to Standard Precautions • In immunocompromised patients, extend the duration of Contact Precautions due to prolonged shedding • Reliability of antigen testing to determine when to remove patients with prolonged hospitalizations from Contact Precautions uncertain
Reye's syndrome	Standard		• Not an infectious condition
Rheumatic fever	Standard		• Not an infectious condition
Rhinovirus	Droplet + Standard	Duration of illness	• Droplet most important route of transmission • Outbreaks have occurred in NICUs and LTCFs. Add Contact Precautions if copious moist secretions and close contact likely to occur (eg. young infants)
Rickettsial fevers, tickborne (Rocky Mountain spotted fever, tickborne Typhus fever)	Standard		• Not transmitted from person to person except through transfusion, rarely
Rickettsialpox (vesicular rickettsiosis)	Standard		• Not transmitted from person to person
Ringworm (dermatophytosis, dermatomycosis, tinea)	Standard		• Rarely, outbreaks have occurred in healthcare settings, (e.g., NICU, rehabilitation hospital) • Use Contact Precautions for outbreak
Rocky Mountain spotted fever	Standard		• Not transmitted from person to person except through transfusion, rarely
Roseola infantum (exanthem subitum; caused by HHV-6)	Standard		
Rotavirus infection *(see gastroenteritis)*			

Rubella (German measles) *(also see congenital rubella)*	Droplet + Standard	Until 7 days after onset of rash	• Susceptible HCWs should not enter the room if immune caregivers are available • No recommendation for wearing face protection (e.g., a surgical mask) if immune. Pregnant women who are not immune should not care for these patients • Administer vaccine within three days of exposure to non-pregnant susceptible individuals. Place exposed susceptible patients on Droplet Precautions; exclude susceptible healthcare personnel from duty from day 5 after first exposure to day 21 after last exposure, regardless of post-exposure vaccine
Rubeola *(see Measles)*			
Salmonellosis *(see Gastroenteritis)*			
Scabies	Contact + Standard	Until 24	
Scalded skin syndrome, staphylococcal	Contact + Standard	Duration of illness	• See staphylococcal disease, scalded skin syndrome below
Schistosomiasis (bilharziasis)	Standard		
Severe acute respiratory syndrome (SARS)	Airborne + Droplet + Contact + Standard	Duration of illness plus 10 days after resolution of fever, provided respiratory symptoms are absent or improving	• Airborne Precautions preferred; Droplet if AIIR unavailable. • N95 or higher respiratory protection; surgical mask if N95 unavailable; eye protection (goggles, face shield); aerosol-generating procedures and "supershedders" highest risk for transmission via small droplet nuclei and large droplets • Vigilant environmental disinfection. See Infection Control Guidance: SARS-CoV-2
Shigellosis *(see Gastroenteritis)*			
Smallpox *(variola; see Vaccinia for management of vaccinated persons)*	Airborne + Contact + Standard	Duration of illness	• Until all scabs have crusted and separated (3-4 weeks). Nonvaccinated HCWs should not provide care when immune HCWs are available; N95 or higher respiratory protection for susceptible and successfully vaccinated individuals; postexposure

			vaccine within 4 days of exposure protective
Sporotrichosis	Standard		
Spirillum minor disease (rat-bite fever)	Standard		• Not transmitted from person to person
Staphylococcal disease (*S. aureus*) • Skin, wound, or burn • Major	Contact + Standard	Duration of illness	• Until drainage stops or can be contained by dressing
Staphylococcal disease (*S. aureus*) • Skin, wound, or burn • Minor or limited	Standard		• If dressing covers and contains drainage adequately
Staphylococcal disease (*S. aureus*) • Enterocolitis	Standard		• Use Contact Precautions for diapered or incontinent children for duration of illness
Staphylococcal disease (*S. aureus*) • Multidrug-resistant *(see Multidrug-Resistant Organisms)*			
Staphylococcal disease (*S aureus*) • Pneumonia	Standard		
Staphylococcal disease (*S aureus*) • Scalded skin syndrome	Contact + Standard	Duration of illness	• Consider healthcare personnel as potential source of nursery, NICU outbreak
Staphylococcal disease (*S aureus*) • Toxic shock syndrome	Standard		
Streptobacillus moniliformis disease (rat-bite fever)	Standard		• Not transmitted from person to person
Streptococcal disease (group A *Streptococcus*) • Skin, wound, or burn • Major	Contact + Droplet + Standard	Until 24 hours after initiation of effective therapy	• Until drainage stops or can be contained by dressing.
Streptococcal disease (group A *Streptococcus*) • Skin, wound, or burn • Minor or limited	Standard		• If dressing covers and contains drainage
Streptococcal disease (group A *Streptococcus*) • Endometritis (puerperal sepsis)	Standard		
Streptococcal disease (group A *Streptococcus*) • Pharyngitis in infants and young children	Droplet + Standard	Until 24 hours after initiation of effective therapy	
Streptococcal disease (group A *Streptococcus*)	Droplet + Standard	Until 24 hours after initiation of	

• Pneumonia		effective therapy	
Streptococcal disease (group A *Streptococcus*) • Scarlet fever in infants and young children	Droplet + Standard	Until 24 hours after initiation of effective therapy	
Streptococcal disease (group A *Streptococcus*) • Serious invasive disease	Droplet + Standard	Until 24 hours after initiation of effective therapy	• Outbreaks of serious invasive disease have occurred secondary to transmission among patients and healthcare personnel • Contact Precautions for draining wound as above; follow rec. for antimicrobial prophylaxis in selected conditions
Streptococcal disease (group B *Streptococcus*), neonatal	Standard		
Streptococcal disease (not group A or B) unless covered elsewhere • Multidrug-resistant *(see Multidrug-Resistant Organisms)*			
Strongyloidiasis	Standard		
Syphilis • Latent (tertiary) and seropositivity without lesions	Standard		
Syphilis • Skin and mucous membrane, including congenital, primary, secondary	Standard		
Tapeworm disease • *Hymenolepis nana*	Standard		• Not transmitted from person to person
Tapeworm disease • *Taenia solium* (pork)	Standard		
Tapeworm disease • Other	Standard		
Tetanus	Standard		• Not transmitted from person to person
Tinea (e.g., dermatophytosis, dermatomycosis, ringworm)	Standard		• Rare episodes of person-to-person transmission
Toxoplasmosis	Standard		• Transmission from person to person is rare; vertical transmission from mother to child, transmission through organs and blood transfusion rare
Toxic shock syndrome (staphylococcal disease, streptococcal disease)	Standard		• Droplet Precautions for the first 24 hours after implementation of antibiotic therapy if Group A streptococcus is a likely etiology
Trachoma, acute	Standard		

Transmissible spongiform encephalopathy (see Creutzfeld-Jacob disease, CJD, vCJD)			
Trench mouth (Vincent's angina)	Standard		
Trichinosis	Standard		
Trichomoniasis	Standard		
Trichuriasis (whipworm disease)	Standard		
Tuberculosis (*M. tuberculosis*) • Extrapulmonary, draining lesion	Airborne + Contact + Standard		• Discontinue precautions only when patient is improving clinically, and drainage has ceased or there are 3 consecutive negative cultures of continued drainage • Examine for evidence of active pulmonary tuberculosis
Tuberculosis (*M. tuberculosis*) • Extrapulmonary, no draining lesion, Meningitis	Standard		• Examine for evidence of pulmonary tuberculosis. For infants and children, use Airborne until active pulmonary tuberculosis in visiting family members ruled out
Tuberculosis (*M. tuberculosis*) • Pulmonary or laryngeal disease, confirmed	Airborne + Standard		• Discontinue precautions only when patient on effective therapy is improving clinically and has three consecutive sputum smears negative for acid-fast bacilli collected on separate days • See CDC's: Tuberculosis Infection Control | TB Prevention in Health Care Settings | CDC
Tuberculosis (*M. tuberculosis*) • Pulmonary or laryngeal disease, suspected	Airborne + Standard		• Discontinue precautions only when the likelihood of infectious TB disease is deemed negligible, and either: ▪ There is another diagnosis that explains the clinical syndrome or ▪ The results of three sputum smears for AFB are negative. • Each of the three sputum specimens should be collected 8-24 hours apart, and at least one should be an early morning specimen
Tuberculosis (*M. tuberculosis*) • Skin-test positive with no evidence of current active disease	Standard		
Tularemia • Draining lesion	Standard		• Not transmitted from person to person
Tularemia	Standard		• Not transmitted from person to person

• Pulmonary			
Typhoid (*Salmonella typhi*) fever *(see gastroenteritis)*			
Typhus • Rickettsia prowazekii (Epidemic or Louse-borne Typhus)	Standard		• Transmitted from person to person through close personal or clothing contact
Typhus • *Rickettsia typhi*	Standard		• Not transmitted from person to person
Urinary tract infection (including pyelonephritis), with or without urinary catheter	Standard		
Vaccinia			• Only vaccinated HCWs have contact with active vaccination sites and care for persons with adverse vaccinia events; if unvaccinated, only HCWs without contraindications to vaccine may provide care
Vaccinia • Vaccination site care (including auto inoculated areas)	Standard		• Vaccination recommended for vaccinators; for newly vaccinated HCWs: semi-permeable dressing over gauze until scab separates, with dressing change as fluid accumulates, ~3-5 days; gloves, hand hygiene for dressing change; vaccinated HCW or HCW without contradiction to vaccine for dressing changes
Vaccinia (adverse events following vaccination) • Eczema vaccinatum	Contact + Standard	Until lesions dry and crusted, scabs separated	• For contact with virus-containing lesions and exudative material
Vaccinia (adverse events following vaccination) • Fetal vaccinia	Contact + Standard	Until lesions dry and crusted, scabs separated	• For contact with virus-containing lesions and exudative material
Vaccinia (adverse events following vaccination) • Generalized vaccinia	Contact + Standard	Until lesions dry and crusted, scabs separated	• For contact with virus-containing lesions and exudative material
Vaccinia (adverse events following vaccination) • Progressive vaccinia	Contact + Standard	Until lesions dry and crusted, scabs separated	• For contact with virus-containing lesions and exudative material
Vaccinia (adverse events following vaccination) • Postvaccinia encephalitis	Standard		
Vaccinia (adverse events following vaccination)	Contact + Standard		• Use Contact Precautions if copious drainage is present

• Blepharitis or conjunctivitis			
Vaccinia (adverse events following vaccination) • Iritis or keratitis	Standard		
Vaccinia (adverse events following vaccination) • Vaccinia-associated erythema multiforme (Stevens Johnson Syndrome)	Standard		• Not an infectious condition
Vaccinia (adverse events following vaccination) • Secondary bacterial infection (e.g., *S. aureus*, group A beta hemolytic *Streptococcus*)	Contact + Standard		• Follow organism-specific (strep, staph most frequent) recommendations and consider magnitude of drainage
Varicella Zoster	Airborne + Contact + Standard	Until lesions dry and crusted	• Susceptible HCWs should not enter room if immune caregivers are available; no recommendation for face protection of immune HCWs; no recommendation for type of protection (i.e., surgical mask or respirator) for susceptible HCWs. In immunocompromised host with varicella pneumonia, prolong duration of precautions for duration of illness • **Varicella Post-exposure Prophylaxis Update [May 2019]:** Postexposure prophylaxis: provide postexposure vaccine ASAP but within 120 hours; for susceptible exposed persons for whom vaccine is contraindicated (immunocompromised persons, pregnant women, newborns whose mother's varicella onset is <5 days before delivery or within 48 hours after delivery) provide varicella zoster immune globulin as soon as possible after exposure and within 10 days • Use Airborne for exposed susceptible persons and exclude exposed susceptible healthcare workers beginning 8 days after first exposure until 21 days after last exposure or 28 if received varicella zoster immune globulin, regardless of postexposure vaccination
Variola			

(see smallpox)			
Vibrio parahaemolyticus *(see Gastroenteritis)*			
Vincent's angina (trench mouth)	Standard		
Viral hemorrhagic fevers due to Lassa, Marburg, Ebola, Crimean-Congo Hemorrhagic Fever, and South American Hemorrhagic Fever viruses (i.e., those caused by Junin, Machupo, Chapare, Guanarito and Sabia viruses)	See comments	Duration of Precautions should be determined on a case-by-case basis, in Conjunction with local, state, and federal health authorities. Factors that should be considered include, but are not limited to, presence of symptoms, date symptoms resolved, other conditions that would require specific precautions (e.g. tuberculosis, *Clostridium difficile*) and available laboratory information	• Guidance on Personal Protective Equipment (PPE) in U.S. Healthcare Settings for: ○ Clinically Stable Patients Suspected to have VHF ○ Confirmed Patients and Clinically Unstable Patients Suspected to have VHF
Viral respiratory diseases (not covered elsewhere) • Adults	Standard		
Viral respiratory diseases (not covered elsewhere) • Infants and young children *(see respiratory infectious disease, acute)*			
Whooping cough *(see Pertussis)*			
Wounds infections • Major	Contact + Standard	Duration of illness	• Until drainage stops or can be contained by dressing
Wound infections • Minor or limited	Standard		• If dressing covers and contains drainage
Yersinia enterocolitica Gastroenteritis *(see gastroenteritis)*			
Zoster (varicella-zoster)			

(see Herpes Zoster)			
Zygomycosis (phycomycosis, mucormycosis)	Standard		• Not transmitted person to person

Reference: Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings (2007)

1.6 History of Guidelines for Isolation Precautions in Hospitals

Table 3: History of Guidelines for Isolation Precautions in Hospitals

Year (Ref)	Document Issued	Comment
1970 (1099)	Isolation Techniques for Use in Hospitals, 1st ed.	• Introduced seven isolation precaution categories with color-coded cards: Strict, Respiratory, Protective, Enteric, Wound and Skin, Discharge, and blood • No user decision-making required • Simplicity a strength; over isolation prescribed for some infections
1975 (1100)	Isolation Techniques for Use in Hospitals, 2nd ed.	• Same conceptual framework as 1st edition
1983 (1101)	CDC Guideline for Isolation Precautions in Hospitals	• Provided two systems for isolation: category-specific and disease-specific • Protective Isolation eliminated; Blood Precautions expanded to include Body Fluids • Categories included Strict, Contact, Respiratory, AFB, Enteric, Drainage/Secretion, Blood and Body Fluids • Emphasized decision-making by users
1985-88 (780,896)	Universal Precautions	• Developed in response to HIV/AIDS epidemic • Dictated application of Blood and Body Fluid precautions to all patients, regardless of infection status • Did not apply to feces, nasal secretions, sputum, sweat, tears, urine, or vomitus unless contaminated by visible blood • Added personal protective equipment to protect HCWs from mucous membrane exposures • Handwashing recommended immediately after glove removal • Added specific recommendations for handling needles and other sharp devices; concept became integral to OSHA's 1991 rule on occupational exposure to blood- borne pathogens in healthcare settings

1987 (1102)	Body Substance Isolation	• Emphasized avoiding contact with all moist and potentially infectious body substances except sweat even if blood is not present • Shared some features with Universal Precautions • Weak on infections transmitted by large droplets or by contact with dry surfaces • Did not emphasize need for special ventilation to contain airborne infections • Handwashing after glove removal not specified in the absence of visible soiling
1996 (1)	Guideline for Isolation Precautions in Hospitals	• Prepared by the Healthcare Infection Control Practices Advisory Committee (HICPAC) • Melded major features of Universal Precautions and Body Substance Isolation into Standard Precautions to be used with all patients at all times • Included three transmission-based precaution categories: airborne, droplet, and contact • Listed clinical syndromes that should dictate use of empiric isolation until an etiological diagnosis is established
Derived from Garner ICHE 1996		

Reference: Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings (2007)

1.7 TB Exposure Control Plan

Yale University has a procedure in place to prevent and control tuberculosis (TB) in our patients, employees and students. TB is a potentially severe, contagious disease that primarily affects the lungs, but can also damage other parts of the body. It is usually transmitted by airborne droplets containing TB bacteria that are spread by infected persons whenever they cough, speak, or sneeze. On rare occasions, blood and body fluids may become contaminated with TB. Control measures include understanding the mode of transmission, signs and symptoms of infection, medical surveillance and therapy, and site-specific protocols.
In conjunction with the facility Infection Control Coordinator, area managers and supervisors must conduct a risk assessment of their workplace to determine the risk for occupational transmission of TB and implement an appropriate exposure control plan. Yale Environmental Health and Safety and Employee Health can assist with TB risk assessments.

1.7.1 Risk Assessment

The number of reported TB cases in Connecticut has continued to decline for the past several years. These rates are monitored by the Connecticut Department of Public Health Tuberculosis Control Program.

1.7.2 Transmission and Pathogenesis

Tuberculosis is an airborne communicable disease caused by Mycobacterium tuberculosis, the tubercle bacillus. It is spread primarily by tiny airborne particles (1 - 5 microns in diameter), known as droplet nuclei, that are generated when a person with infectious TB (pulmonary or laryngal) sneezes, coughs, speaks, or sings. If another person inhales

these droplet nuclei, transmission may occur. Infection begins with multiplication of tubercle bacilli in alveolar macrophages, some of which spread through the bloodstream; however, the immune system response usually prevents the development of disease. Persons infected with TB but who do not develop active TB are often asymptomatic and not infectious; such persons usually have a positive reaction to the tuberculin skin test. Only about 10% of infected persons develop active TB disease at some time in their lives, but the risk is considerably higher for persons who are immunosuppressed, especially those with HIV infection. Although most TB cases are pulmonary, TB can occur in almost any anatomical site or as disseminated disease. Extrapulmonary TB can be transmitted through blood and body fluids.

An extremely serious aspect of TB that has developed over the past two decades is multidrug resistant strains (MDR TB) that are usually resistant to at least isoniazid and rifampin. Infection with MDR-TB has a 50 to 80% mortality rate. MDR-TB can usually be prevented by initially treating TB patients with four drugs and by administering TB medications on a directly observed basis. Persons at higher risk for MDR-TB include those: recently exposed to MDR-TB, especially the immunocompromised; TB patients who failed to take medications as prescribed; TB patients who were prescribed an ineffective treatment regimen; and persons previously treated for TB.

1.7.3 Guidelines for TB Control

Employees at risk should be tested for TB exposure by a tuberculin skin test (PPD) or QuantiFERON serum test at least annually. New employees will be referred to the Employee Health office (Yale Health, 55 Lock Street, (432-0071), employeehealth-business@yale.edu) upon being hired for baseline PPD testing. Employees with potential exposure must be tested within 2 weeks of hire. Employees with a history of a previous positive PPD or serum test will not be retested but should provide documentation of a negative chest x-ray as part of their evaluation. Employees exempt from the tuberculin skin test must be informed about symptoms of TB and the need for immediate evaluation of any pulmonary symptoms suggestive of TB by their health care provider to determine if active disease has developed.

University employees and students in contact with patients or clients in hospitals, clinics, or long-term facilities must be tested for TB exposure by a tuberculin skin test (PPD) or QuantiFERON serum test annually. This includes students who deliver care, conduct research or consult individuals. In addition, students who volunteer in correctional facilities, hospices, shelters for the homeless, or drug/alcohol treatment facilities should be tested annually. Employees and students who test positive for PPD or blood testing will be referred for a chest x-ray and evaluated for signs of active TB infection. If no signs of active infection (such as fatigue, fever, chills, night sweats, loss of appetite, weight loss, productive sputum, coughing up blood (hemoptasis), chest pain, hoarse voice) are present, the employees will be referred for prophylactic treatment as appropriate following established CDC recommendations. Health care providers, employees and students (as designated in the above statements) should be educated through infection control staff about the transmission of TB and appropriate methods of protection. OSHA compliant TB training will be provided to those in covered risk groups. Awareness level training will be provided periodically to students and volunteers working in a health care setting.

Health care providers should concentrate on identifying TB infection among our patient population.

The following guidelines are recommended for testing groups of patients at high risk for TB infection:

- Patients with history of combined cough, fever, weight loss, night sweats, hemoptysis for greater than 2 weeks.

- Patients with radiographic abnormalities suggestive of TB infection.
- Recent contacts with infectious TB cases.
- Patients infected with HIV.
- Groups at high risk for TB infection such as foreign-born persons who arrived within the past 5 years from Asia, Africa, Latin America and Caribbean, medically underserved populations, long term residents of hospitals, nursing homes, homeless shelters, and correctional facilities.
- Patients with underlying medical conditions that increase the risk of TB such as silicosis, diabetes mellitus, long term corticosteroid therapy, immunosuppressive therapy, injecting drug use, underlying malignancies, end stage renal disease, post gastrectomy, or intestinal bypass. In addition, anergy testing should also be performed on any patient suspected of being immunocompromised.
- Patients identified as having a positive skin test should have a chest x-ray and be evaluated for signs of active TB by their health care provider. Patients should be referred when appropriate for curative or prophylactic treatment under CDC guidelines.

1.7.4 TB Exposure Control Procedures for Suspected or Known Active TB Cases

- Ask the person/patient presenting symptoms to cover their nose and mouth.
- Provide a surgical mask for the person to wear to contain droplets. Recognize the signs and symptoms of active TB - these include: fatigue, fever, chills, night sweats, loss of appetite and weight loss. The advanced stages of TB disease include: sputum-producing cough, coughing up blood, chest pain, and hoarseness of voice.
- Isolate patient from other visitors and employees
- If available, place any patient strongly suspected of active TB in a room with:
- negative air pressure in relation to the surrounding areas that can be monitored,
- 6 to 12 room air exchanges per hour,
- air discharged directly outdoors or through monitored high efficiency particulate aerosol (HEPA) filters before recirculation to other areas in the facility.
- In facilities without a negative pressure isolation room, post a sign at the entrance. The sign will have a red and white stop sign with the statement “No Admittance without Wearing a Type N95 or More Protective Respirator”.
- If a facility does not have a negative air flow room, provide a surgical mask for patient(s) to wear to contain droplets. Any patient who is strongly suspected of having active TB should be given a molded surgical mask, instructed to keep it on, and escorted to a private exam room. These areas are not appropriate for strict isolation but can be used as a separate waiting area for a short duration until transport can be arranged. Post a sign at the entrance of the room. The health care provider evaluating the patient should arrange to transfer them to a facility with an appropriate isolation room to complete the rest of the TB work up (i.e. Yale-New Haven Hospital). Ambulance and emergency room personnel at the admitting facility must be notified of the suspected diagnosis so appropriate precautions can be taken.
- Immediately notify your supervisor
- Any known case of tuberculosis in a patient or employee must be reported to the Infection Control Nurse for appropriate reporting to local and state health departments. The examining room used as a holding area should be closed and terminally cleaned after the patient has left and then disinfected with an institutionally approved disinfectant.
- Wear a respirator for close or prolonged contact
- When in close contact with a suspected active TB case, wear a NIOSH certified N-95 mask or a HEPA respirator. The employee must be fit tested before using N-95 or HEPA respirator, before wearing a respirator, personnel

must be evaluated by Employee Health (432-7978) (employeehealth-business@yale.edu) at the Yale Health (55 Lock Street) and must contact Yale Environmental Health and Safety (785-3550) at 135 College Street for training regarding respirator selection, fit testing, and use.

1.7.5 Evaluation of Health Care Workers Post Exposure to Active TB Cases

Health care workers exposed to active TB cases are recommended to have an initial baseline TB test at time of exposure and a follow-up test at 3 months post-exposure. Health care workers with PPD or blood test conversion from negative to positive post-exposure will be advised to have a chest x-ray and referred for appropriate prophylactic therapy.

1.7.6 Continuing Risk Assessment at Yale University

TB test conversion rates among employees and active TB cases among patients will be reviewed annually by Employee Health and Infection Control Staff for risk assessment. Any evidence of TB test conversion clusters or patient to patient transmission of TB will be the impetus for further investigation to maintain compliance with TB control guidelines. Yale Environmental Health and Safety will provide training and fit testing (respiratory protection) to employees at risk of occupational exposure to TB.

Yale Health Employee Health will provide the medical surveillance of employees at risk of occupational exposure to tuberculosis for screening and post-exposure follow-up. The facility Infection Control Committee will coordinate risk assessment and compliance. Human Resources will notify EHS & YHC of potential occupationally exposed newly hired employee.

1.8 Guidelines for Vancomycin Resistant Enterococcus (VRE) and Multi Resistant Staphylococcal Aureus (MRSA) Management

- The source patient colonized or infected with VRE should immediately be placed on Contact Precautions in a private room (or in the same room as another VRE infected patient).
- Contact Precautions for VRE require that gloves be worn when entering the room; gowns should also be worn if substantial contact with the patient or environmental surfaces (including furniture, bed rails, etc.) is anticipated or if the patient is incontinent.
- Hands should be washed with antimicrobial soap containing chlorhexidine (i.e., Hibiclens) after removal of gloves and gowns.
- Non-critical patient care items such as stethoscopes, thermometers or sphygmomanometers should be dedicated for the patient's exclusive use on Contact Precautions.
- Items (i.e., wheelchairs, stretchers,) that cannot be specially dedicated to the source patient should be first cleaned and then disinfected with an institutionally approved disinfectant after each use.
- Patient(s) on Contact Precautions who need to be transported outside of the ICF but within the building should be accompanied by a staff member who can inform the receiving department of Contact Precautions. Any contaminated surfaces in the receiving department should be disinfected (as above) after use by the affected patient(s).
- The charge nurse should ensure that any outside facility or agency (including ambulance) is notified of Contact Precautions prior to receiving the patient.
- The Infection Control Nurse may order follow up stool cultures on the source patient for VRE to determine when Contact Precautions may be discontinued. The guidelines for discontinuation of Contact Precautions pertaining

to VRE are 3 sequential negative specimens from multiple body sites taken at least one week apart.

- Contact Precautions may not be discontinued until it has been discussed with and approved by the Infection Control Nurse or their designee.
- If any evidence of transmission of VRE to other patients is detected, such as finding a positive culture in the roommate of the source patient, the Infection Control Nurse will do further investigation in collaboration with the ICF staff.
- The Infection Control Nurse with the primary providers' assistance may order a stool culture (or rectal swab) for VRE on the roommate of a patient who has been newly found to have VRE. Additional screening of patients on the unit may be performed at the discretion of the Infection Control Nurse.
- After discharge of a patient with VRE, housekeeping should be instructed to clean and disinfect all environmental surfaces in the room (including phones, doorknobs etc.) using the institutionally approved disinfectant. The ICF charge nurse is responsible for ensuring this step is completed and that the Infection Control Nurse is notified. The Infection Control Nurse may choose to perform routine environmental surveillance cultures at their discretion.

1.9 Infection Control MRSA Program

1. ***Clinical Staff***
   - CDC handouts on MRSA to clinical staff to increase education and awareness
   - Health care worker education done at safety fair
   - Work with pharmacy to look at programs to foster and monitor appropriate use of antimicrobials
   - Include history of MRSA infection or current colonization on electronic medical record problem list
   - Suspect MRSA infection when clinical picture is consistent, culture any open, draining or suspecting wounds to look for MRSA as well as other bacterial pathogens.
   - Focus on communication - inform all transferring or receiving agencies or facilities of patient's MRSA status

2. ***Transmission precautions***

   Contact precautions are recommended for treatment of patients with MRSA infections. This includes:
   - **Inpatient**
     - Private room (if not available may have patients with same MRSA infection housed in the same room)
     - Glove use when entering room
     - Change gloves after contact with material that might have high concentration of organisms
     - Remove gloves before leaving room and wash with antimicrobial soap
     - Gowns should be worn if substantial contact with patient(s) or environmental surfaces is expected and removed prior to leaving the room.
     - Patients should stay in their private rooms and only be transported when necessary, minimizing contact between patients and environmental surfaces. Patients should be escorted by a staff member for all transportation within the facility.
     - Non-critical patient care items should only be used for that patient. If sharing of equipment is necessary, the equipment must be cleaned and disinfected before using it on another patient.
     - Masks should be used for any splash generating procedures.
     - Clean and disinfect surfaces and equipment that may be contaminated, especially those that are

close to the patient such as bed rails, over the bed tables and other frequently touched surfaces such as doorknobs, bed pans, bathrooms on a more frequent schedule than routine cleaning.
        - Upon discharge of patient, terminally clean the room with special focus on frequently touched areas.
    - **Ambulatory**
        - Standard precautions are used for patients infected or colonized with MRSA.
        - Gloves and gowns must be used for contact with any secretions or drainage.
        - Clean exam tables after use by patient with open wound or drainage as well as any other environmental surfaces in exam room where patient may have had contact between surfaces and wound

3. Tracking

- Laboratory reports will be analyzed to track the incidence of MRSA in our facility. Categories to be tracked will be: total number of infections (this will separate by patient to avoid duplication of reporting), antibiotic susceptibility data for MRSA infections, and site information for MRSA infections. If analysis shows a significant upward trend in the incidence of new MRSA infections or if there is any evidence of a health care associated infection or outbreak, prevention efforts will be intensified (see below).

4. Prevention of transmission

- Follow CDC hand hygiene recommendations, stress hand washing in all clinical areas.
- Patient education programs include: Educational posters in residential and athletic areas, education directed at patients who are infected or colonized prior to discharge.

5. Intensified Prevention Efforts in setting of increased transmission

- Intensify efforts if any evidence of increased transmission or health care associated outbreaks, including one or more of the measures below in addition to those previously outlined
- Consider obtaining active surveillance cultures from at risk inpatient populations, obtain cultures on roommates of patients subsequently diagnosed with MRSA, and obtain cultures on patients previously infected or colonized with MRSA. Cultures should be obtained from areas of skin breakdown or draining wounds, plus anterior nares. Continue surveillance weekly until transmission ceases or frequency decreases.
- If surveillance data points to a health care worker as a possible ongoing source of transmission, consider obtaining health care worker cultures or consultation with an expert in Infectious Disease.
- Consider assignment of dedicated nursing and ancillary staff, including environmental staff to infected patients. Use either disposable or patient dedicated equipment for infected patients.
- Intensify training and monitoring of contact precautions and on proper environmental measures.
- Obtain environmental cultures of equipment or other surfaces if evidence points to an environmental source of ongoing transmission.
- Consider consultation with an expert in Infectious Disease or Epidemiology for further recommendations and discussion of decolonization options for patients or staff.

SECTION 2: Medical Surveillance

2.1 Healthcare Personnel Vaccination Recommendations

Yale University requires that health care workers have the following immunizations:

- COVID-19
- Hepatitis B vaccine
- Influenza (flu) vaccine
- Measles/Mumps/Rubella vaccines
- Tetanus-diphtheria, adult Pertussis vaccine
- Varicella (chickenpox) vaccine

See Immunization Requirements for Yale University Healthcare Workers

2.2 Tuberculosis Testing

Employees and students at risk should be tested for TB exposure by a tuberculin skin test (PPD) or a QuantiFERON serum test annually. New employees will be referred to the Employee Health Department upon being hired for baseline PPD testing. A 2-step PPD will be done on employees who are at higher risk for previous TB infection as defined by the CDC and who do not have a history of a previous negative PPD within the last 2 years. Employees with a history of a previous positive PPD test will not be retested but should provide documentation of a negative chest x-ray as part of their evaluation for the positive PPD. Employees exempt from the tuberculin skin test must be informed about symptoms of TB and the need for immediate evaluation of any pulmonary symptoms suggestive of TB by a primary or trained health care provider to determine if symptoms of TB disease have developed.

All University employees and students in contact with patients or clients in hospitals, clinics or long-term facilities must be tested for TB exposure by a tuberculin skin test (PPD) or QuantiFERON serum annually. This includes students who deliver care conduct research or consult individuals. In addition, any student who volunteers in correctional facilities, hospices, shelters for the homeless or drug/alcohol treatment facilities should be retested annually.

Employees and students who test positive on PPD testing will be referred for a chest x-ray and will be evaluated for any signs of active TB infection. If no signs of active infection (such as fatigue, fever, chills, night sweats, loss of appetite, weight loss, sputum production, coughing up blood — hemoptysis. chest pain, hoarse voice) are present the employees will be referred for prophylactic treatment when appropriate following established CDC recommendations.

If an employee is exposed to someone with active TB through their job, they should contact the Employee Health Department at 432-7978 at Yale Health to arrange for a tuberculosis skin test now and at 3 months. If the employee's skin test remains negative, they can return for annual skin testing if they are in a job category which has potential exposure. If the skin test shows evidence of recent infection, they will be referred for a Chest X-ray and a discussion of appropriate treatment or prophylaxis.

2.3 Communicable Disease Work Restrictions for Health Care Workers

Table 1 summarizes the suggested work restrictions for health care workers who are infected with infectious diseases of importance in health care settings. In some cases, state and local regulations may regulate the restrictions in each area. Employees who are suffering from any of these listed infections should report it to their supervisor, who should then report it to the Department of Employee Health for further guidance or advice on the restrictions and return to duty.

Table 4. Summary of suggested work restrictions for health care personnel exposed to or infected with infectious diseases of importance in health care settings (modified from ACIP recommendations).

Disease/Problem	Work Restriction	Duration
Conjunctivitis	Restrict from patient contact and contact with the patient's environment	Until discharge ceases
Cytomegalovirus infections	No restriction	
Diarrheal diseases ○ Acute stage (diarrhea with other symptoms) ○ Convalescent stage, Salmonella spp.	○ Restrict from patient contact, contact with the patient's environment, or food handling ○ Restrict from care of high-risk patients	○ Until symptoms resolve ○ Until symptoms resolve; consult with local and state health authorities regarding need for negative stool cultures
Diphtheria	Exclude from duty	Until antimicrobial therapy completed and 2 cultures obtained > 24 hours apart are negative
Enteroviral infections	Restrict from care of infants, neonates, and immunocompromised patients and their environments	Until symptoms resolve
Hepatitis A	Restrict from patient contact, contact with patient's environment, and food handling	Until 7 days after onset of jaundice
Hepatitis B ○ Personnel with chronic hepatitis B surface antigemia who do not perform exposure prone procedures ○ Personnel with acute or chronic hepatitis B e antigenemia who perform exposure-prone procedures	○ No restriction; refer to state regulations; standard precautions should always be observed ○ Do not perform exposure-prone invasive procedures until counsel from an expert review panel has been sought; panel should review and recommend procedures the worker can perform, taking into account	○ Until hepatitis B e antigen is negative

	specific procedure as well as skill and technique of worker; refer to state regulations	
Hepatitis C	No recommendation	
Herpes simplex ○ Genital ○ Hands (herpetic whitlow) ○ Oralfacial	○ No restriction ○ Restrict from patient contact and contact with the patient's environment ○ Evaluate for need to restrict from care of high- risk patients	○ Until lesions heal
Human immunodeficiency virus	Do not perform exposure-prone invasive procedures until counsel from an expert review panel has been sought; panel should review and recommend procedures the worker can perform, taking into account specific procedures as well as skill and technique of the worker; standard precautions should always be observed; refer to state regulations	
Measles ○ Active ○ Postexposure (susceptible personnel)	○ Exclude from duty ○ Exclude from duty	○ Until 7 days after the rash appears ○ From 5th day after 1st exposure through 21st day after last exposure and/or 7 days after rash appears
Meningococcal infections	Exclude from duty	Until 24 hours after start of effective therapy
Mumps ○ Active ○ Postexposure (susceptible personnel)	○ Exclude from duty ○ Exclude from duty	○ Until 9 days after onset of parotitis ○ From 12th day after 1st exposure through 26th day after last exposure or until 9 days after onset of parotitis
Pediculosis	Restrict from patient contact	Until treated and observed to be free of adult and immature lice
Pertussis ○ Active	○ Exclude from duty	○ From beginning of catarrhal (inflammation of mucous membranes) stage through 3rd wk after onset

		of paroxysms or until 5 days after start of effective antimicrobial therapy
○ Postexposure (asymptomatic personnel) ○ Postexposure (symptomatic personnel)	○ No restriction, prophylaxis recommended ○ Exclude from duty	○ Until 5 days after start of effective antimicrobial therapy
Rubella ○ Active ○ Postexposure (susceptible personnel)	○ Exclude from duty ○ Exclude from duty	○ Until 5 days after rash appears ○ From 7th day after 1st exposure through 21st day after last exposure
Scabies	Restrict from patient contact	Until cleared by medical evaluation
Staphylococcus aureus infection ○ Active, draining skin lesions ○ Carrier state	○ Restrict from contact with patients and patient's environment or food handling ○ No restriction, unless personnel are epidemiologically linked to transmission of the organism	○ Until lesions have resolved
Streptococcal infection, Group A	Restrict from patient care, contact with patient's environment, or food handling	Until 24 hours after adequate treatment started
Tuberculosis ○ Active disease ○ PPD converter	○ Exclude from duty ○ No restriction	○ Until proved non-infectious
Varicella ○ Active ○ Postexposure (susceptible personnel)	○ Exclude from duty ○ Exclude from duty	○ Until all lesions dry and crust ○ From 10th day after 1st exposure through 21st day (28th day if VariZIG given) after last exposure
Zoster ○ Localized, in healthy person ○ Generalized or localized in immunosuppressed person ○ Postexposure (susceptible	○ Cover lesions; restrict from care of high-risk patients† ○ Restrict from patient contact	○ Until all lesions dry and crust ○ Until all lesions dry and crust

personnel)	○ Restrict from patient contact	○ From 10th day after 1st exposure through 21st day (28th day if VZIG given) after last exposure or, if varicella occurs, until all lesions dry and crust
Viral respiratory infections, acute febrile	Consider excluding from the care of high-risk patients‡ or contact with their environment during community outbreak of RSV and influenza	Until acute symptoms resolve
*Unless epidemiologically linked to transmission of infection †Those susceptible to Varicella and who are at increased risk of complications of varicella, such as neonates and immunocompromised persons of any age. ‡ High-risk patients as defined by the ACIP for complications of influenza.		

Reference: AJIC Vol. 26 No 3June 1998 CDC Personnel Health Guideline: Guideline for Infection Control in Health Care Personnel

2.4 Guidelines for Pregnant Healthcare Personnel

Pregnant health care workers are at no greater risk than other personnel for acquiring an infectious disease from caring for patients. However, since some infections can pose a risk to the fetus due to perinatal transmission, pregnant workers should adhere to Standard and Transmission Based Precautions regardless of their individual immune status with respect to certain diseases. Pregnant workers should also be aware of their own immune status with respect to communicable diseases and be up to date on vaccinations that are available for these diseases.

Table 5. Pregnant health care personnel: Pertinent facts to guide management of occupational exposures to infectious agents

Agent	Potential Effect on Fetus	Rate of Perinatal Transmission	Maternal Screening	Prevention
Cytomegalovirus (CMV)	Hearing loss; congenital syndrome*	15% after primary maternal infection; symptomatic 5%	Antibody provides some but not complete protection against clinical disease; routine screening not recommended	Standard precautions
Hepatitis B	Hepatitis; development of chronic infection in infant	HBeAg seropositive 90%; HBeAg negative 0-25%	HBsAg routine screening recommended	Vaccine and HBIG to infant; standard precautions
Hepatitis C	Hepatitis	2% - 5%	Anti-HCV; HCV RNA in reference labs; routine screening not	Standard precautions

			recommended	
Herpes simplex	Mucocutaneous lesions, sepsis, encephalitis; congenital malformations (rare)	Unlikely from nosocomial exposure; primary 33%-50%, recurrent 4%	Antibody testing not useful; inspection for lesions at delivery	Standard precautions
Human immunodefici-ency virus (HIV)	AIDS by 2-3 yr	8%-30%	Antibody by enzyme immunoassay, Western blot	Avoid high-risk behaviors; consider postexposure prophylaxis after high-risk needlestick exposure; intrapartum and postnatal zidovudine for HIV- seropositive mothers and their babies; standard precautions
Influenza	Inconsistent	Rare	None	Vaccine (safe during pregnancy); droplet precautions
Measles	Prematurity; abortion	Rare	History, antibody	Vaccine†; airborne precautions
Parovirus B19	Hydrops, stillbirth	Rare, 3% - 9% maximum adverse outcome	IgM and IgG antibody prepregnancy; antibody protection	Droplet precautions
Rubella	Congenital syndrome*	45% - 50% overall; 90% in 1st 12 wk	Antibody	Vaccine†; droplet precautions for acute infection; contact precautions for congenital rubella
Tuberculosis	Hepatomegaly , pulmonary, CNS	Rare	Skin test	Isoniazid ethambutol for disease; airborne precautions
Varicella- zoster	Malformations (skin, limb, CNS, eye); chickenpox	Total 25%; congenital syndrome (0-4%)	Antibody	Vaccine†; VariZIG within 10 days of exposure if susceptible; airborne and contact precautions

Modified from Siegel JD. Risk and exposure for the pregnant health-care worker. In: Olmstead RN, editor. APIC infection control and applied epidemiology: principles and practices. St Louis: Mosby; 1996. p. 22-2-22-3 (table 22-1). *HBeAg*, Hepatitis B e antigen; *CNS*, central nervous system.

*Congenital syndrome: varying combinations of jaundice, hepatosplenomegaly, microcephaly, CNS abnormalities, thrombocytopenia, anemia, retinopathy, and skin and bone lesions.

†Live-virus vaccines are given routinely before pregnancy

Reference: AJIC Vol. 26 No 3June 1998 CDC Personnel Health Guideline: Guideline for Infection Control in Health Care Personnel

2.5 Emergency Procedures for Exposure to Blood and Body Fluids

- Employees exposed to blood or body fluids by a needlestick, cut, bite, or splash to a mucous membrane or non-intact skin should immediately wash the affected area with soap and water for 15 minutes. If the splash is to the eyes or mucous membrane, the area should be flushed with water for 15 minutes.
- Employees should immediately report the exposure incident to their supervisor and seek medical attention.
- Employees or students should immediately report for medical care at Yale Health Center (Employee Health Department 203-432-7978, Student Health 203-432-0312 or Acute Care 203-432-0123). It is important to begin any recommended treatment within 1 to 2 hours after exposure.
- If the exposure occurs at Yale-New Haven Hospital and the employee wishes to be seen on site, they should report to Occupational Health (7:30 A.M. to 4:30 P.M., Monday through Friday) or the Yale-New Haven Hospital Emergency Room if the episode occurs outside of regular daytime working hours.

2.5.1 Needlestick Procedures

- The exposed employee/student should immediately be tested for baseline HIV, Hepatitis B Surface Ab, and Hepatitis C Ab following established testing guidelines.
- The exposed person will be counseled regarding the risk of seroconversion for HIV; symptoms of disease (acute retroviral syndrome), precautions to prevent secondary spread, and possible indication for antiviral prophylaxis.
- Workers who receive antiviral prophylaxis should also have baseline CBC and renal and hepatic function tests drawn.
- The suspected source patient for the exposure should be immediately approached to give consent for a baseline HIV, Hepatitis B S Ag, Hepatitis B S Ab, Hepatitis B core Ab, and Hepatitis C Ab. The attending primary care provider for the source patient should be notified to obtain this testing. The Yale Health Plan or Personnel Health providers can assist with this process. If the source patient does not give consent for testing, the institution's needlestick committee should convene as soon as possible to take the necessary steps to obtain testing.
- If antiviral prophylaxis for HIV is indicated, the employee/student will be given a 96-hour packet of prophylactic medication available at each institution.
- The exposed person will then be instructed to follow up with the appropriate department (either Employee Health at 432-7978 or Student Medicine at 432-0312) on the next business day to receive further instructions.
- Anyone receiving antiviral prophylaxis should be reevaluated at 2 weeks and 4 weeks post- exposure for CBC, LFT's, and renal function to check for any symptoms of drug toxicity that might indicate the need for reduction of dosage or change in medication. Expert consultation with an infectious disease specialist should be obtained for situations that might require a change in the protocol.
- Exposed person should be retested for HIV antibody at 6 weeks, 12 weeks, and 6 months post- exposure. Testing may be extended for a year if recommended by the medical provider on a case-by-case basis.
- Appropriate prophylaxis for Hepatitis B exposure should be included in all evaluations where indicated. If the source patient has evidence of HepC infection, the employee should have follow-up testing for HepC including a HepC viral RNA at 4 weeks and HepC Ab at 3 and 6 months.

- If the source patient's HIV status subsequently becomes known, the decision about antiviral prophylaxis can be modified as clinically indicated.
- Those exposed to blood or bodily fluids should make sure an incident report is filed within 24 hours; employees should also make sure a Supervisor's Report of Injury is filed.

The following table outlines prophylactic regimens that may be prescribed in situations where a health care worker is exposed to an infectious agent or communicable disease. Health care workers exposed to any of these infections through their work should notify their supervisor, who will then refer them to the Department of Employee Health for evaluation and discussion of prophylaxis.

Table 6. Immunobiologics and schedules for health care personnel: Diseases for which postexposure prophylaxis may be indicated for health care personnel

Disease	Prophylaxis	Indications	Major Precautions and Contraindications	Special considerations
Diphtheria	Benzathine penicillin, 1.2 mU IM, single dose, or erythromycin (1 gm/day) PO x 7 days	For health care personnel exposed to diphtheria or identified as carriers		Also administer one dose Td to previously immunized if no Td has been given in >5 yr.
Hepatitis A	Begin Hepatitis A vaccination series for persons 1-40 years old (If < 1 year or > 40 years old, can use IgG 0.02mg/kg within 2 weeks)	May be indicated for health care personnel exposed to feces of infected persons during outbreaks	Persons with IgA deficiency; do not administer within 2 wk after MMR or within 3 wk after varicella vaccine	
Hepatitis B	HBIG 0.06 ml/kg IM as soon as possible (and within 7 days) after exposure (with dose 1of hepatitis B vaccine given at different body site); complete doses #2 and #3 of HepB series	HBV-susceptible health care personnel with percutaneous or mucous-membrane exposure to blood known to be HBsAg seropositive		
Meningococcal disease	Rifampin, 600 mg PO every 12 hours for 2 days, or ceftriaxone, 250 mg IM, single dose, or ciprofloxacin, 500 mg PO, single dose	Personnel with direct contact with respiratory secretions from infected persons without the use of proper precautions (e.g., mouth-to-mouth resuscitation, endotracheal	Rifampin and ciprofloxacin not recommended during pregnancy	

		intubation, endotracheal tube management, or close examination of oropharynx		
Pertussis	Azithromycin, 500mg x1, then 250mg x 4 days Erythromycin, 500 mg qid PO, or trimetho-prim-sulfamethoxazole, 1 tablet bid PO, for 14 days after exposure	Personnel with direct contact with respiratory secretions or large aerosol droplets from respiratory tract of infected persons.		
Rabies	For those never vaccinated: HRIG 20 IU/kg, half infiltrated around wound, and HDCV or RVA vaccine, 1.0 ml, IM (deltoid area), 1 each on days 0, 3, 7, 14, and 28	Personnel who have been bitten by human being or animal with rabies or have had scratches, abrasions, open wounds, or mucous membranes contaminated with saliva or other potentially infective material (e.g., brain tissue)		Personnel who have previously been vaccinated, give HDCV or RVA vaccine, 1.0 ml, IM, on days 0 and 3; no HRIG is necessary
Varicella-zoster virus	VZIG for persons ≤50 kg: 125 U/10kg IM; for persons >50 kg: 625 U†	Personnel known or likely to be susceptible to varicella and who have close and prolonged exposure to an infectious health care worker or patient, particularly those at high risk for complications, such as pregnant or immunocompromised persons		Serologic testing may help in assessing whether to administer VZIG; if varicella is prevented by the use of VZIG, vaccine should be offered later

PO, Orally; *Td*, tetanus-diphtheria toxoid; *IG*, immune globulin; *IgA*, immunoglobulin A; *qid*, four times daily; *bid*, twice daily; *HRIG*, human rabies immunoglobulin; *HDCV*, human diploid cell rabies vaccine; *RVA*, rabies vaccine absorbed.

*Persons immunocompromised because of immune deficiencies, HIV infection, leukemia, generalized malignanacy, or immunosuppressive therapy with corticosteroids, alkylating drugs, antimetabolites, or radiation.

†Some persons have recommended 125 U/10 kg regardless of total body weight.

Reference: AJIC Vol. 26 No 3June 1998 CDC Personnel Health Guideline: Guideline for Infection Control in Health Care Personnel

SECTION 3: Handling Waste

3.1 Medical Waste Management

This section provides practical guidelines for employees who handle, manage, transport and dispose of waste. There is no epidemiological evidence that clinical waste, when properly disposed of, is more infective to the community than residential waste. However, it does present a greater risk to waste-handlers until it reaches the final disposal location. Medical waste must always, therefore, be handled carefully. Infection capability is dependent on:

- The presence of a human pathogen
- A pathogen with sufficient virulence in sufficient dose to cause disease
- The availability of a potential host's portal of entry
- The resistance of the host

The following waste shall be declared as medical waste and shall be subject to the special waste- handling described below:

- Contaminated sharps
- Unused, discarded hypodermic needles, suture needles, scalpel blades and syringes
- Used intravenous equipment
- Isolation wastes from patients infected with these viruses: Kyasanur Forest Disease, Junin, Marburg, Russian spring-summer encephalitis, Congo Crimean Hemorrhagic fever, Omsk hemorrhagic fever, Lassa, Machupo Ebola
- Cultures and stocks of infectious agents
- Human blood and blood products
- Dressings, paper tissues and other disposable items saturated or dripping with blood or items caked with dried blood
- Pathological wastes
- Medical waste must be collected and transported in leak proof and impervious bags or containers prior to autoclaving or incineration. Items other than the infective waste described, even if the item has had contact with blood, exudates or secretions, may be disposed of with all other trash. All trash must be collected and transported to the collection bin in leak proof, impervious bags. Bulk blood, suctioned fluids, excretions and secretions must be carefully poured down a drain connected to a sanitary sewer, and bleach must be poured into the drain before disposing of contaminated fluid and also after disposing of contaminated fluid.

3.2 Guidelines on the Management of Infectious Waste

Medical Waste:

- Wearing gloves place contaminated dressings, tissues and other articles soiled by respiratory, oral, blood or wound secretions in a receptacle lined with an impervious plastic bag. Double- bag in a red plastic bag for disposal.
- Place waste in the designated area for medical waste removal.
- Dispose of urine, feces, secretions and excretions into the patient's toilet or hopper sink.
- Do not dispose of waste in the patient's sink.

Blood and Blood Products:

- Wash hands

- Follow standard precautions.
- Clean up any spillage of blood immediately with a solution of 5.25 sodium hypochlorite (bleach) and water. Use one part bleach to nine parts water, or another EPA registered disinfectant.

These recommendations are for the protection of patient care personnel, specimen transporting personnel, laboratory personnel, and everyone who works in the institution. When handling blood, employees should be aware of the potential that exists for the acquisition of Hepatitis B, Hepatitis C, HIV, Cytomegalovirus (CMV), other viruses and biological agents which are blood borne.

3.3 Trash handling

- All material for disposal, except material designated as "infectious," will be disposed of using the ordinary trash removal system which terminates with the trash removal from facility and off-loading at an approved municipal landfill.
- Gross liquid content found in various containers to be discarded should be eliminated by the individual, generating the waste, before the container's introduction into the trash disposal system.
- Containers (e.g., bed pans, emesis basins, urinals, urinal hats, respiratory suction tubing, suction canister liners & tubing) holding urine, feces, vomitus or nasogastric drainage are discarded in regular trash after emptying fluids into sanitary sewer system and rinsing container.
- All trash shall be placed in a high tensile strength, impervious, liquid-tight bag prior to being sent down a trash chute.

3.4 Procedure for Trash Disposal

- Use plastic liners in all wastebaskets.
- Discard paper and disposable items into the plastic liner in the wastebasket. When full, the plastic liner should be sealed and disposed of into another larger bag, and not reused.
- Do not discard needles and syringes into the wastebasket.
- Close bag tightly and secure with tie or tape.

3.5 Disposal of Chemotherapy Waste

Under laws enacted by the federal government, criteria were developed by which waste could be determined hazardous. Because of similarity of structure, mode of action, and toxicity all chemotherapy drugs should be handled and disposed of as hazardous waste. Yale Environmental Health and Safety has detailed recommendations for the handling of hazardous waste. These recommendations can be found on the EHS website or by contacting EHS at 203-785- 3550. These recommendations must be followed since Yale is considered a large generator of hazardous waste and, as such, is highly regulated by the EPA and Connecticut DEEP. The law allows for civil and criminal penalties to be assessed against institutions and/or individuals that improperly dispose of hazardous wastes.

The following procedures are recommended for laboratory and clinic personnel for the safe handling and disposal of chemotherapy drugs and related waste:

- Empty syringes, vials, etc. should be placed in the appropriate sharps disposal container. A container is considered empty if it contains no more than 3 percent by weight of the total capacity of the container. This definition is important since containers of chemotherapy drugs do not have to be disposed of as hazardous

waste if they meet this definition.

- Syringes are always considered biological waste. Any chemotherapy drugs in the syringe should be emptied into a waste container. The empty syringe is then placed into the appropriate sharps disposal container.
- Waste containers for prepared excess chemotherapy drugs should be kept in each lab, clinic or office. The container should be compatible with the drug, have a secure lid, and a label identifying the contents. More than one type of excess drug can be put into each container if a log sheet is kept on the type of drug and the amount put in. This is important for the final disposal of this material since unknown material is very expensive to dispose of and these costs would be charged back to the doctor or department.
- Vials that are not empty (>3 percent by weight of the capacity of the container) should be placed into a plastic lined box. When the box is full, tape the top shut, tag with a hazardous waste tag, and call Environmental Services Section (5-3551) to arrange for disposal.
- Vials containing sterile water should be emptied into the sink and the bottles should be placed in the appropriate sharps disposal container.

3.6 Needles and Syringes and Other Sharp Items

Personnel should use caution when handling all used needles and syringes because it is usually not known which patient's blood is contaminated with the hepatitis virus, HIV or other blood borne diseases. To prevent needle-stick injuries, used needles should not be recapped; bent, broken, or removed. Place used needle and syringes into an appropriate sharps disposal container after use.

The sharps disposal container used for needles/syringes or other intravascular sharps must be a rigid puncture-resistant, leak proof on sides and bottom, the container lid opening must be a one-way system to prevent spillage and retrieval of items from container, and appropriately labeled with the international biohazard symbol and word biohazard:

BIOHAZARD

Sharp instruments and disposable items:

- Only safety needles should be used unless EHS has approved an exception for a particular procedure.
- Needles must not be recapped, purposely bent or broken by hand, removed from disposable syringes, or otherwise manipulated by hand.
- Needles, syringes and other sharps must have the facility-approved protective safety mechanism employed immediately after use.
- After syringes and needles, scalpel blades and other sharp items are used they must be placed in appropriate sharps disposal containers for disposal.
- Such containers must be easily accessible to personnel needing them and located in all areas where sharps are commonly used. Sharps containers must be constructed so that they will not spill their contents and will not themselves allow injuries when handled.
- These containers must be in the patient's examination or treatment rooms and any other setting where blood is drawn and needles are used.

Knife blades:

- Safety scalpels with disposable handles must be used unless a department has been granted an exception by ICC.
- Deposit blade or blade with disposable handle in the sharps container.

Other Sharps:

- Non-intravascular sharp items (e.g., glass slides, glass tubes, vacutainers, glass medication vials, vaccine vials) are deposited into the designated puncture-resistant medical waste containers.

3.7 Dressings and Tissues

Wound dressings are to be disposed of in a manner to "confine and contain" any blood and body fluid that may be present.

- Small dressings can be enclosed in the disposable glove used by the caregiver removing the dressing. While holding the dressing, the glove should be pulled off inside out over the dressing. The dressing will be contained in the inverted glove. The dressing and glove can be safely discarded into the regular trash container located in the patient/clinic room.
- Larger dressings should be removed using gloves on both hands. The gloves, dressings and other trash from the dressing change procedure should be placed directly into an impervious plastic bag at the bedside. The bag should be zipped or tied closed and deposited into the regular trash.
- Dressings, paper tissues and other disposable items saturated or dripping with blood or items caked with dried blood must be placed in red biohazard bag and disposed as regulated medical waste.
- Any waste item caked, dried, soaked or dripping with blood is deposited into red biohazard bag, if it can puncture it, then place it in a puncture-resistant red medical waste container.
- Other body fluids (semen, vaginal secretions, cerebrospinal fluids, synovial fluids, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva in dental procedures, anybody fluid that is visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids) are empty from container when feasible, by patient care area staff, by pouring into the sanitary sewer system (soiled utility room or toilet facility) and deposit containers and/or sealed units in red medical waste container: Containers that cannot be emptied are stoppered to prevent leakage and placed in red medical waste container.

3.8 Autoclaves

- Autoclaves can sterilize all items that are heat stable (not damaged by steam or high temperature) or used to decontaminate waste items. In gravity autoclaves, cycles of 250°F (121°C), 15 to 18 lbs. pressure for one hour may be required for decontamination. In the newer vacuum autoclaves, decontamination may require 270°F (132°C), 27 to 30 lbs. pressure for 45 minutes. Use chemical and biological indicators to verify your autoclave technique and sterilization.
- Whatever the temperature and time requirement for decontamination, the contents of each load must be positioned so that steam penetrates, or heated air flows freely among all items to be decontaminated. Tightly sealed or stoppered materials may not be effectively decontaminated and may become dangerously pressurized causing injury when removed.
- A routine autoclave maintenance program is recommended:
    - Use chemical indicators for each instrument

- Use biological indicators at least weekly or if the autoclave is used less frequently, with each load. Place biological indicators at locations inside the load, the area slowest to heat up, throughout the autoclave are the best indication of sterilization. Biological indicators may be processed by either in-office biological monitoring (use of an incubator) or mail-in spore testing (processed by a lab vendor).
- Ensure all employees are trained prior to using the autoclave
- Reprocessed items must be appropriately labeled and verified that they were sterilized
- Reprocessed items must be dated and intact. Reprocess items only when the packaging becomes degraded, damaged, opened or otherwise rendered non-sterile.
- Place biological indicators at locations inside the load, the area slowest to heat up, throughout the autoclave are the best indication of sterilization. Biological indicators may be processed by either in-office biological monitoring (use of an incubator) or mail-in spore testing (processed by a lab vendor).

- Autoclave records should be kept on-hand for at least three years.

Questions should be addressed to Yale Environmental Health and Safety: 203-785-3550.

SECTION 4: Good Work Practices

This section contains information essential to understanding and properly using Standard Precautions. These techniques and recommendations should be applied to all patient care procedures. For example, gowns are appropriate for patient-care personnel when soiling with bodily fluids is likely, whether the patient is known or suspected to be infected.

4.1 Hand Washing

Hand washing is the single most important means of preventing the spread of infection. Personnel should always wash their hands, even when gloves are used, before and after taking care of any patient.

- Start with acceptable antimicrobial liquid hand soap. Turn water on and wet hands thoroughly.
- Vigorously lather with soap, covering well beyond areas of contamination.
- Use friction, one hand upon the other with fingers interlaced for at least 15 seconds.
- Rinse hands thoroughly under running water, holding elbows higher than hands to allow water to flow to the fingertips.
- Dry hands with a clean, dry paper towel.
- Use a paper towel to turn off the water faucet.

4.2 General

- Eating, drinking, application of cosmetics or lip balm, and handling of contact lenses is prohibited in work areas where there is reasonable likelihood of occupational exposure to blood, body fluids, chemicals, radioactive materials, and all other hazardous materials.
- Personal food and drink are prohibited from storage in refrigerators, freezers, cabinets, or on shelves or countertops in the areas designated for patient care.
- Use protective covering on chairs, wheelchairs, stools, and exam tables that have direct contact with patient's skin.
- Cover stretchers and exam/treatment tables with a clean sheet and/or disposable exam table paper before each patient use. Wipe the surface with an institutionally approved disinfectant (such as tuberculocidal disinfectant or

a 10% bleach solution) daily and when visibly soiled with blood or body fluids.

- Clean non-patient specific portable equipment (blood pressure cuffs) with an approved disinfectant-detergent in accordance with the manufacturer's instructions when visibly soiled and according to the equipment cleaning policy.
- Place contaminated reusable instruments in designated containers before removal to another area for cleaning.
- Due to infection control considerations, plants and flowers are not allowed in patient care areas or in clean and dirty utility rooms.
- Dispose of sharps in the designated sharps container. Contaminated needles must not be bent, recapped, broken, or removed by hand from the syringe. Always engage the sharp safety mechanism before disposal immediately after use.
- Check all sterile supplies weekly for inventory rotation. Supply delivery will follow the first in first out procedure.
- Prepare fresh solutions of disinfectant according to manufacturer's instructions. Place a date on the container as to when the solution was prepared. If using bleach solution, (10% in water) it must be prepared daily.
- Minimize splashing, spraying, or generation of droplets during procedures involving blood or other potentially infectious materials.
- Keep goggles, gowns, and gloves available and easily accessible in all exam rooms and other direct patient care areas.
- Label and date all patient food items.
- Do not store clean supplies on the floor, in the soiled utility room, or next to sinks where splashing of water or soiling may occur. Designate and maintain areas for clean and dirty supplies.
- Medical supplies must not be stored in corrugated boxes.

4.3 Eyewash Station and Spill Clean-Up Supplies

- Employees need to know where the emergency eyewash, chemical and biological spill supplies, and other safety equipment is located. Eyewash stations will be tested weekly according to policy by clinical personnel to be certain that water flows through it.
- Eyewash logs are available on the Yale EHS website

4.4 Refrigerators

- There must be separate refrigerators for food, specimens and medications. Signs must be affixed to indicate its designated use. A biohazard label must be affixed to the outside of refrigerators used to store specimens. Medication and food refrigerators must be labeled as well. Contact Yale EHS for labels.
- Refrigerators must be monitored for temperature and cleanliness, which includes daily temperature checks.
- Laboratory specimens needing refrigeration while awaiting transport may not be stored in the same refrigerator as medications or food.

4.5 Storage of Sterile Solutions

- Upon opening sterile solutions, staff may write the date on the label. All open solutions will be discarded on the first working day of the month or upon expiration date, whichever is the earliest. Sterile stock solutions should be checked prior to use for turbidity, leaks, cracks, particle matter, discoloration, and expiration date.
- When pouring from a container of sterile solution, first pour and then discard a small amount. Unused remaining sterile solutions must be discarded after 24 hours or as per explicit instructions of the pharmacist.

4.6 Storage of Disposable Supplies

- Single-use disposable type sterile and non-sterile supplies must be inspected upon receipt and again just prior to use for intact packaging, evidence of water damage or other contamination or tampering.
- Store supplies in a clean, dry, enclosed area (e.g., cupboard, closet) in their original cartons. Never store clinical supplies under the sink since they may receive moisture damage/contamination during routine cleaning procedures and from water leakage. Disposable supplies may only be used once and not reprocessed, re-sterilized, or reused. After use, promptly dispose items in the appropriate waste container.

4.7 Perishable Food and Juices

- Cans of juices or milk must be checked for expiration date and discarded at expiration date. Before opening a can, wipe the surface with a moistened paper towel to avoid introducing contaminants. A dedicated refrigerator is required for the storage of patient food and juices, and must be monitored at least daily for temperature and cleanliness.

4.8 Dietary

- No special dishes or other precautions are necessary when visiting, serving or interviewing patients, except when those patients are on Transmission Based Precautions.
- Disposable dishware and trays are not required for any patient except those on Transmission Based Precautions.
- No special precautions are needed when passing or collecting menus (except for those patients on Transmission Based Precautions), unless the menus are visibly soiled. If soiled, wear gloves to handle and dispose of the soiled menus. Promptly wash hands.
- No special precautions are needed when passing trays or delivering nourishment to patients (except those on Transmission Based Precautions). For collecting trays, gloves should be worn. All disposable items should be removed from trays and discarded into the appropriate waste receptacle in the patient's room. Only reusable items should be returned to the Food Service.
- Because it is unsanitary to mix clean and contaminated materials, bedpans and urinals must be removed from patient bed tables prior to mealtime. The table will be washed with facility approved disinfectant.
- For food trays to be collected by Food Service Personnel, they must be free of direct patient care items.
- Employees in the dish-room must wear gloves, discard them and wash their hands before working in "clean" food areas.
- See specific policies related to dietary services.

4.9 Private Rooms

- Private rooms are required for all patients who soil the room with body substances and for patients likely to have an infectious disease transmissible by the airborne route. Few patients require private rooms, so in choosing roommate combinations, nurses should assess the risk of transmission between patients. When practicing Standard Precautions, roommate selections should be based on the likelihood of soiling articles in the room.

4.10 Roommates for Patients on Transmission Based Precautions

- If infected or colonized patients are not placed in private rooms, they should be placed with appropriate

roommates. Infected patients should not share a room with a patient who is likely to become infected or in whom the consequences of infection are likely to be severe (e.g., immunosuppressed patient).

- In general, patients infected by the same microorganism may share a room. Such grouping (or cohorting) of patients is especially useful during outbreaks when there is a shortage of private rooms.

4.11 Airborne Precaution Rooms

- Any patient requiring airborne precaution rooms will be masked, placed in a private room and if appropriate be admitted to Inpatient Care isolation rooms or immediately transferred to Yale New Haven Hospital.

4.12 Cleaning Patient Rooms

Routine Cleaning

- Patient rooms and other treatment areas must be cleaned and disinfected before a new patient is introduced. This cleaning and disinfecting must comply with established housekeeping policies using only approved cleaning and disinfecting agents. Cleaning equipment used in rooms of patients whose infection requires a private room should be disinfected before being used in other patient rooms, i.e. dirty water should be discarded, wiping cloths and mop heads should be laundered. If cleaning cloths and mop heads are contaminated with infective material or blood, they should be bagged and sent to the laundry.
- Environmental surfaces such as walls, floors and other surfaces are not associated with transmission of infections to patients or health-care workers. Therefore, extraordinary attempts to disinfect or sterilize these environmental surfaces are not necessary. However, cleaning and removal of soil should be done routinely.
- Cleaning schedules and methods vary according to the department, the type of surface to be cleaned and the amount and type of soil present. Horizontal surfaces (e.g. bedside tables and hard-surfaced flooring) in patient-care areas are usually cleaned regularly when soiling or spills occur, and when a patient is discharged. Cleaning of walls, blinds and curtains is performed semi-annually and when they are visibly soiled.
- Disinfectant-detergent formulations registered by the Environmental Protection Agency (EPA) can be used for cleaning environmental surfaces, but the actual physical removal of microorganisms by scrubbing is probably as important as any antimicrobial effect of the cleaning agent used. The manufacturer's instructions for appropriate use should be followed.

Staff Responsibilities in Terminal Cleaning of the Isolation Room or Cubicle

- Clean, bag and remove all supplies from the room before Housekeeping arrives to terminally clean the room.
- Empty all non-disposable receptacles such as drainage bottles into the toilet. If the receptacles are disposable, empty and discard them according to facility's policy.
- Housekeeping will clean other patient care supplies such as reusable equipment according to facility policy.
- Discard all opened or unopened disposable items into trash receptacle.

Terminal Cleaning

- Although microorganisms may be present on walls, floors and tabletops in rooms used for patients on isolation precautions, these environmental surfaces, unless visibly contaminated, are rarely associated with transmission of infections to other patients when such equipment is not appropriately decontaminated and reprocessed. Therefore, terminal cleaning should primarily be directed toward those items that have been in direct contact with the patient or in contact with the patient's infective material (excretions, secretions, blood or body fluids). The disinfectant- detergent solution used during terminal cleaning should be facility approved. Terminal cleaning

of rooms (or cubicles) consists of the following:

- Housekeeping personnel should use the same precautions to protect themselves during terminal cleaning that they use if the patient were still in the room.
- All disposable items should be discarded. Articles grossly contaminated with infective material should be bagged and disposed of in accordance with Yale University's policy on disposal of infectious wastes.
- All equipment not sent for sterilization or discarded should be cleaned according to facility policy.
- All surfaces of furniture and mattress covers should be cleaned according to facility policy.
- All floors should be mopped with a disinfectant- detergent solution. Routine washing of walls, blinds and curtains is not indicated; however, these should be washed if they are visibly soiled. Cubicle curtains should be changed if visibly soiled or according to facility policy.
- Airing a room from which a patient has been discharged is not an effective terminal disinfection procedure and is not necessary.

SECTION 5: Personal Protective Equipment

Personal protective equipment (PPE), also known as barrier protection, is used to prevent blood and other potentially infectious materials from making direct contact with an employee's clothing or body. The type and amount of PPE required depends upon the task to be performed and the anticipated exposure.

5.1 Gloves

- Gloves reduce the possibility personnel will become infected with microorganisms that are infecting patients; gloves reduce the likelihood personnel will transmit their own endogenous microbial flora to patients; gloves reduce the possibility personnel will become transiently colonized with microorganisms which can be transmitted to other patients.
- When gloves are indicated, disposable single-use gloves (sterile or non-sterile, depending on the purpose for use) should be worn. Use sterile gloves for procedures involving contact with normally sterile areas of the body. Use examination gloves for procedures involving contact with mucous membranes, unless otherwise indicated, and for other patient care or diagnostic procedures that do not require the use of sterile gloves.
- Since no one glove can provide protection against all hazards, the gloves selected must be of appropriate material, usually intact vinyl or nitrile, of appropriate quality for the procedures performed, and of appropriate size for each health-care worker. Employers must not wash or disinfect surgical or examination gloves for reuse. Washing with surfactants may cause "wicking," i.e. the enhanced penetration of liquids through undetected holes in the glove. Direct glove contact with disinfecting agents (i.e., bleach, ethanol or isopropanol, gluturaldehyde) will cause glove deterioration and must be avoided. General-purpose utility (rubber) gloves worn by maintenance, housekeeping, laundry or other non-medical personnel may be decontaminated and reused. Do not use gloves if they are peeling, cracked, or discolored, or if they have punctures, tears, or other evidence of deterioration.
- Used gloves should be discarded into an appropriate receptacle. When there is direct contact with a patient's secretions or excretions, gloves should be changed if care of the patient has not been completed.

Policy and procedure for wearing gloves

- Wear gloves on both hands for touching blood and body fluids, mucous membranes, or non- intact skin of all patients, for handling items or surfaces soiled with blood or body fluids.

- Change gloves immediately if they are torn or punctured.
- Change gloves after contact with each patient's blood or body fluids or after contact with items or surface soiled with blood or body fluids.
- Remove gloves before leaving the exam/patient room, dirty utility areas or other work areas.
- Change gloves and wash hands between patient contact.
- Wash hands after removing gloves.

Using gloves is essential in the following circumstances:

- During phlebotomy, injections, intravenous administration, wear gloves on both hands. Gloves will reduce the incidence of blood contamination of hands, but they cannot prevent penetrating injuries caused by needles or other sharp instruments.
- Any time the health-care worker has cuts, abraded skin, chapped hands, dermatitis or the like. Workers with chapped or abraded skin must contact their supervisor before initiating work with potentially infectious materials. Waterproof bandages and double gloving should be employed to protect the employee. If the employee cannot provide adequate protection, she/he should not work with potentially infectious materials. This restriction should remain in effect until the condition is resolved.
- During instrumental examination of oropharynx, gastrointestinal tract and genitourinary tract.
- When examining abraded or non-intact skin or patients with active bleeding.
- During invasive procedures.
- During all cleaning of body fluids and decontaminating procedures.

Clean technique

- Slip the gloves onto the right hand first and then the left, making sure they fit securely over the cuffs of the isolation gown.
- Take an extra pair of gloves, protected by a clean paper towel, into the isolation room. The extra gloves can be used in case the original pair tears or becomes soiled.

Sterile technique

- Remove all jewelry, including rings (a plain wedding band is permitted)
- Wash hands thoroughly with an antiseptic and dry them off with a paper towel. Use a paper towel to turn off the faucet.
- Open the package containing the sterile gloves.
- Carefully open the inner wrapper, maintaining aseptic technique, being careful not to contaminate the gloves by touching them.
- Grasp the folded edge (inside surface) of the right glove's cuff with the left hand (see diagram below).
- Slip the right hand inside the glove. To avoid contamination, the fingers on the left hand should touch only the inside of the glove. If the glove becomes contaminated, discard it and obtain a new one
- Slip the fingers of the gloved hand under the cuff (touching only the outer surfaces) of the glove, as shown below.
- Insert the left hand into the glove and pull the glove on with the right hand. Avoid touching the skin with the gloved hand.
- Adjust both gloves so they fit properly. Make sure no gaps exist between the fingertips and the ends of the gloves.

- Inspect the gloves for nicks and tears before and during the procedure. Obtain a new pair of sterile gloves if a break in technique, nick or tear occurs.

5.2 Gowns

In general, gowns are recommended to prevent soiling of clothing when taking care of patients. Gowns, aprons or lab coats are required when splashes to the skin or clothing with body fluid are likely to occur. Gowns, including surgical gowns, shall be made of or lined with impervious material and shall protect all areas of exposed skin. Gowns will also be worn when arms come into contact with a patient's blood or body fluids or non-intact skin.

- When gowns are indicated, they should be worn only once and then discarded in an appropriate receptacle.
- Clean, freshly laundered or disposable gowns may be worn in most circumstances.
- In some instances, as with extreme burns or extensive wounds, sterile gowns should be worn when changing dressings.
- Supplies of gowns are to be readily available.
- The gown should be large enough to cover the clothing entirely and protect all areas of exposed skin.

Procedure for putting on a gown

- Slide the gown over the hands and arms by holding arms forward and slightly above head.
- Fasten the gown at the back of the neck; then grasp the gown at the waistline in the back and overlap the edges as much as possible. While holding the overlapping edge with one hand, grasp one end of the belt with the other hand and pull it around the back and fasten.
- Procedure for removing a contaminated gown
- Untie belt in the back of the gown, and remove gloves if applicable. Wash and dry hands using sink inside room. Unfasten the neck of the gown and pull off the first sleeve by slipping the fingers under the cuff.
- Do not touch outside surface of cuff; the outside is contaminated and the hands are now clean.
- Remove the second sleeve by grasping it through the first sleeve like this
- Without touching the outer surface of the gown, fold it with the outer contaminated surfaces together. Then, roll the gown into a ball, being careful to touch only the inner uncontaminated surface of the gown. If gown is non-disposable, place it into the patient's linen hamper. If gown is disposable, discard it into the patient's covered waste receptacle. Always remember to hold the contaminated gown away from the uniform.
- Wash hands before leaving room and use a paper to turn off the faucetsRemove the second sleeve by grasping it through the first sleeve
- Without touching the outer surface of the gown, fold it with the outer contaminated surfaces together. Then, roll the gown into a ball, being careful to touch only the inner uncontaminated surface of the gown. If gown is non-disposable, place it into the patient's linen hamper. If gown is disposable, discard it into the patient's covered waste receptacle. Always remember to hold the contaminated gown away from the uniform.
- Wash hands before leaving room and use a paper to turn off the faucets.

5.3 Face and Eye Protection

- Face and eye protection must be worn whenever there is potential for the generation of splashes, spray, splatter or droplets of blood or other potentially infectious material in the eyes, nose, mouth, or other facial areas. Eye protection may prevent damage to the eye in addition to preventing exposure to infectious materials. Certain disinfectants and other chemical can damage the eye or cause blindness if splashed in the eye.
- One or more devices may provide face and eye protection. Remember that the nose and mouth must be protected if eye protection is worn, and vice-versa.

- Product selection should be based upon acceptability to the wearer and the protection afforded. Eye protection may be provided by safety glasses or normal glasses with side shields, goggles or chin length face shields. Nose and mouth protection may be provided by surgical masks and face shields.

Face shields

- Provide full-face protection against splashes and sprays to the face. Some face shields are strong enough to provide protection against impact injuries. Note that face shields do not offer mucous membrane protection from infectious aerosols.

Goggles

- Goggles are another alternative for eye protection. Goggles form a face seal and provide protection on the sides and top of the eyes

Safety Glasses

- Safety glasses with side shields provide protection against splashes and sprays. Note that splashes may reach the eye because glasses are not flush with the user's face. Safety glasses do not offer eye protection from infectious aerosols.

Surgical Masks

- Surgical masks protect the mucous membranes of the mouth and nose. Surgical masks are generally protective against droplets, splashes and sprays. Masks must cover both the nose and the mouth, and fit the face closely, so that air passes through the mask before being inhaled. Some surgical masks are available with attached eye shields.
- Moisture from expired air may eventually saturate the mask, making breathing difficult or fogging eyeglasses. If this occurs, change the mask, discarding it as medical waste if contaminated with human blood or other potentially infectious materials. Uncontaminated masks may be discarded in the general trash. Surgical masks offer limited protection from infectious aerosols.
- The use of masks and protective eye wear or face shields is required when contamination of mucosal membranes (eyes, mouth or nose) with body fluid splashes or aerosolization is likely to occur, such as during suctioning, surgical or dental procedures.

Procedure for Putting on a Mask

- If the mask has a metal strip, position it over the nose with the metal strip facing outward; if the mask does not have a metal strip, position it properly covering the mouth and nose.
- Tie the mask's top strings just above the top of the ears or place ties behind ears.
- Pull down the lower part of the mask over the mouth and chin.
- Tie the bottom strings around the neck.
- Press the metal strip over the nose so the mask fits comfortably and snugly.
- Change mask when it becomes moist, difficult to breathe through or damaged.
- Wash hands before touching mask and/or removing it. Discard mask in waste receptacle in room before leaving room.
- If both gown and mask are worn, remove gown first, wash hands, remove mask and discard mask in waste receptacle in room. Wash hands prior to leaving the room and use a paper towel to turn off the faucets

5.4 NIOSH Approved Particulate Masks and Respirators

- Different respirators offer different levels of protection by varying their aerosol filter efficiency: 95%, 99% and 99.97%. NIOSH approved particulate masks and respirators for airborne precaution use are the N95, N99 or N100. All respirator wearers must complete a medical surveillance questionnaire. Training and fit testing is also required for all respirator wearers prior to use. A respirator wearer needs to be refitted with the respirator if the wearer has a weight change of 20 pounds or more, significant facial scarring in the area of the facepiece seal, significant dental changes (such as multiple extractions without prosthesis or acquiring dentures), reconstructive or cosmetic surgery or any other condition that may interfere with facepiece sealing. Fit testing is required initially and annually on all respirators with tight fitting face pieces. Respirator information, training, and fit testing is available through the Yale Environmental Health and Safety; medical questionnaires are administered through Yale Health Employee Health
- Respirators should be put on before entering the room of the patient on airborne precautions and taken off, placed in a protective labeled bag in the anteroom. Discarded at the end of shift. Employees who perform duties that may require respirator use must be trained and fit tested as per the Yale University Respiratory Protection Program.

SECTION 6: Decontamination, Spill Response and Housekeeping

6.1 Sterilization or Disinfection of Reusable Medical Instruments/Devices

Medical devices, equipment, and surgical materials are divided into three general categories: critical items, semi-critical items, and non-critical items, based on the potential risk of infection involved in their use.

Critical Items

- Critical items are instruments or objects that are introduced directly into the bloodstream or into other normally sterile areas of the body. Examples of critical items are surgical instruments, cardiac catheters, implants, pertinent components of the heart-lung oxygenator, and the blood compartment of a hemodialyzer. Sterility at the time of use is required for these items; consequently, one of several accepted sterilization procedures is generally recommended.

Semi-Critical Items

- Items in the second category are classified as semi-critical in terms of infection risk. Examples are non-invasive flexible and rigid fiber-optic endoscopes, endotracheal tubes, anesthesia breathing circuits, and cystoscopes. Although these items come in contact with intact mucous membranes, they do not ordinarily penetrate body surfaces. If steam sterilization can be used, it is often cheaper to sterilize many of these items, but sterilization is not essential; at a minimum, a high-level disinfection procedure that can be expected to destroy vegetative microorganisms, most fungal spores, tubercle bacilli, and small non-lipid viruses is recommended. In most cases, meticulous physical cleaning followed by an appropriate high-level disinfection treatment gives the user a reasonable degree of assurance that the items are free of pathogens.

Non-Critical Items

- Non-critical items are those that either do not ordinarily touch the patient or touch only intact skin. Such items

include crutches, bed boards, blood pressure cuffs, and other medical accessories. These items rarely, if ever, transmit disease. Consequently, depending on the piece of equipment or item, washing with a detergent may be enough.

- The level of disinfection achieved depends on several factors, principally contact time, temperature, type and concentration of the active ingredients of the chemical germicide, and the nature of the microbial contamination. Some disinfection procedures can produce sterility if the contact times used are sufficiently long; when these procedures are continued long enough to kill all but resistant bacterial spores, the result is high-level disinfection. Other disinfection procedures that can kill many types of viruses and most vegetative microorganisms (but cannot be relied upon to kill resistant microorganisms such as tubercle bacilli, bacterial spores, or certain viruses) are intermediate- or low-level disinfection.
- The tubercle bacillus, lipid and non-lipid viruses, and other groups of microorganisms in Table I are used in the context of indicator microorganisms that have varying degrees of resistance to chemical germicides and not necessarily because of their importance in causing nosocomial infections. For example, cells of M. tuberculosis or M. bovis, which are used in routine efficacy tests, are among the most resistant vegetative microorganisms known and, after bacterial endospores, constitute the most severe challenge to a chemical germicide. Thus, a tuberculocidal chemical germicide may be used as a high or intermediate-level disinfectant targeted to many types of nosocomial pathogens but not specifically to control respiratory tuberculosis.

Table 7 Methods for Disinfection and Sterilization of Patient-Care Items and Environmental Surfaces

Process	Level of Microbial Inactivation	Method	Examples (with processing times)	Healthcare Application (examples)
Sterilization	Destroys all microorganisms, includes bacterial spores	High temperature	Steam (~40 min), dry heat (1-6 hr depending on temperature)	Heat-tolerant critical (surgical instruments) and semi-critical patient-care items
		Low temperature	Ethylene oxide gas (~15 hr), hydrogen peroxide gas plasma (28-52 min), ozone (~4 hr), hydrogen peroxide vapor (55 min)	Heat-sensitive critical and semicritical patient-care items
		Liquid immersion	Chemical sterilants include*: >2% glut (~10 hr); 1.12% glut with 1.93% phenol (12 hr); 7.35% HP with 0.23% PA (3 hr); 8.3% HP with 7.0% PA (5 hr); 7.5% HP (6 hr); 1.0% HP with 0.08% PA (8 hr); >0.2% PA (12 min at 50-56°C)	Heat-sensitive critical and semicritical patient-care items that can be immersed
High-level disinfection (HLD)	Destroys all microorganisms except high numbers of bacterial spores	Heat-automated	Pasteurization (65-77°C, 30 min)	Heat-sensitive semicritical items (e.g., respiratory therapy equipment)
		Liquid immersion	Chemical sterilants/HLDs include*: >2% glut (10-90 min); 0.55% OPA	Heat-sensitive semicritical items (e.g., GI

			(12 min); 1.12% glut with 1.93% phenol (20 min); 7.35% HP with 0.23% PA (15 min); 7.5% HP (30 min); 1.0% HP with 0.08% PA (25 min); 650-675 ppm chlorine (10 min); 2.0% HP (8 min); 3.4% glut with 26% isopropanol (10 min)	endoscopes, bronchoscopes, endocavitary probes)
Intermediate-level disinfection	Destroys vegetative bacteria, mycobacteria, most viruses, most fungi but not bacterial spores	Liquid contact	EPA-registered hospital disinfectant with label claim regarding tuberculocidal activity (e.g., chlorine-based products, phenolics, improved hydrogen peroxide-exposure times at least 1 min)	Noncritical patient care item (blood pressure cuff) or surface with visible blood
Low-level disinfection	Destroys vegetative bacteria, some fungi and viruses but not mycobacteria or spores	Liquid contact	EPA-registered hospital disinfectant with no tuberculocidal claim (e.g., chlorine-based products, phenolics, improved hydrogen peroxide, quaternary ammonium compounds-exposure times at least 1 min) or 70-90% alcohol	Noncritical patient care item (blood pressure cuff) or surface (bedside table) with no visible blood

Reference: APIC Methods for Disinfection and Sterilization of Patient-Care Items and Environmental Surfaces

- In general, reusable medical devices or patient-care equipment that enters normally sterile tissue or the vascular system or through which blood flows should be sterilized before each use. Sterilization means the use of a physical or chemical procedure to destroy all microbial life, including highly resistant bacterial endospores.
- The major sterilizing agents used in hospitals are:
    - moist heat by steam autoclaving
    - ethylene oxide gas
    - dry heat
- However, there are a variety of chemical germicides (sterilant) used for reprocessing reusable heat-sensitive medical devices and appear effective when used appropriately, i.e., according to manufacturer's instructions. These chemicals are rarely used for sterilization but appear to be effective for high-level disinfection of medical devices that come into contact with mucous membranes during use (e.g., flexible fiber-optic endoscopes).
- Disinfection means the use of a chemical procedure that eliminates virtually all recognized pathogenic microorganisms but not necessarily all microbial forms (e.g., bacterial endospores) on inanimate objects. There are three levels of disinfection: high, intermediate, and low. High-level disinfection kills all organisms, except high levels of bacterial spores, and is affected with a chemical germicide cleared for marketing as a sterilant by the Food and Drug Administration. Intermediate-level disinfection kills mycobacterium, most viruses, and bacteria with a chemical germicide registered as a "tuberculocide" by the Environmental Protection Agency (EPA). Low-level disinfection kills some viruses and bacteria with a chemical germicide registered as a hospital disinfectant by the EPA.

- Heat stable reusable medical devices that enter the blood stream or enter normally sterile tissue should always be reprocessed using heat-based methods of sterilization (e.g., steam autoclave or dry heat oven).
- Laparoscopic or arthroscopic telescopes (optic portions of the endoscopic set) should be subjected to a sterilization procedure before each use; if this is not feasible, they should receive high-level disinfection. Heat stable accessories to the endoscopic set (e.g., trocars, operative instruments) should be sterilized by heat-based methods (e.g., steam autoclave or dry heat oven).
- Reusable devices or items that touch mucous membranes should, at a minimum, receive high- level disinfection between patients. These devices include reusable flexible endoscopes, endotracheal tubes, anesthesia breathing circuits, and respiratory therapy equipment.
- Medical devices that require sterilization or disinfection must be thoroughly cleaned to reduce organic material or bio-burden before being exposed to the germicide, and the germicide and the device manufacturer's instructions should be closely followed.
- Except on rare and special instances (as mentioned below), items that do not ordinarily touch the patient or touch only intact skin are not involved in disease transmission, and generally do not necessitate disinfection between uses on different patients. These items include crutches, bed boards, blood pressure cuffs, and a variety of other medical accessories. Consequently, depending on the piece of equipment or item, washing with a detergent or using a low- level disinfectant may be sufficient when decontamination is needed. If non-critical items are grossly soiled with blood or other body fluids:
    - In patient-care areas, visibly soiled areas should first be cleaned and then chemically decontaminated. For disinfection, the pre-cleaned areas should be moistened with the appropriate germicide and allowed to air dry.
    - In the laboratory, large spills of cultured or concentrated infectious agents should be flooded with a liquid germicide before cleaning, then decontaminated with fresh germicidal chemical after organic material has been removed. It is not necessary to flood spills of blood or other body fluids with germicide before cleaning.
- Gloves should always be worn during cleaning and decontaminating procedures. Eye and face protection may be needed if spraying or splattering is likely to occur to the face. Eye protection may prevent eye damage and exposure to infectious materials. Certain disinfectants and other chemicals can damage the eye or cause blindness if splashed in the eye. Use goggles or safety glasses and mask or full-face shield to protect the mucous membranes of the face.
- Exceptional circumstances that require non-critical items to be either dedicated to one patient or patient cohort, or subjected to low-level disinfection between patient uses are those involving:
    - Patients infected or colonized with vancomycin-resistant enterococci or other drug-resistant microorganisms judged by the infection control program, based on current state, regional, or national recommendations, to be of special or clinical or epidemiologic significance or
    - Patients infected with highly virulent microorganisms, e.g., viruses causing hemorrhagic fever (such as Ebola or Lassa).
- If you have questions about a low- or intermediate-level disinfectant, contact the manufacturer, your local or state health department, or the Antimicrobial Program Branch, Registration Division, Environmental Protection Agency (EPA), (703-308-6411) or (pesticidequestions@epa.gov). Or, you may call the EPA disinfectant hotline at 800-858-7378. The EPA is the federal regulatory agency for low- or intermediate-level disinfectants. The EPA Region 1 (New England) Customer Service Line 888-372-7341 which is answered by a voicemail box. Region 1 Contact Information
- If you have questions about high-level disinfectants (sterilants), or how to clean, disinfect or sterilize a particular

medical device, first contact the manufacturer of the product. If you are unable to obtain sufficient information in this manner, contact the Food and Drug Administration (FDA) regional office or DPH's Department of Consumer Protection main line 860-713-6100.

6.2 Sphygmomanometer and Stethoscope

- No special precautions are indicated unless this equipment is contaminated (or likely to be contaminated) with infective material. If soiled, wipe the stethoscope, cuff, gauge, bulb, and other component parts with a cloth moistened with a disinfectant solution. See Contact Precautions for additional information.

6.3 Soiled Linen & Laundry

- It is the responsibility of the housekeeping staff to remove all soiled/dirty linen and all trash from the unit.
- There is a method for disposal of linen soiled with blood and body secretions to reduce risk of staff contact with the soiled linen. In accordance with standard precautions, employees are required to wear gloves and gowns, if necessary, while handling all soiled linen. All patient laundry is considered to be soiled with blood or body fluids and should be handled using Standard Precautions. All soiled linen is placed in the linen hampers
- The risk of disease transmission from soiled linen is negligible. However, soiled linens may carry large numbers of organisms that may contaminate the air and immediate environment if they are "fluffed" or agitated.
- All linen will be handled as potentially infectious. Linen will be transported in high tensile strength, impervious bags. Soiled linen should be handled as little as possible and with minimum agitation in order to prevent microbial dissemination into the air and onto employees handling the linen. Soiled linen should not come into contact with attire. Hold the soiled linen away from your clothes. If linen saturated wear a gown and booties to prevent further transmission. It should be placed in bags as close as possible as the location it was used. It should not be sorted or rinsed in patient care areas. Soiled linen must be collected and transported in impervious bags to prevent leakage. Bags must be secured when filled (not overfilled) to prevent spillage during transportation. Soiled laundry must be collected in covered hampers in patient care areas. Gloves must be worn when handling linen.

6.4 Housekeeping

- All waste baskets in the rooms of patients shall be lined with plastic liners. When full these bags shall be removed, using gloves, closed (placed in a second plastic bag that is closed), and transported to the dumpster.
- Bathrooms shall be cleaned in the usual manner using gloves and germicide/disinfectant solution.
- Gloves shall be worn when cleaning showers and bathtubs, using the germicidal disinfectant solution once each day. Tub cleaning with germicidal disinfectant solution will be followed by scrubbing with a cleaner and rinsed thoroughly.
- Housekeeping Staff shall wear gloves when removing all trash. The trash in the specially marked waste containers in the treatment rooms is to be double bagged and removed by Housekeeping Staff wearing gloves.
- All horizontal surfaces shall be cleaned in accordance with a germicidal solution in accordance with manufacturer's recommendations daily and as required.
- Floors shall be mopped thoroughly and cleaned with germicidal solution once a week and as required.
- Wall shall be spot cleaned with detergent and germicide solution when soiled and shall be periodically cleaned according to prescribed housekeeping routine.
- Institutionally approved germicide can be obtained through the Purchasing department.

6.5 Cleaning Spills of Blood and Body Fluids on Environmental Surfaces

- All spilled blood and other body fluids are handled and managed safely to maintain a safe environment. Household bleach (5.25 sodium hypochlorite) or an appropriate tuberculocidal disinfectant shall be used to clean all spills of human blood and other potentially infectious materials.
- If spill response /mess kits are unavailable in facility, either obtain prepared spill kit or assemble your own spill response kit.
- Basic equipment is some disinfect and solidifying agent, paper towels, household rubber gloves, biohazard bags, and forceps to pick up broken glass and PPE. The contents of the kit are kept in a plastic container. There are commercial available spill kits for cleaning blood and body fluids.

SECTION 7: Medications and Safe Injection Practices

7.1 Storage of Medications – Multi-Dose Vials/Single-Dose Vials

- Single-dose vials: Approved for use on a single patient for a single procedure or injection.
- Multi-dose vials: Use a new sterile needle and syringe each time entering the vial. Do not keep multi-dose vials in the immediate patient treatment area.
- The rubber stopper should be wiped with alcohol each time the vial is entered. If multiple-dose vials are used, the date and time of opening should be written on the label with the initials of the person who opened it. Multi-dose vials must be examined for precipitate matter and evidence of discoloration prior to each use. Vials are stored in accordance with manufacturer recommendations.
- Medications should be stored in areas with restricted access and secured in a locked cabinet. Medications should not be stored on counter tops next to the sink. The person administering unit dose medications should always check to be certain that the package is sealed, and that the expiration date has not passed.
- Only supplies used for medication and patient treatment shall be stored in the treatment room or dedicated refrigerator. The medication refrigerator must be checked for outdated medications and kept clean. The temperature (36 F –40F) of the medication refrigerator must be monitored daily. A log must be maintained to include daily temperature checks, weekly and as needed cleaning and routine inspection of contents.
- Horizontal surfaces in the treatment room shall be wiped with a germicide solution weekly and as needed and sinks shall be scoured, and germicide solution applied daily.
- Sterile water and saline for irrigation should be labeled with the date and time it was opened. The bottles should be discarded at the end of 24 hours.
- Hydrogen peroxide must be dated when opened and discarded at the end of the week. Contact Environmental Affairs (203-432- 6545) (waste.request@yale.edu) for information on disposal procedures.
- Note: Controlled Substances must be kept in a secured locked area. Clinics who utilize controlled substances must have an updated license with the State and Federal Drug Enforcement Agency. An Inventory must be kept of all controlled substances. A copy of this inventory must be sent to the State DEA by May 1st of each year.

7.2 Fingerstick Devices

- Two types of devices:
    - Auto-disabling single use
    - Reusable

- Single use, auto-disabling devices are disposable and, by design, prevent re-use. Use in settings where assisted BGM is performed.
- Reusable devices cannot be adequately cleaned and disinfected. Never use it for more than one person. Even when not visibly soiled, it has been responsible for transmitting hepatitis when stored with other devices.
- Use a new pair of gloves for each new test.
- Perform hand hygiene before and after glove use.
- Avoid handling test strip containers with soiled gloves to avoid contamination. If a new test strip is needed, discard soiled gloves and perform hand hygiene before obtaining a new test strip.

7.3 Blood Glucose Meter

- When possible, it should be assigned to an individual person and should not be shared. If the meter must be shared, clean and disinfect after every use, per manufacturer's instructions:
    - Use the disinfectant recommended by the manufacturer, typically, an EPA approved disinfectant (effective against Human HIV-1 and Hepatitis B Virus)
    - Follow recommended dwell time (or contact time) specified on label. If the manufacturer does not specify how the device should be cleaned and disinfected, it should not be shared.
- Always maintain aseptic technique:
    - Hand hygiene and glove use
    - Separate clean and dirty
    - Cleaning of environment

SECTION 8: Storage and Transporting of Specimens

8.1 Handling of Clinical Specimens

All clinical specimens, regardless of patient origin, will be subject to the application of Standard Precautions and handled as potentially infectious.

- All specimens will be packaged in a lab provided approved sealable plastic bag prior to transportation to the lab so that lab slips will not come in direct contact with specimen container. *This bag must be sealed when delivered to the lab.
- Urine, vomitus, and feces from patients can be safely flushed down the toilet into the municipal sewage system.
- Care should be taken when collecting specimens to avoid contamination of the outside of the container. Contaminated materials used in laboratory tests should be decontaminated before reprocessing or be placed in bags and disposed of in accordance with institutional policies for disposal of infectious waste. Bagging is intended to prevent inadvertent exposure of laboratory or transport personnel to infective material and prevent contamination of the environment.
- All blood or body fluid specimens must be transported from one area to another using an appropriate leak proof specimen transport container or placed in the specimen refrigerator or specimen pick-up container that are labeled with the biohazard label.

8.2 Protocol on Management of Specimens

- Wear gloves when collecting and handling specimens.

- Collect specimens in appropriate container following specimen requirements (spinning, freezing, etc.)
- Close container tightly. Leakage leads to contamination of specimen and personnel.
- Label specimen container including all appropriate information. All specimens must be labeled with the patient using 2 identifiers.
- Fill out laboratory requisition form completely.
- Contact appropriate Lab (Yale, Quest).
- Place container in the lab specific sealable plastic bag.
- Attach requisition to bagged specimen.
- Transport specimens in an upright in the Yale Health approved transport container/cooler.
- Deliver specimen promptly to the appropriate pick-up storage container or specimen refrigerator labeled with the Biohazard label.
- Wash hands with soap and water after contact with secretions, excretions, blood and articles contaminated with bodily fluids. See Section 2.5 Emergency Procedures for Exposure to Blood and Body Fluids for additional information concerning exposure to potentially infectious materials.
- For spills, disinfect the area promptly with tuberculocidal disinfectant or 10% household bleach (1:10 dilution: 1 part bleach to 9 parts water). Wear gloves to cleanup. Refer to spill policy.

SECTION 9: Transportation of Patient

9.1 Transportation Process

- Patient(s) infected with virulent or epidemiologically important microorganisms should leave their room only for essential purposes. When special studies are ordered, the individual requesting the study should indicate on the requisition the patient is on transmission-based precautions. The patient and transport personnel should use acquisition barriers (masks, impervious dressings, etc.) to prevent transmission. Personnel in the area to which the patient is to be taken should be notified of the impending arrival of the patient and of precautions to be used to Prevent transmission of infection. Patient(s) should be alerted to the potential spread of their disease and informed how they can help maintain a barrier against transmission of their infection to others.
- The preparation of transportation of patient to other departments or institutions and the notification concerning the impending arrival of the patient is a multi-disciplinary responsibility that requires collaboration and teamwork. The nurse, the unit receptionist and transport personnel are jointly responsible for the following actions:
    - Unit Receptionist: Notify the department to which the patient is being transported (e.g. Diagnostic Imaging, Physical Therapy, etc.) that the patient is on transmission based precautions.
    - Nurse: Instruct the transporter in transmission based precautions when the transporter arrives on the patient-care unit to transport the patient to another area of the hospital. Before entering the room, put on essential protective barriers as indicated by the transmission based precautions (such as gloves, gown, face shield, mask or respirator). Explain to the patient what special precautions will be taken before he/she leaves the room. Put the mask on the patient if required under the specific transmission based precautions. Assist the patient into wheelchair or stretcher.
    - Transport Personnel: Receive instructions from the nurse when he/she arrives on site. Bring clean wheelchair or stretcher to the patient's room. The vehicle should be protected by a clean sheet. Before entering the room, put on essential protective barriers. Assist the patient into wheelchair or stretcher.

Remove gloves and wash hands with an antiseptic solution when transportation is complete. Push transport vehicle outside room and transport patient to designated area as expeditiously as possible.

9.2 Infection Control Considerations for Personnel Transporting Patients on Contact Precautions Only

During the transportation process, the following infection control procedures should be considered:

- When transporting the patient to another department, if soiling of the uniform is likely to occur, wear a gown to protect clothing and wear gloves for touching infective material; if soiling is not likely, no special precautions are required other than GOOD HAND WASHING.
- Transport patients to the destination area as quickly as possible using the service elevator when possible, limiting contact with others.
- Wash hands after direct contact with the patient, contaminated equipment and before touching another patient.
- Discard the sheet in contaminated laundry in patient's room.
- Spray and wipe the chair, stretcher, or wheelchair and wipe with a disinfectant according to cleaning and reprocessing of non-critical patient care equipment and medical devices.

SECTION 10: Reporting Communicable Diseases to the State of Connecticut

REPORTABLE DISEASES, EMERGENCY ILLNESSES and HEALTH CONDITIONS - 2020
PART A: REPORTABLE DISEASES

Physicians, and other professionals are required to report using the Reportable Disease Confidential Case Report form (PD-23), other disease specific form or authorized method (see page 4 for additional information). Forms can be found on the DPH "Forms" webpage or by calling 860-509-7994. Mailed reports must be sent in envelopes marked "CONFIDENTIAL." Changes for 2020 are in **bold font** .

Category 1 Diseases: Report immediately by telephone (860-509-7994) on the day of recognition or strong suspicion of disease for those diseases marked with a telephone (☎). On evenings, weekends, and holidays call 860-509-8000. These diseases must also be reported by mail within 12 hours.

Category 2 Diseases: All other diseases not marked with a telephone must be reported by mail within 12 hours of recognition or strong suspicion of disease.

Acquired Immunodeficiency Syndrome (1,2)
Acute flaccid myelitis
☎ Acute HIV infection
☎ Anthrax
Babesiosis
Borrelia miyamotoi disease
☎ Botulism
☎ Brucellosis
California group arbovirus infection
Campylobacteriosis
Candida auris
Chancroid
Chickenpox
Chickenpox-related death
Chikungunya
Chlamydia (*C. trachomatis*) (all sites)
☎ Cholera
Cryptosporidiosis
Cyclosporiasis
Dengue
☎ Diphtheria
E-cigarette or vaping product use associated lung injury (EVALI)
Eastern equine encephalitis virus infection
Ehrlichia chaffeensis infection
Escherichia coli O157:H7 gastroenteritis
Gonorrhea
Group A Streptococcal disease, invasive (3)
Group B Streptococcal disease, invasive (3)
Haemophilus influenzae disease, invasive (3)
Hansen's disease (Leprosy)
Healthcare-associated Infections (4)
Hemolytic-uremic syndrome (5)
Hepatitis A
Hepatitis B:
- acute infection (2)
- HBsAg positive pregnant women

Hepatitis C:
- acute infection (2)
- **perinatal infection**
- positive rapid antibody test result

HIV-1 / HIV-2 infection in: (1)
- persons with active tuberculosis disease
- persons with a latent tuberculous infection (history or tuberculin skin test ≥5mm induration by Mantoux technique)
- persons of any age
- pregnant women

HPV: biopsy proven CIN 2, CIN 3 or AIS or their equivalent (1)
Influenza-associated death (6)
Influenza-associated hospitalization (6)
Legionellosis
Listeriosis
Lyme disease
Malaria
☎ Measles
☎ Melioidosis
☎ Meningococcal disease
Mercury poisoning
Mumps
Neonatal bacterial sepsis (7)
Neonatal herpes (≤ 60 days of age)
Occupational asthma
☎ Outbreaks:
- Foodborne (involving ≥ 2 persons)
- Institutional
- Unusual disease or illness (8)

Pertussis
☎ Plague
Pneumococcal disease, invasive (3)
☎ Poliomyelitis
Powassan virus infection
☎ Q fever

☎ Rabies
☎ Ricin poisoning
Rocky Mountain spotted fever
Rubella (including congenital)
Salmonellosis
☎ SARS-CoV
Shiga toxin-related disease (gastroenteritis)
Shigellosis
Silicosis
☎ Smallpox
St. Louis encephalitis virus infection
☎ Staphylococcal enterotoxin B pulmonary poisoning
☎ *Staphylococcus aureus* disease, reduced or resistant susceptibility to vancomycin (1)
Staphylococcus aureus methicillin-resistant disease, invasive, community acquired (3,9)
Staphylococcus epidermidis disease, reduced or resistant susceptibility to vancomycin (1)
Syphilis
Tetanus
Trichinosis
☎ Tuberculosis
☎ Tularemia
Typhoid fever
Vaccinia disease
☎ Venezuelan equine encephalitis virus infection
Vibrio infection (*parahaemolyticus, vulnificus*, other)
☎ Viral hemorrhagic fever
West Nile virus infection
☎ Yellow fever
Zika virus infection

FOOTNOTES: (NOTE: a footnote was removed, and have been renumbered)

1. Report only to State.
2. As described in the CDC case definition.
3. Invasive disease: from sterile fluid (blood, CSF, pericardial, pleural, peritoneal, joint, or vitreous) bone, internal body sites, or other normally sterile site including muscle.
4. Report HAIs according to current CMS pay-for-reporting or pay-for-performance requirements. Detailed instructions on the types of HAIs, facility types and locations, and methods of reporting are available on the DPH website: https://portal.ct.gov/DPH/Infectious-Diseases/HAI/Healthcare-Associated-Infections-and-Antimicrobial-Resistance.
5. On request from the DPH and if adequate serum is available, send serum from patients with HUS to the DPH Laboratory for antibody testing.
6. Reporting requirements are satisfied by submitting the Hospitalized and Fatal Cases of Influenza-Case Report Form in a manner specified by the DPH.
7. Clinical sepsis and blood or CSF isolate obtained from an infant ≤ 72 hours of age.
8. Individual cases of "significant unusual illness" are also reportable.
9. Community-acquired: infection present on admission to hospital, and person has no previous hospitalizations or regular contact with the health-care setting.

How to report: The PD-23 is the general disease reporting form and should be used if other specialized forms are not available. The PD-23 can be found on the DPH "Forms" webpage (https://portal.ct.gov/DPH/Communications/Forms/Forms). It can also be ordered by writing the Department of Public Health, 410 Capitol Ave., MS#11FDS, P.O. Box 340308, Hartford, CT 06134-0308 or by calling the Epidemiology and Emerging Infections Program (860-509-7994). Specialized reporting forms are available on the DPH "Forms" webpage or by calling the following programs: Epidemiology and Emerging Infections Program (860-509-7994) - Hospitalized and Fatal Cases of Influenza, Healthcare Associated Infections (860-509-7995) - National Healthcare Safety Network, HIV/AIDS Surveillance (860-509-7900) - Adult HIV Confidential Case Report form, Immunizations Program (860-509-7929) - Chickenpox Case Report (Varicella) form, Occupational Health Surveillance Program (860-509-7740) - Physician's Report of Occupational Disease, Sexually Transmitted Disease Program (860-509-7920), and Tuberculosis Control Program (860-509-7722). National notifiable disease case definitions are found on the CDC website.

Telephone reports of Category 1 disease should be made to the local Director of Health for the town in which the patient resides, and to the Epidemiology and Emerging Infections Program (860-509-7994). Tuberculosis cases should be directly reported to the Tuberculosis Control Program (860-509-7722). For the name, address, or telephone number of the local Director of Health for a specific town contact the Office of Local Health Administration (860-509-7660).

For public health emergencies on evenings, weekends, and holidays call 860-509-8000.

SECTION 11: Service and Assistance Animals

In compliance with the Americans with Disabilities Act and other applicable state and federal law, the purpose of this policy is to establish guidance for Yale University employees in a clinical setting. For the policy statement please refer to the Yale University policy for service and assistance animals. 4400 Service Animals and Emotional Support Animals | It's Your Yale

11.1 Guidelines for Service Animals Visiting Heath Care Facilities

- Require that all patients, visitors and health care workers practice hand hygiene both before and after each animal contact.
- Require that animal handlers carry an alcohol-based hand rub product with them, and that they offer the product to anyone who wishes to touch the animal.
- Require that animal handlers practice personal hand hygiene in accordance with Yale University policy for employees.
- Service animals must be harnessed, leashed or tethered unless these devices interfere with the animal's work or the person's disability prevents using these devices.
- The handler must carry supplies sufficient to clean up the animal's excreta (feces, urine, vomitus). If the animal has an elimination accident, gloves should be worn to remove the debris and clean up the area and hand hygiene performed after glove removal. Any organic debris and paper towels should be placed in a plastic bag and discarded in an outdoor trash receptacle. After the area is cleaned, it must be disinfected with the facility's approved product, following the label instructions for appropriate concentration and contact time.
- Patients must arrange to take care of the pet if they cannot physically do so.
- Access cannot be denied to a person with a service animal because of allergies or fear of dogs. If a person has allergies to dog dander or is afraid of a dog, accommodations should be made by assigning them to different locations in the room or different rooms in the facility.

11.2 Staff Responsibilities

- When encountering an individual with a disability, it is acceptable to ask if they need assistance. If yes, ask how you can best assist them.
- Allow a service animal to accompany the partner at all times and everywhere on campus except where service animals are specifically prohibited.
- A person with a disability cannot be asked to remove his or her service animal from the premises unless the dog is not housebroken, is out of control, or if the handler/owner does not take effective action to control the service animal.
- When encountering an individual with a service animal, treat the individual and the service animal with respect and do not treat the animal like a pet (e.g. pat the animal or otherwise distract it from its duties).
- With regard to those with animals that appear to be service animals, staff may not ask about the person's disability; require medical documentation, a special identification card, or training documentation for the dog; or ask the dog to demonstrate its ability to perform the work or task. When it is not obvious what task is being performed by a service animal, staff may ask only two questions:
    1. Is the dog a service animal required because of a disability?
    2. What work or task has the dog been trained to perform?

- Staff is not required to provide care or food for a service animal.

11.3 Permitted and Restricted Areas for Service Animals and Additional Information for Staff

Areas Where Service Animals Are Permitted:

- A service animal is permitted in areas of Yale University clinics that are unrestricted to inpatients, outpatients or visitors, provided the presence of the animal does not compromise patient care subject to the following:

Areas Where Service Animals Are Not Permitted:

- Restricted areas where a service animal generally cannot be permitted include:
  - Areas that employ greater than general infection-control measures
  - Other restricted areas include:
  - Food preparation areas
  - Central sterile processing
  - Operating rooms (and other invasive treatment/procedure rooms)
  - Post anesthesia areas
  - Heart and vascular procedure rooms
  - Intensive care units and/or other locations with immunocompromised patients. Individualized (case-by-case) assessment should be made to determine whether animal visitation is appropriate for immunocompromised patients.
  - Diagnostic areas
  - Family birthing areas
  - Nurseries
  - Medication rooms
  - Pharmacy
  - Playrooms
  - Oncology transplant unit
- Areas, facilities, or rooms where a patient(s) have:
  - Altered mental status
  - Had a splenectomy
  - Open wounds
  - Behavior or psychiatric disorders