Infection Control

Manual

Revised: October, 2015

Yale University

Table of Contents

Yale University's Infection Control Manual

Yale University's Infection Control Manual

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 the Yale-New Haven Hospital, prompted the Deputy Provost to request the establishment of an Infection Control Work Group. Infection control coordinators, nurses and doctors from various clinical locations as well as representatives from the Office of Environmental Health and Safety were selected to participate in the work group. The group conducted an initial assessment of infection control programs in each University clinical area. The Yale University Infection Control Work Group has prepared this manual to inform the Yale clinical community of standard infection control issues and practices. This manual will not replace established policy and procedure manuals that are in place at clinical areas. However, this manual was established with the intent to provide consistent infection control policies and programs that meet or exceed minimal acceptable standards, across Yale's clinical areas and satellite facilities. Areas lacking an established infection control manual can use the manual as a framework and amend it with site specific information as required.

As this is a document in progress, all are encouraged to review this manual and contact the Office of Environmental Health and Safety concerning any infection control or safety issues.

In addition to preparing this manual, the Yale Infection Control Work Group is available to assist your site with the following:

- help establish an infection control committee for your site;
- work with you to identify an on-site infection control coordinator;
- assist with the evaluation of new engineering controls designed to minimize occupational exposures, such as sharps safety devices

Special thanks to those individuals who took time to review this manual and contributed information and suggestions to improve the presentation. Every two years or as needed, this manual will be reviewed and updated. The work group will continue to serve as a resource for infection control, and will periodically monitor locations to ensure that the appropriate practices are upheld.

Yale University's Infection Control Manual

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 health-care 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 as well as 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, as well as their visitors, also have a responsibility 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 health-care 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 of 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). World wide 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 in order 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 that are 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 that which is absolutely necessary. Patients should wear surgical masks if transported outside of the room.

Refer to TB Control Plan for additional information on this agent (see page 17).

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, as well as 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.
- A surgical (or better) mask must be worn when working within 3 feet of the patient.
- Patient transport should be limited to that which is absolutely necessary. A surgical mask should be placed on the patient during transport.

1.4.3 Contact Precautions

These should be used for patients who are infected with organisms that are 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 who are 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 that which is absolutely 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 absolutely 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 Synopsis of Types of Precautions and Patients Requiring the Precautions**

Standard Precautions
Use Standard Precautions for the care of all patients

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

Measles

Varicella (including disseminated zoster) +

Tuberculosis ++

Droplet Precautions
In addition to Standard Precautions, use Droplet Precautions for patients known or suspected to have serious illnesses transmitted by large particle droplets. Examples of such illnesses include:

Invasive Haemophilus influenzae type b disease, including meningitis, pneumonia, epiglottitis, and sepsis

Invasive Neisseria meningitidis disease, including meningitis, pneumonia, and sepsis

Other serious bacterial respiratory infections spread by droplet transmission, including:

Diphtheria (pharyngeal)

Mycoplasma pneumonia

Pertussis

Pneumonic plague

Streptococcal pharyngitis, pneumonia, or scarlet fever in infants and young children

Serious viral infections spread by droplet transmission, including:

Adenovirus +

Influenza

Mumps

Parvovirus B19

Rubella

Contact Precautions

In addition to Standard Precautions, use Contact Precautions for patients known or suspected to have serious illnesses easily transmitted by direct patient contact or by contact with items in the patient's environment. Examples of such illnesses include:

Gastrointestinal, respiratory, skin, or wound infections or colonization with multidrug-resistant bacteria judged by the infection control program, based on current state, regional, or national recommendations, to be of special clinical and epidemiologic significance

Enteric infections with a low infectious dose or prolonged environmental survival, including:

Clostridium difficile

For diapered or incontinent patients: enterohemorrhagic Escherichia coli (O157:H7), Shigella, hepatitis A, or rotavirus

Respiratory syncytial virus, parainfluenza virus, or enteroviral infections in infants and young children

Skin infections that are highly contagious or that may occur on dry skin, including:

Diphtheria (cutaneous)

Herpes simplex virus (neonatal or mucocutaneous)

Impetigo

Noncontained abscesses, cellulitis, or decubiti

Pediculosis

Scabies

Staphylococcal furunculosis in infants and young children

Herpes or Varicella Zoster (disseminated or in the immunocompromised host) +

Viral/hemorrhagic conjunctivitis

Viral hemorrhagic infections (Ebola, Lassa, or Marburg) *

* See Appendix A for a complete listing of infections requiring precautions, including appropriate footnotes.
+ Certain infections require more than one type of precaution.
++ See CDC Guidelines for Preventing the Transmission of Tuberculosis in Health-Care Facilities.

1.5 Empiric Use of Transmission-Based Precautions - Pending Confirmation of Diagnosis

Patients can transmit infections prior to the establishment of a definitive diagnosis. The risk of transmission is often greatest in the early stages of evaluation before confirmatory testing is complete. All patients should be treated under Standard Precautions to decrease the risk of disease transmission. In addition, an attempt should be made to identify all patients requiring enhanced transmission-based precautions while awaiting definitive diagnosis.

The following table, adopted from the CDC's Isolation Guidelines (AJIC, Vol. 24, No. 1), is meant as a guide to help identify clinical syndromes that warrant additional transmission-based precautions:

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

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

±The organisms listed under the column "Potential Pathogens" are not intended to represent the complete or even most likely diagnoses, but rather possible etiologic agents that require additional precautions beyond Standard Precautions until they can be ruled out.

§These pathogens include enterohemorrhagic *Escherichia coli* 0157:H7, *Shigella*, hepatitis A, and rotavirus.

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

1.6 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. The Office of Environmental Health and Safety and the Employee Health can assist with TB risk assessments.

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.

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 the majority of 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.

Guidelines for TB Control

- Employees at risk should be tested for TB exposure by a tuberculin skin test (PPD) at least annually. New employees will be referred to the Employee Health office (Yale Health, 55 Lock Street, (432-0071) 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 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) on an annual basis. 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 on an annual basis.
- Employees and students who test positive on PPD 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 by pass. In addition, anergy testing should also be performed on any patient suspected of being immunocompromised.
- Patients who are 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.

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 an available negative pressure isolation room, post a sign at the entrance of the room. 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 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 make arrangements to transfer the patient to a facility with an appropriate isolation room to complete the remainder of the TB work up (i.e. Yale-New Haven Hospital). Ambulance as well as emergency room personnel at the admitting facility must be notified of the suspected diagnosis so that appropriate precautions can be taken.

Immediately notify your supervisor and infection control nurse
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 (432-0071) at the Yale Health (55 Lock Street) and must contact the Office of Environmental Health and Safety (785-3550) at 135 College Street for training regarding respirator selection, fit testing, and use.

Evaluation of Health Care Workers Post Exposure to Active TB Cases

Health care workers who have been 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 test conversion from negative to positive post-exposure will be advised to have a chest x-ray and referred for appropriate prophylactic therapy.

Continuing Risk Assessment at Yale University

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

The Yale Health –Dept. of 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 OEHS & UHS of potential occupationally exposed newly hired employee.

1.7 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 exclusive use of the patient on Contact Precautions.
- Items (i.e., wheel chairs, 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 the 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 insure 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 <u>all</u> environmental surfaces in the room (including phones, doorknobs etc.) using the

institutionally-approved disinfectant. It is the responsibility of the ICF charge nurse to ensure that this step is completed and that the Infection Control Nurse is notified. The Infection Control Nurse may elect to perform routine environmental surveillance cultures at his or her discretion.

1.8 Infection Control MRSA Program

1. Clinical Staff
    a. CDC handouts on MRSA to clinical staff to increase education and awareness
    b. Health care worker education done at safety fair
    c. Work with pharmacy to look at programs to foster and monitor appropriate use of antimicrobials
    d. Include history of MRSA infection or current colonization on electronic medical record problem list
    e. Suspect MRSA infection when clinical picture is consistent, culture any open, draining or suspect wounds to look for MRSA as well as other bacterial pathogens.
    f. 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 or environmental surfaces is expected and removed prior to leaving the room.
    - Patients should remain in their private rooms and should only be transported when absolutely necessary, minimizing contact between patient 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.

    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.

Environmental Measures:

Inpatient

- 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 door knobs, 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

- 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 separated 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

a. Follow CDC hand hygiene recommendations, stress hand washing in all clinical areas
b. Patient education programs - 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 on a weekly basis 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 the infected patients.
- Intensify training and monitoring of the use of contact precautions and on the proper use of 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 Recommended Immunizations for Health Care Workers

Adopted from AJIC Vol. 26 No 3June 1998 *CDC Personnel Health Guideline:* Guideline for Infection Control in Health Care Personnel and current CDC Adult Immunization Guidelines:

All health care workers should be immunized against the following diseases that may be encountered in their workplace: hepatitis B, measles, mumps, rubella, and diphtheria-tetanus. In addition, non-immune workers should be vaccinated against Varicella-zoster. Health care workers should also receive the influenza vaccine on a yearly basis to prevent transmission of the disease to their high-risk patients. Table 1 outlines the recommended vaccinations along with their indications and contraindications. There are some additional vaccinations listed in the table which may be indicated in certain situations for health care workers, but which are not routinely recommended. Health Care workers are also recommended to receive one adult tetanus-diphtheria-pertussis booster as an adult and repeat diphtheria-tetanus boosters as recommended by CDC.

Table 1. Immunobiologics and schedules for health care personnel: Immunizing agents strongly recommended for health care personnel

Generic name	Primary booster Dose schedule	Indications	Major precautions and contraindications	Special considerations
Hepatitis B-recombinant vaccine	Two doses IM in the deltoid muscle 4 wk apart; 3rd dose 5 mo. after 2nd; booster doses not necessary if titer is positive	Health care personnel at risk of exposure to blood and body fluids	No apparent adverse effects to developing fetuses, not contraindicated in pregnancy; history of anaphylactic reaction to common bakers yeast	No therapeutic or adverse effects on HBV-infected persons; cost-effectiveness of prevaccination screening for susceptibility to HBV depends on costs of vaccination and antibody testing and prevalence of immunity in the group of potential vaccines; health care personnel who have ongoing contact with patients or blood should be tested 1-2 mo. after completing the vaccination series to determine serologic response
Influenza vaccine (inactivated whole or split virus)	Annual single-dose vaccination IM with current (either whole- or split-virus) vaccine	All health care workers	History of anaphylactic hypersensitivity after egg ingestion	No evidence of maternal or fetal risk when vaccine was given to pregnant women with underlying conditions that render them at high risk for serious influenza complications.
Measles live-virus vaccine	One dose SC; 2nd dose at least 1 mo. later	All health care workers must have either two doses of live vaccine on or after their 1st birthday, (b) physician-diagnosed measles, or (c) laboratory evidence of immunity.	Pregnancy; immunocompromised* state; (including HIV-infected persons with severe immunosuppression) history of anaphylactic reactions after gelatin ingestion or receipt of neomycin; or recent receipt of immune globulin	MMR is the vaccine of choice if recipients are also likely to be susceptible to rubella and/or mumps; persons vaccinated between 1963 and 1967 with (a) a killed measles vaccine alone, (b) killed vaccine followed by live vaccine, or (c) a vaccine of unknown type should be revaccinated with two doses of live measles vaccine
Mumps live- virus vaccine	Two dose of live mumps virus vaccine	Susceptible health care workers should receive 2 doses of live mumps vaccine unless they have laboratory evidence of immunity, or physician diagnosed mumps.	Pregnancy; immunocompromised* state; history of anaphylactic reaction after gelatin ingestion or receipt of neomycin	MMR is the vaccine of choice if recipients are also likely to be susceptible to measles and rubella
HDCV, Human diploid cell rabies vaccine; rabies vaccine absorbed; IPV, inactivated poliovirus vaccine; OPV, oral poliovirus vaccine; ID, intradermally. *Persons immunocompromised because of immune deficiencies, HIV infection, leukemia, lymphoma, generalized malignancy, or immunosuppressive therapy with corticosteroids, alkylating drugs, antimetabolites, or radiation.				

Table 1. Continued

Generic name	Primary booster Dose schedule	Indications	Major precautions and contraindications	Special considerations
Rubella live- virus vaccine	One dose SC; no booster	Health care personnel, both male and female, who lack documentation of receipt of live vaccine on or after their 1st birthday, or of laboratory evidence of immunity.	Pregnancy; immunocompromised* state; history of anaphylactic reaction after receipt of neomycin	Women pregnant when vaccinated or who become pregnant within 3 mo. of vaccination should be counseled on the theoretic risks to the fetus, the risk of rubella vaccine-associated malformations in these women is negligible; MMR is the vaccine of choice if recipients are also likely to be susceptible to measles or mumps
Varicella-zoster live-virus vaccine	Two 0.5 ml doses SC 4-8 wk apart if ≥13 yr.	Health care personnel without laboratory evidence of Varicella immunity or evidence of previous vaccination.	Pregnancy, immunocompromised* state, history of anaphylactic reaction after receipt of neomycin or gelatin; salicylate use should be avoided for 6 wk after vaccination	Because 71%-93% of persons without a history of varicella are immune, serologic testing before vaccination may be cost-effective
Hepatitis A Vaccine	Two doses of vaccine IM, either (HAVRIX™) 6-12 mo. apart or (VAQTA™) 6 mo. apart	Not routinely indicated for U.S. health care personnel; however, persons who work with HAV-infected primates or with HAV in a laboratory setting should be vaccinated	History of anaphylactic reaction to alum or the preservative 2-phenoxy-ethanol; vaccine safety in pregnant women has not been evaluated, risk to fetus is likely low and should be weighed against the risk of hepatitis A in women at high risk	Health care personnel who travel internationally to endemic areas should be evaluated for vaccination
HDCV, Human diploid cell rabies vaccine; rabies vaccine absorbed; IPV, inactivated poliovirus vaccine; OPV, oral poliovirus vaccine; ID, intradermally. *Persons immunocompromised because of immune deficiencies, HIV infection, leukemia, lymphoma, generalized malignancy, or immunosuppressive therapy with corticosteroids, alkylating drugs, antimetabolites, or radiation.				

Table 1. Continued

Generic name	Primary booster Dose schedule	Indications	Major precautions and contraindications	Special considerations
Meningo-coccal (MCV4 or MPSV)	One dose in volume and by route specified by manufacturer; need for boosters is unknown	Not routinely indicated for health care workers in the United States except to microbiologists who are routinely exposed to isolates	Vaccine safety in pregnant women has not been evaluated; vaccine should not be given during pregnancy unless risk of infection is high.	May be useful in certain outbreak situations
Polio vaccine	IPV, two doses SC given 4-8 wk apart followed by 3rd dose 6-12 mo. after	Health care personnel in close contact with persons who may be excreting wild virus and laboratory personnel handling specimens that may contain wild poliovirus	History of anaphylactic reaction after receipt of streptomycin or neomycin; because safety of vaccine has not been evaluated in pregnant women, it should not be given during pregnancy	Use only IPV for immunosuppressed persons or personnel who care for immunosuppressed patients.
Tetanus and Diphtheria (Td)	Two doses IM 4 wk apart; 3rd dose 6-12 mo. after 2nd dose; booster every 10 yr.	All adults; tetanus prophylaxis in wound management	First trimester of pregnancy; history of a neurologic reaction or immediate hypersensitivity reaction; individuals with severe local (Arthus-type) reaction after previous dose of Td vaccine should not be given further routine or emergency doses of Td for 10 yr.	

*The term immunocompromised includes persons who are immunocompromised from immune deficiency diseases, HIV infection, leukemia, lymphoma, or generalized malignancy, or immunosuppressed as a result of therapy with corticosteroids, alkylating drugs, antimetabolites, or radiation.

Table 1. Continued

Generic name	Primary booster Dose schedule	Indications	Major precautions And contraindications	Special considerations
Tetanus-diphtheria acellular pertussis	One dose as an adult	Adults should have one dose in place of regular diphtheria-tetanus booster at greater than or equal to 10 years after last Td booster. Adults who have contact with children under 12 months old and health care workers are recommended to get one Tdap if more than 2 years have passed since last tetanus booster.	Anyone with unstable neurological condition should defer, see other precautions under Adult diphtheria-tetanus	
Typhoid vaccines: oral	Four oral doses on alternate days; (Ty21a) vaccine manufacturer's recommendation is revaccination with the entire four-dose series every 5 yr.	Personnel in laboratories who frequently work with Salmonella typhi	History of severe local or systemic reaction to a previous dose of typhoid vaccine; Ty2la vaccine should not be given to immunocompromised* personnel or those currently taking antibiotocs	Vaccination should not be considered as an alternative to the use of proper procedures when handling specimens and cultures in the laboratory
Typhoid vaccines: Inactivated	one injection with booster needed every 2 years			
Vaccinia vaccine	One dose administered with a bifurcated needle; boosters every 10 yr.	Personnel who directly handle cultures of or animals contaminated with recombinant Vaccinia viruses or orthopox viruses (monkeypox, cowpox, Vaccinia, etc.) that infect human beings	Pregnancy, presence or history of eczema, or immunocompromised' status in potential vaccines or in their household contacts	Vaccination may be considered for health care personnel who have direct contact with contaminated dressings or other infectious material from volunteers in clinical studies involving recombinant Vaccinia virus

*The term immunocompromised includes persons who are immunocompromised from immune deficiency diseases, HIV infection, leukemia, lymphoma, or generalized malignancy, or immunosuppressed as a result of therapy with corticosteroids, alkylating drugs, antimetabolites, or radiation.

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 on an annual basis. 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) on an annual basis. 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 on an annual basis.

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 again 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

Adopted from the AJIC Vol. 26 No 3June 1998 *CDC Personnel Health Guideline:* Guideline for Infection Control in Health Care Personnel

Table 2 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 a given area. Employees who are suffering from any of these listed infections should report it to their supervisor, who should then report it to the infection control coordinator and the Department of Employee Health for further guidance or advice on the restrictions and return to duty.

Table 2. Summary of suggested work restrictions for health care personnel exposed to or infected with infectious diseases of importance in health care setting (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. Norovirus – restrict from work while symptomatic and until 48-72 hours after resolution	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
Enterovial 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'' 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 specific procedure as well as skill and technique of worker; refer to state regulations	Until hepatitis B e antigen is negative
Hepatitis C	No recommendation	

†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.

Table 2 Continued

Disease/Problem	Work Restriction	Duration
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

*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.

Table 2 Continued **Revised: 10/29/01**

Disease/Problem	Work Restriction	Duration
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)	No restriction, prophylaxis recommended	
Postexposure (symptomatic personnel)	Exclude from duty	Until 5 days after start of effective antimicrobial therapy
Rubella		
Active	Exclude from duty	Until 5 days after rash appears
Postexposure (susceptible personnel)	Exclude from duty	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	Restrict from contact with patients and patient's environment or food handling	Until lesions have resolved
Carrier state	No restriction, unless personnel are epidemiologically linked to transmission of the organism	
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	Exclude from duty	Until proved noninfectious
PPD converter	No restriction	
Varicella		
Active	Exclude from duty	Until all lesions dry and crust
Postexpsoure (susceptible personnel)	Exclude from duty	From 10th day after 1st exposure through 21st day (28th day if VariZIG given) after last exposure

*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.

Table 2 Continued

Disease/Problem	Work Restriction	Duration
Zoster Localized, in healthy person	Cover lesions; restrict from care of high-risk patients†	Until all lesions dry and crust
Generalized or localized in immunosuppressed person	Restrict from patient contact	Until all lesions dry and crust
Postexposure (susceptible personnel)	Restrict from patient contact	From 8th day after 1st exposure through 21st day (28th day if VariZIG 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.

2.4 Guidelines for Pregnant Health care Personnel

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

Pregnant health care workers are at no greater risk than other personnel for acquiring an infectious disease as a result of 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 3. 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
1. Cytomegalo-virus	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
2. 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
3. Hepatitis C	Hepatitis	2% - 5%	Anti-HCV; HCV RNA in reference labs; routine screening not recommended	Standard precautions
4. 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
5. 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
6. Influenza	Inconsistent	Rare	None	Vaccine (safe during pregnancy); droplet precautions

Table 3 Continued

Agent	Potential Effect on Fetus	Rate of Perinatal Transmission	Maternal Screening	Prevention
7. Measles	Prematurity; abortion	Rare	History, antibody	Vaccine†; airborne precautions
8. Parovirus B19	Hydrops, stillbirth	Rare, 3% - 9% maximum adverse outcome	IgM and IgG antibody prepregnancy; antibody protection	Droplet precautions
9. Rubella	Congenital syndrome*	45% - 50% overall; 90% in 1st 12 wk	Antibody	Vaccine†; droplet precautions for acute infection; contact precautions for congenital rubella
10. Tuberculosis	Hepatomegaly, pulmonary, CNS	Rare	Skin test	Isoniazid ethambutol for disease; airborne precautions
11. 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: Olmatead 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 Be antigen; *CNS,* central nervous system.
*Congenital syndrome: varying combinations of jaundice, hapatospienomegaly, microcephaly, ONS abnormalities, thrombocytopenia, anemia, retinopathy, and skin and bone lesions.
†Live-virus vaccines are given routinely before pregnancy.

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 Plan (**Employee Health Office 432-7978**, **Student Medicine 432-0312** or **Acute Care 432-0123**). It is important to begin any recommended treatment within 1 to 2 hours after exposure.
- If the exposure occurs at the Yale-New Haven Hospital and the employee wishes to be seen on site, they should report to Personnel Health Service (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. See needlestick PnP for current prophylaxis recommendations (Appendix B)
- 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 that is 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.

See appendix for information concerning HIV Counseling Guidelines and Risk Categories.

2.6 Post Exposure Prophylaxis guidelines for exposure to other infectious agents

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

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 who are 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 4. 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 serioes 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		
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 intubation, endotracheal tube management, or close examination of oropharynx	Rifampin and ciprofloxacin not recommended during pregnancy	
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.		

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.

Table 4. Continued

Disease	Prophylaxis	Indications	Major precautions and contraindications	Special considerations
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.	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	If within 3-5 days immediate vaccination with Varicella vaccine series. Alternatively for high risk patients, 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,* tour times daily; bid, twice daily; *HRIG,* human rabies immunoglobulin; HDCV, human diploid cell rabies vaccine; RVA, rabies vaccine absorbed, VZIG Varicella Zoster Immune globulin.

*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.

SECTION 3: Handling Waste

3.1 Medical Waste Management

The purpose of this section is to provide practical guidelines for employees who handle, manage, transport and dispose of waste.

There is no epidemiological evidence that clinical waste, when properly disposed, 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 wastes in the patient's sink.

Blood and Blood Products

- **Wash hands** (See section on hand washing).
- 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 the potential 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, prior to the introduction of the container 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

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

Under laws enacted by the federal government, criteria were developed by which wastes could be determined hazardous. Chemotherapy drugs have been listed as hazardous wastes.

Because of similarity of structure, mode of action, and toxicity all chemotherapy drugs should be handled and disposed of as hazardous waste. The University Environmental Health and Safety Department has detailed recommendations for the handling of hazardous waste. These recommendations can be found on the EHS web site or by contacting the department 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 DEP. The law allows for civil and criminal penalties to be assessed against institutions and/or individuals that improperly dispose of hazardous wastes.

- 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 item

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

(see figure below).

BIOHAZARD

Procedures for Used Needles, Syringes, Knife Blades and other intravascular Sharps -- These guidelines should be followed by all personnel:

Sharp instruments and disposable items:

- Only safety needles should be used unless ICC 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 also be located in patient's examination or treatment rooms and any other setting where blood is drawn and needles are used.

Disposal of knife blades:

- Safety scalpels with disposable handles must be used unless a department hs been granted and 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 so as 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 located 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 that is caked, dried, soaked or dripping with blood is deposited into red biohazard bag, if the item is capable of puncturing the bag then place the item 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, any body 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 a biological indicator to verify your autoclave technique and sterilization. Contact the Occupational Health and Safety Section (785-3550) for more information on the Biological Indicator test kit. Personal protection equipment (PPE) such as rubberized aprons, full-face shields and heat and liquid resistant gloves must be worn when operating autoclaves.

When autoclaves cannot be used, an alternative method such as chemical decontamination may be employed. Items must be soaked in a tuberculocidal disinfectant or a 10% bleach (sodium hypochlorite) solution for at least 30 minutes. Heavily soiled items must be cleaned first.

Whatever the temperature and time requirement for decontamination, the contents of each load must be positioned so that steam penetrates into, 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. Regular chemical "tape" monitoring of temperature and periodic monitoring with a biological indicator should be performed to evaluate the effectiveness of the autoclave. Place biological indicators at locations inside the load, the area slowest to heat up, throughout the autoclave are the best indication of sterilization. Autoclaves should be tested periodically. Contact the Office of Environmental Health and Safety for assistance in testing your autoclave.

Items containing chemicals (such as phenol-chloroform) should not be placed in an autoclave or a hot air oven (remove chemicals first).

Questions should be addressed to the Office of Environmental Health and Safety — 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 or not 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.

YUHS Policy and Procedure is to wash hands before and after each patient contact.

Basic Hand Washing

- 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.
- Family/visitors of Inpatient Care patients will be advised to check with the patient's nurse before bringing gifts of food or drink, as some patients are on special diets.

- 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 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 according to policy by clinical personnel to be certain that water flows through it.

4.4 Refrigerators:

There must be separate refrigerators for food, specimens and medications, each with a cleaning schedule. Signs must be affixed to indicate its designated use. A biohazard label must be affixed to the outside of refrigerators used to store specimens. Refrigerators must be monitored for temperature and cleanliness, which includes daily or twice daily temperature checks, weekly and as needed cleaning, and routine inspection of contents. Laboratory specimens requiring refrigeration while awaiting transport may not be stored in the same refrigerator as medications, juices or water stored for the purpose of dispensing with medication.

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.

◆ **YUHS Personnel refer to policy *Quality Control of Multidose Vials* - Appendix # 1**

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.
  - In order 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, as well as for patients who are 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 selection should be based on the likelihood of soiling of 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 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

General Considerations

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

1. Routine Cleaning

Patient rooms and other treatment area must be cleaned and disinfected prior to the introduction of a new patient. This cleaning and disinfecting must be in compliance 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 on a regular basis, 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.

2. 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.

3. 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.

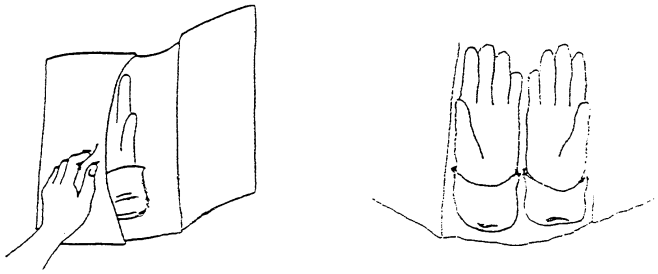
Clean technique

a. Slip the gloves onto the right hand first and then the left, making sure they fit securely over the cuffs of the isolation gown.

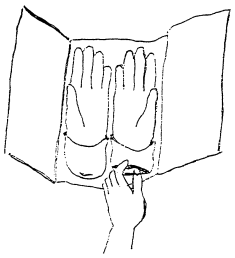
b. Take an extra pair of gloves, protected by a clean paper towel, into the isolation room. The extra gloves can be used in case the original pair tears or becomes soiled.

Sterile technique

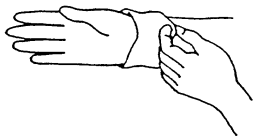
- Remove all jewelry, including rings (a plain wedding band is permitted)
- Wash hands thoroughly with an antiseptic and dry them off with a paper towel. Use a paper towel to turn off the faucet. (refer to page 49 for handwashing technique).
- Open the package containing the sterile gloves.
- Carefully open the inner wrapper, maintaining aseptic technique, being careful not to contaminate the gloves by touching them (see diagram below).



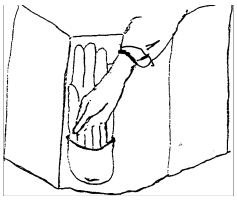
- Grasp the folded edge (inside surface) of the right glove's cuff with the left hand (see diagram below).

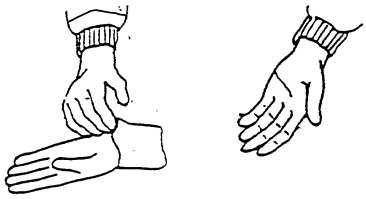


- Slip the right hand inside the glove. To avoid contamination, the fingers on the left hand should touch only the inside of the glove. If the glove becomes contaminated, discard it and obtain a new one

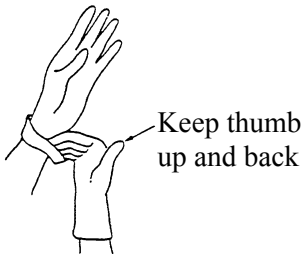


- Slip the fingers of the gloved hand under the cuff (touching only the outer surfaces) of the glove, as shown below.





- 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.

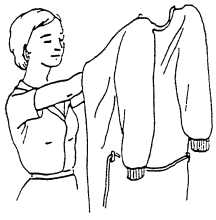
5.2 Gowns

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.

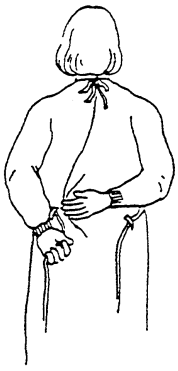
- When gowns are indicated, they should be worn only once and then discarded in an appropriate receptacle.
- Clean, freshly laundered or disposable gowns may be worn in most circumstances.
- In some instances, as with extreme burns or extensive wounds, sterile gowns should be worn when changing dressings.
- 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.

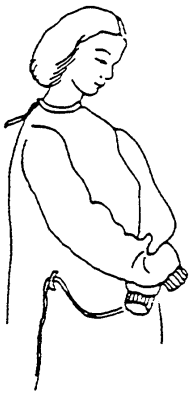


Procedure for removing a contaminated gown

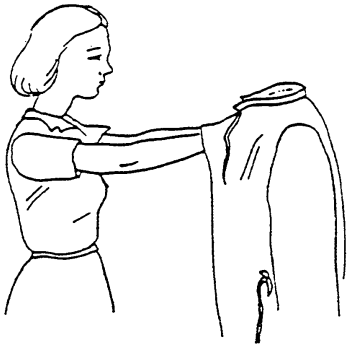
- Untie belt in the back of the gown, and remove gloves if applicable. Wash and dry hands using sink inside room. Unfasten the neck of the gown and pull off the first sleeve by slipping the fingers under the cuff.

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

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. Also safety glasses do not offer eye protection from infectious aerosols.

5.4 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 breath 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 room and use a paper towel to turn off the faucets.

5.5 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 would need 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 Office of Environmental Health and Safety; medical questionnaires are administered through the Employee Health office.

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, 1.critical items, 2. Semi-critical items, and 3. 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 the degree of risk of infection. Examples are noninvasive 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 absolutely 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 a variety of other medical accessories. These items rarely, if ever, transmit disease. Consequently, depending on the particular piece of equipment or item, washing with a detergent may be sufficient.

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 are capable of producing 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 considered to be 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 1. Levels of Disinfection According to Types of Microorganism

	Bacteria			Fungi[1]	Viruses	
Levels	Vegetative	Tubercle Bacillus	Spores		Lipid & Medium size	Non-lipid & small
High	+[2]	+	+[3]	+	+	+
Intermediate	+	+	±[4]	+	+	±[5]
Low	+	-	-	±	+	-

[1]Includes asexual spores but not necessarily chlamydospores or sexual spores.
[2]Plus sign indicates that a killing effect can be expected when the normal use-concentrations of chemical disinfectants or pasteurization are properly employed; a negative sign indicates little or no killing effect.
[3]0nly with extended exposure times are high-level disinfectant chemicals capable of actual sterilization.
[4]Some intermediate-level disinfectants can be expected to exhibit some sporicidal action.
[5]Some intermediate-level disinfectants may have limited virucidal activity

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 a) moist heat by steam autoclaving, b) ethylene oxide gas, and c) dry heat. However, there are a variety of chemical germicides (sterilants) that have been used for purposes of reprocessing reusable heat-sensitive medical devices and appear to be 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 effected 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 particular 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 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. 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, you may call the EPA disinfectant hotline at 1-800-447-6349. The EPA is the federal regulatory agency for low- or intermediate-level disinfectants.

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 the FDA Center for Devices and Radiological Health in Hartford at (860) 240-4289/90 in Bridgeport at (203) 579-5822/3. FDA is the federal regulatory agency for safe and effective use of medical devices and is now also responsible for regulation of chemical sterilants.

6.2 Reusable Patient-Care Equipment

- **Yale Health Personnel refer to Central Sterile Department Policy and Procedures located in the Located in the Endoscopy Suite, 4th floor, Room 4277 (Decontamination) and room 4275 (Sterilization), for equipment reprocessing.**

6.3 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.

6.4 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.

◆ **YUHS Personnel refer to policy *Laundry* - Appendix # 2**

6.5 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.

6.6 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.

- **YUHS Personnel refer to policy *Clean Up of Spills* - Appendix # 3**

If spill response /mess kits are unavailable in facility, either obtain prepared spill kit or assemble your own spill response kit.

Prepare and maintain a 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.

References:

Favero MS, Bond WW. Sterilization, disinfection, and antisepsis in the hospital. In: Manual of Clinical Microbiology, 1991; chapter 24:183-200. American Society for Microbiology. Washington, DC.

Garner JS, Favero MS. Guidelines for handwashing and hospital environmental control, 1985. MMWR, 1987;36(25 Supplement). MMWR 1988;37(24)

Rutala WA. APIC guideline for selection and use of disinfectants. Am J Infect Control 1996;24:313-342.

SECTION 7: Storage of Medications – Multi-Dose Vials/Sterile Solutions

Unit-dose vials of sterile medication should be used whenever possible.

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.

◆ **YUHS Personnel refer to policy *Quality Control of Multi-dose Vials* - Appendix #1**

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 Services Section (432- 2093) 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.

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 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 in the presence of the patient utilizing 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 YUHS approved transport container/cooler.
- Deliver specimen promptly to the appropriate pick-up storage container or specimen refrigerator that is 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 exposures to potentially infectious materials.
- For spills, disinfect area promptly with tuberculocidal disinfectant or 10% household bleach (1:10 dilution: 1 part bleach to 9 parts water). Wear gloves for clean up. Refer to spill policy.

SECTION 9: Transportation of Patient

9.1 Transportation Process

Patient 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 should be alerted to the potential spread of their disease and informed as to how they can assist in maintaining a barrier against transmission of their infection to others.

9.2 General Considerations and Responsibilities

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.

9.3 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 patient to area of destination as expeditiously as possible utilizing 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.

9.4 General Considerations for Patients

- Help the patient to bed.
- Push wheelchair or stretcher to door.
- Wash hands upon leaving the isolation area.

Yale University's Infection Control Manual

SECTION 10: Reporting Communicable Diseases to the State of Connecticut

REPORTABLE DISEASES, EMERGENCY ILLNESSES and HEALTH CONDITIONS - 2015

The Commissioner of the Department of Public Health (DPH) is required to declare an annual list of Reportable Diseases, Emergency Illnesses and Health Conditions. The Reportable Disease Confidential Case Report form (PD-23) or other disease specific form should be used to report the disease, illness, or condition. Reports (mailed, faxed, or telephoned into the DPH) should include the full name and address of the person reporting and attending physician, name of disease, illness or condition, and full name, address, date of birth, race/ethnicity, gender and occupation of the person affected. Forms can be found on the DPH website. Mailed reports must be sent in envelopes marked "CONFIDENTIAL." Changes for 2015 are noted in **bold** and with an asterisk (*****).

Category 1 Diseases: Report immediately by telephone on the day of recognition or strong suspicion of disease for those diseases marked with a telephone (☎). Also mail a report within 12 hours.
Category 2 Diseases: Diseases not marked with a telephone are Category 2 diseases. Report by mail within 12 hours of recognition or strong suspicion of disease.

Acquired Immunodeficiency Syndrome (1,2)
☎ Anthrax
Babesiosis
☎ Botulism
☎ Brucellosis
California group arbovirus infection
Campylobacteriosis
Carbon monoxide poisoning (3)
Chancroid
Chickenpox
Chickenpox-related death
Chikungunya*
Chlamydia (*C. trachomatis*) (all sites)
☎ Cholera
Cryptosporidiosis
Cyclosporiasis
Dengue
☎ Diphtheria
Eastern equine encephalitis virus infection
Ehrlichia chaffeensis infection
Escherichia coli O157:H7 gastroenteritis
Gonorrhea
Group A Streptococcal disease, invasive (4)
Group B Streptococcal disease, invasive (4)
Haemophilus influenzae disease, invasive all serotypes (4)
Hansen's disease (Leprosy)
Healthcare-associated Infections (5)
Hemolytic-uremic syndrome (6)
Hepatitis A
Hepatitis B
- acute infection (2)
- HBsAg positive pregnant women

Hepatitis C
- acute infection (2)
- positive rapid antibody test resuult

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
Influenza-associated hospitalization (7)
Lead toxicity (blood level > 15 µg/dL)
Legionellosis
Listeriosis
Lyme disease
Malaria
☎ Measles
☎ Melioidosis
☎ Meningococcal disease
Mercury poisoning
Mumps
Neonatal herpes (< 60 days of age)
Neonatal bacterial sepsis (8)
Occupational asthma
☎ Outbreaks:
- Foodborne (involving > 2 persons)
- Institutional
- Unusual disease or illness (9)

☎ Pertussis
☎ Plague
Pneumococcal disease, invasive (4)
☎ Poliomyelitis
☎ Q fever
☎ Rabies
☎ Ricin poisoning
Rocky Mountain spotted fever
Rotavirus
☎ 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 (4, 10)
Staphylococcus epidermidis disease, reduced or resistant susceptibility to vancomycin (1)
Syphilis
Tetanus
Trichinosis
☎ Tuberculosis
☎ Tularemia
Typhoid fever
Vaccinia disease
☎ Venezuelan equine encephalitis
Vibrio infection (*parahaemolyticus, vulnificus*, other)
☎ Viral hemorrhagic fever
West Nile Virus infection
☎ Yellow fever

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 for download from the DPH website (www.ct.gov/dph/forms). It can also be ordered in triplicate by writing the Department of Public Health, 410 Capitol Ave., MS#11EPI, P.O. Box 340308, Hartford, CT 06134-0308

or by calling the Epidemiology and Emerging Infections Program (860-509-7994). Specialized reporting forms from the following programs are available: on the DPH website or by calling the following telephone numbers HIV/AIDS Surveillance (860-509-7900), Sexually Transmitted Disease Program (860-509-7920), Tuberculosis Control Program (860-509-7722), Occupational Health Surveillance Program (860-509-7740), or Hospitalized and Fatal Cases of Influenza through the Epidemiology and Emerging Infections Program (860-509-7994).

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, an epidemiologist can be reached evenings, weekends, and holidays through the DPH emergency number (860-509-8000).**

FOOTNOTES:

1. Report only to State.
2. CDC case definition.
3. Includes persons being treated in hyperbaric chambers for suspect CO poisoning.
4. Invasive disease: confirmed by isolation from sterile fluid (blood, CSF, pericardial, pleural, peritoneal, joint, or vitreous) bone, internal body sites, or other normally sterile site including muscle.
5. Report HAIs according to current CMS 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: www.ct.gvo/dph/HAI.
6. On request from the DPH and if adequate serum is available, send serum from patients with HUS to the DPH Laboratory for antibody testing.
7. Reporting requirements are satisfied by submitting the Hospitalized and Fatal Cases of Influenza—Case Report Form to the DPH in a manner specified by the DPH.
8. Clinical sepsis and blood or CSF isolate obtained from an infant < 72 hours of age.
9. Individual cases of "significant unusual illness" are also reportable.
10. Community-acquired: infection present on admission to hospital, and person has no previous hospitalizations or regular contact with the health-care setting.

APPENDIX A: Type and Duration of Precautions Needed for Selected Infections and Conditions

Garner, JS, Hospital Infection Control Practices Advisory Committee. Guideline for isolation precautions in hospitals. Infection Control and Hospital Epidemiology January 1996; 17:53-80

Infection/Condition	Precautions Type*	Precautions Duration†
Abscess		
Draining, major [a]	C	DI
Draining, minor or limited [b]	S	
Acquired immunodeficiency syndrome [c]	S	
Actinomycosis	S	
Adenovirus infection, in infants and young children	D,C	DI
Amebiasis	S	
Anthrax		
Cutaneous	S	
Pulmonary	S	
Antibiotic-associated colitis (see *Clostridium difficile*)		
Arthropodborne viral encephalitides (eastern, western, Venezuelan equine encephalomyelitis; St Louis, California encephalitis)	S [d]	
Arthropodborne viral fevers (dengue, yellow fever, Colorado tick fever)	S [d]	
Ascariasis	S	
Aspergillosis	S	
Babesiosis	S	
Blastomycosis, North American, cutaneous or pulmonary	S	
Botulism	S	
Bronchiolitis (see respiratory infections in infants and young children)		
Brucellosis (undulant, Malta, Mediterranean fever)	S	
Campylobacter gastroenteritis (see gastroenteritis)		
Candidiasis, all forms including mucocutaneous	S	
Cat-scratch fever (benign inoculation lymphoreticulosis)	S	
Cellulitis, uncontrolled drainage	C	DI
Chancroid (soft chancre)	S	
Chickenpox (varicella; see F [e] for varicella exposure)	A,C	F [e]
Chlamydia trachomatis		
Conjunctivitis	S	
Genital	S	
Respiratory	S	
Cholera (see gastroenteritis)		
Closed-cavity infection		
Draining, limited or minor	S	
Not draining	S	
Clostridium		
C botulinum	S	
C difficile	C	DI
C perfringens		
Food poisoning	S	
Gas gangrene	S	
Coccidioidomycosis (valley fever)		
Draining lesions	S	
Pneumonia	S	
Colorado tick fever	S	
Congenital rubella	C	F [f]

Infection/Condition	Precautions Type*	Duration†
Conjunctivitis		
Acute bacterial	S	
Chlamydia	S	
Gonococcal	S	
Acute viral (acute hemorrhagic)	C	DI
Coxsackievirus disease (see enteroviral infection)		
Creutzfeldt-Jakob disease	S [g]	
Croup (see respiratory infections in infants and young children)		
Cryptococcosis	S	
Cryptosporidiosis (see gastroenteritis)		
Cysticercosis	S	
Cytomegalovirus infection, neonatal or immunosuppressed	S	
Decubitus ulcer, infected		
Major [a]	C	DI
Minor or limited [b]	S	
Dengue	S [d]	
Diarrhea, acute-infective etiology suspected (see gastroenteritis)		
Diphtheria		
Cutaneous	C	CN [h]
Pharyngeal	D	CN [h]
Ebola viral hemorrhagic fever	C [i]	DI
Echinococcosis (hydatidosis)	S	
Echovirus (see enteroviral infection)		
Encephalitis or encephalomyelitis (see specific etiologic agents)		
Endometritis	S	
Enterobiasis (pinworm disease, oxyuriasis)	S	
Enterococcus species (see multidrug-resistant organisms if epidemiologically significant or vancomycin resistant)		
Enterocolitis, *Clostridium difficile*	C	DI
Enteroviral infections		
Adults	S	
Infants and young children	C	DI
Epiglottitis, due to *Haemophilus influenzae*	D	U(24 hrs)
Epstein-Barr virus infection, including infectious mononucleosis	S	
Erythema infectiosum (also see Parvovirus B19)	S	
Escherichia coli gastroenteritis (see gastroenteritis)		
Food poisoning		
Botulism	S	
Clostridium perfringens or welchii	S	
Staphylococcal	S	
Furunculosis-staphylococcal		
Infants and young children	C	DI
Gangrene (gas gangrene)	S	
Gastroenteritis		
Campylobacter species	S [j]	
Cholera	S [j]	
Clostridium difficile	C	DI
Cryptosporidium species	S [j]	
Escherichia coli		
Enterohemorrhagic O157:H7	S [j]	
Diapered or incontinent	C	DI
Other species	S [j]	
Infection/Condition	**Precautions**	

Infection/Condition	Precautions: Type*	Precautions: Duration†
Giardia lamblia	S [i]	
Rotavirus	S [i]	
Diapered or incontinent	C	DI
Salmonella species (including *S typhi*)	S [i]	
Shigella species	S [i]	
Diapered or incontinent	C	DI
Vibrio parahaemolyticus	S [i]	
Viral (if not covered elsewhere)	S [i]	
Yersinia enterocolitica	S [i]	
German measles (see rubella)		
Giardiasis (see gastroenteritis)		
Gonococcal ophthalmia neonatorum (gonorrheal ophthalmia, acute conjunctivitis of newborn)	S	
Gonorrhea	S	
Granuloma inguinale (donovanosis, granuloma venereum)	S	
Guillain-Barré, syndrome	S	
Hand, foot, and mouth disease (see enteroviral infection)		
Hantavirus pulmonary syndrome	S	
Helicobacter pylori	S	
Hemorrhagic fevers (for example, Lassa and Ebola)	C [i]	DI
Hepatitis, viral		
Type A	S	
Diapered or incontinent patients	C	F [k]
Type B-HBsAg positive	S	
Type C and other unspecified non-A, non-B	S	
Type E	S	
Herpangina (see enteroviral infection)		
Herpes simplex (*Herpesvirus hominis*)		
Encephalitis	S	
Neonatal [l] (see F [l] for neonatal exposure)	C	DI
Mucocutaneous, disseminated or primary, severe	C	DI
Mucocutaneous, recurrent (skin, oral, genital)	S	
Herpes zoster (varicella-zoster)		
Localized in immunocompromised patient, or disseminated	A,C	DI [m]
Localized in normal patient	S [m]	
Histoplasmosis	S	
HIV (see human immunodeficiency virus)	S	
Hookworm disease (ancylostomiasis, uncinariasis)	S	
Human immunodeficiency virus (HIV) infection [c]	S	
Impetigo	C	U(24 hrs)
Infectious mononucleosis	S	
Influenza	D [n]	DI
Kawasaki syndrome	S	
Lassa fever	C [i]	DI
Legionnaires' disease	S	
Leprosy	S	
Leptospirosis	S	
Lice (pediculosis)	C	U(24 hrs)
Listeriosis	S	
Lyme disease	S	
Lymphocytic choriomeningitis	S	
Lymphogranuloma venereum	S	
Malaria	S [d]	

Infection/Condition	Precautions	
	Type*	Duration†
Marburg virus disease	C [i]	DI
Measles (rubeola), all presentations	A	DI
Melioidosis, all forms	S	
Meningitis		
Aseptic (nonbacterial or viral meningitis; also see enteroviral infections)	S	
Bacterial, gram-negative enteric, in neonates	S	
Fungal	S	
Haemophilus influenzae, known or suspected	D	U(24 hrs)
Listeria monocytogenes	S	
Neisseria meningitidis (meningococcal) known or suspected	D	U(24 hrs)
Pneumococcal	S	
Tuberculosis [o]	S	
Other diagnosed bacterial	S	
Meningococcal pneumonia	D	U(24 hrs)
Meningococcemia (meningococcal sepsis)	D	U(24 hrs)
Molluscum contagiosum	S	
Mucormycosis	S	
Multidrug-resistant organisms, infection or colonization [p]		
Gastrointestinal	C	CN
Respiratory	C	CN
Pneumococcal	S	
Skin, wound, or burn	C	CN
Mumps (infectious parotitis)	D	F [q]
Mycobacteria, nontuberculosis (atypical)		
Pulmonary	S	
Wound	S	
Mycoplasma pneumonia	D	DI
Necrotizing enterocolitis	S	
Nocardiosis, draining lesions or other presentations	S	
Norwalk agent gastroenteritis (see viral gastroenteritis)		
Orf	S	
Parainfluenza virus infection, respiratory in infants and young children	C	DI
Parvovirus B19	D	F [r]
Pediculosis (lice)	C	U(24 hrs)
Pertussis (whooping cough)	D	F [s]
Pinworm infection	S	
Plague		
Bubonic	S	
Pneumonic	D	U(72 hrs)
Pleurodynia (see enteroviral infection)		
Pneumonia		
Adenovirus	D,C	DI
Bacterial not listed elsewhere (including gram-negative bacterial)	S	
Burkholderia cepacia in cystic fibrosis (CF) patients, including respiratory tract colonization	S [t]	
Chlamydia	S	
Fungal	S	
Haemophilus influenzae		
Adults	S	
Infants and children (any age)	D	U(24 hrs)
Legionella	S	
Meningococcal	D	U(24 hrs)
Multidrug-resistant bacterial (see multidrug-resistant organisms)		

Infection/Condition	Precautions: Type*	Precautions: Duration†
Mycoplasma (primary atypical pneumonia)	D	DI
Pneumococcal	S	
Multidrug-resistant (see multidrug-resistant organisms)		
Pneumocystis carinii	S [u]	
Pseudomonas cepacia (see *Burkholderia cepacia*)	S [t]	
Staphylococcus aureus	S	
Streptococcus, group A		
Adults	S	
Infants and young children	D	U(24hrs)
Viral		
Adults	S	
Infants and young children (see respiratory infectious disease, acute)		
Poliomyelitis	S	
Psittacosis (ornithosis)	S	
Q fever	S	
Rabies	S	
Rat-bite fever (*Streptobacillus moniliformis* disease, *Spirillum minus* disease)	S	
Relapsing fever	S	
Resistant bacterial infection or colonization (see multidrug-resistant organisms)		
Respiratory infectious disease, acute (if not covered elsewhere)		
Adults	S	
Infants and young children [c]	C	DI
Respiratory syncytial virus infection, in infants and young children, and immunocompromised adults	C	DI
Reye's syndrome	S	
Rheumatic fever	S	
Rickettsial fevers, tickborne (Rocky Mountain spotted fever, tickborne typhus fever)	S	
Rickettsialpox (vesicular rickettsiosis)	S	
Ringworm (dermatophytosis, dermatomycosis, tinea)	S	
Ritter's disease (staphylococcal scalded skin syndrome)	S	
Rocky Mountain spotted fever	S	
Roseola infantum (exanthem subitum)	S	
Rotavirus infection (see gastroenteritis)		
Rubella (German measles; also see congenital rubella)	D	F [v]
Salmonellosis (see gastroenteritis)		
SARS	A,C,D,S	See Appendix C
Scabies	C	U(24 hrs)
Scalded skin syndrome, staphylococcal (Ritter's disease)	S	
Schistosomiasis (bilharziasis)	S	
Shigellosis (see gastroenteritis)		
Sporotrichosis	S	
Spirillum minus disease (rat-bite fever)	S	
Staphylococcal disease (*S aureus*)		
Skin, wound, or burn		
Major [a]	C	DI
Minor or limited [b]	S	
Enterocolitis	S [j]	
Multidrug-resistant (see multidrug-resistant organisms)		
Pneumonia	S	
Scalded skin syndrome	S	
Toxic shock syndrome	S	
Streptobacillus moniliformis disease (rat-bite fever)	S	

	Type*	Duration†
Streptococcal disease (group A streptococcus)		
Skin, wound, or burn		
Major [a]	C	U(24 hrs)
Minor or limited [b]	S	
Endometritis (puerperal sepsis)	S	
Pharyngitis in infants and young children	D	U(24 hrs)
Pneumonia in infants and young children	D	U(24 hrs)
Scarlet fever in infants and young children	D	U(24 hrs)
Streptococcal disease (group B streptococcus), neonatal	S	
Streptococcal disease (not group A or B) unless covered elsewhere	S	
Multidrug-resistant (see multidrug-resistant organisms)		
Strongyloidiasis	S	
Syphilis		
Skin and mucous membrane, including congenital, primary, secondary	S	
Latent (tertiary) and seropositivity without lesions	S	
Tapeworm disease		
Hymenolepis nana	S	
Taenia solium (pork)	S	
Other	S	
Tetanus	S	
Tinea (fungus infection dermatophytosis, dermatomycosis, ringworm)	S	
Toxoplasmosis	S	
Toxic shock syndrome (staphylococcal disease)	S	
Trachoma, acute	S	
Trench mouth (Vincent's angina)	S	
Trichinosis	S	
Trichomoniasis	S	
Trichuriasis (whipworm disease)	S	
Tuberculosis		
Extrapulmonary, draining lesion (including scrofula)	S	
Extrapulmonary, meningitis [o]	S	
Pulmonary, confirmed or suspected or laryngeal disease	A	F [w]
Skin-test positive with no evidence of current pulmonary disease	S	
Tularemia		
Draining lesion	S	
Pulmonary	S	
Typhoid (*Salmonella typhi*) fever (see gastroenteritis)		
Typhus, endemic and epidemic	S	
Urinary tract infection (including pyelonephritis), with or without urinary catheter	S	
Varicella (chickenpox)	A,C	F [e]
Vibrio parahaemolyticus (see gastroenteritis)		
Vincent's angina (trench mouth)	S	
Viral diseases		
Respiratory (if not covered elsewhere)		
Adults	S	
Infants and young children (see respiratory infectious disease, acute)		
Whooping cough (pertussis)	D	F [s]
Wound infections		
Major [a]	C	DI
Minor or limited [b]	S	
Yersinia enterocolitica gastroenteritis (see gastroenteritis)		

Infection/Condition	Precautions

	Type*	Duration†
Zoster (varicella-zoster)		
Localized in immunocompromised patient, disseminated	A,C	DI [m]
Localized in normal patient	S [m]	
Zygomycosis (phycomycosis, mucormycosis)	S	

Abbreviations:

* Type of Precautions: A, Airborne; C, Contact; D, Droplet; S, Standard; when A, C, and D are specified, also use S.

† Duration of precautions: CN, until off antibiotics and culture-negative; DI, duration of illness (with wound lesions, DI means until they stop draining); U, until time specified in hours (hrs) after initiation of effective therapy; F, see footnote.

[a] No dressing or dressing does not contain drainage adequately.

[b] Dressing covers and contains drainage adequately.

[c] Also see syndromes or conditions listed in section 1.5.

[d] Install screens in windows and doors in endemic areas.

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

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

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

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

[i] Call state health department and CDC for specific advice about management of a suspected case. During the 1995 Ebola outbreak in Zaire, interim recommendations were published. Pending a comprehensive review of the epidemiologic data from the outbreak and evaluation of the interim recommendations, the 1988 guidelines for management of patients with suspected viral hemorrhagic infections will be reviewed and updated if indicated.

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

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

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

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

[n] The "Guideline for Prevention of Nosocomial Pneumonia" recommends surveillance, vaccination, antiviral agents, and use of private rooms with negative air pressure as much as feasible for patients for whom influenza is suspected or diagnosed. Many hospitals encounter logistic difficulties and physical plant limitations when admitting multiple patients with suspected influenza during community outbreaks. If sufficient private rooms are unavailable, consider cohorting patients or, at the very least, avoid room sharing with high-risk patients. See "Guideline for Prevention of Nosocomial Pneumonia" for additional prevention and control strategies.

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

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

[q] For 9 days after onset of swelling.

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

[s] Maintain precautions until 5 days after patient is placed on effective therapy.
[t] Avoid cohorting or placement in the same room with a CF patient who is not infected or colonized with *B cepacia*. Persons with CF who visit or provide care and are not infected or colonized with *B cepacia* may elect to wear a mask when within 3 ft of a colonized or infected patient.
[u] Avoid placement in the same room with an immunocompromised patient.
[v] Until 7 days after onset of rash.
[w] Discontinue precautions *only* when TB patient is on effective therapy, is improving clinically, and has three negative sputum smears obtained 8-24 hours apart, with at least one specimen being an early morning sputum, or TB is ruled out. Also see CDC "Guidelines for Preventing the Transmission of Tuberculosis in Health-Care Facilities."

APPENDIX B: Needle Stick Procedure

Standard:

Yale Health will have a policy to define the sequence of events which needs to take place after a health care worker sustains a needlestick, or other injury involving exposure to human blood or body fluids. This policy conforms to the requirements set forth by OSHA.

Policy:

The Yale Health needlestick policy has been developed by the Department of Employee Health and applies to all health care workers of the facility. Any health care worker (HCW) who sustains a needlestick or exposure to human blood or body fluids during the course of his or her job duties must follow the steps outlined in the following procedure. The policy's aim is to provide the optimum care to the injured HCW and attempt to prevent or identify infections caused by blood borne pathogens that the employee might be exposed to in the course of the injury.

Procedure:

1. Employees or students who sustain a needlestick should **Immediately** report to receive medical care at Yale Health (Employee Health Department 432-7978, Student Health 432-0312, or Acute Care 432-0123). It is important to begin any recommended treatment within 1 to 2 Hours after exposure.

2. If the exposure occurs at the Yale New Haven Medical Center and the HCW wishes to be seen on site, he/she should report to the Occupational Health Service (7:30 a.m. to 4:30 p.m., Monday through Friday) at 203-688-2462 or to Yale New Haven Hospital Emergency Room (203-688-2222) if the episode occurs outside of regular daytime working hours.

3. The source patient for the exposure should be immediately approached to give consent for a baseline HIV, Hepatitis B Surface Ag, Hepatitis B Surface Ab, Hepatitis B core Ab, and Hepatitis C Ab. Rapid HIV testing on the source patient should be requested for all needlestick cases. Rapid HIV testing can be done at the Yale-New Haven Hospital Laboratory. The attending physician for the source patient should be notified to obtain this testing. The Yale Health or YNHH Occupational Health providers can assist with this process. If the source patient has no medical provider to perform testing and consents to testing, the treating M.D. can order the tests through Yale Health and bill to Employee Health. The Employee Health provider must be informed of the testing and of a means to follow up with source patient to communicate the results. 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 the source is known to be HIV positive or is on antiretroviral therapy, then the attending physician should be questioned about known HIV resistance patterns.

This should be considered when prescribing anti-viral treatment. Do not delay treatment pending the information however.

4. Consider requesting expert Infectious Disease Consult for exposures to known HIV source cases that are currently receiving treatment for HIV. The CDC Post Exposure Prophylaxis Hotline at 1-888-448-4911 is available for consultation 24 hours a day.

5. The exposed employee/student should immediately be tested for a baseline HIV, Hepatitis B Surface Ab, Hepatitis C Ab following the institution's established testing guidelines.

6. Post Exposure Prophylaxis (PEP) should be offered to any health care provider who has been exposed to blood or body fluids from an HIV positive source, or from a source with reasonable suspicion of HIV infection. PEP is not justified for situations where there is negligible risk of transmission. Expert consultation should be sought if needed to determine the need for PEP.

7. Any health care provider who is prescribed PEP should receive a 3 drug regimen. The preferred regimen is:

    a. **Truvada once daily plus Raltegrvir (Isentress) 400 mg bid for 4 weeks.**

    b. This should be started as soon as possible, using the starter packets available in the Pharmacy or Pyxis in Acute Care. If treatment has been delayed but the exposure is subsequently found to be high risk, it may be started up to 72 hours later (this could change the effectiveness).

8. If the source patient is subsequently found to be HIV negative, any PEP that was prescribed should be discontinued and no further follow up is indicated.
9. Workers who receive antiviral prophylaxis should also have baseline CBC, renal and hepatic function tests drawn.
10. If antiviral prophylaxis for HIV is indicated, the HCW should be given a 96 hour packet of prophylactic medication, which is available at each institution in the Pharmacy or Pyxis in Acute Care.
11. The health care worker should then be instructed to follow up with the appropriate department (either Employee Health at 432-7978 or Student Health 432-0312) on the next business day by phone to receive further instructions within 72 hours.
12. All HCWs taking antiviral prophylaxis should be reevaluated at 2 weeks for a CBC, LFT's and renal functions to check for any symptoms of drug toxicity, which may necessitate a reduction of dosage or change in medication. Expert consultation with an infectious disease specialist should be obtained for situations which might require a change in the protocol or for cases where the source HIV strain is known to be resistant to one or more drugs.
13. If the health care worker follow up testing is done using a 4th generation HIV p24 Ag/HIVAb test, they should receive follow up testing at 6 weeks and 4 months,

after which follow up can be considered complete. (Testing should be extended to 6 months if a standard HIV Ab test is used).

14. See Appendix 1 for situations where expert consultation for PEP is recommended.
15. The exposed worker should be advised to use precautions (e.g., use of barrier contraception and avoidance of blood or tissue donations, pregnancy, and, if possible, breast-feeding) to prevent secondary transmission, especially during the first 6–12 weeks after exposure. They should be counseled about symptoms of acute retroviral syndrome, possible drug interactions, the need to adhere to the PEP regimen and possible drug toxicities and rashes.
16. Appropriate prophylaxis for Hepatitis B exposure should be included in all evaluations where indicated. (See Table 3)
17. The employee should be evaluated for exposure to Hepatitis C if the source patient is infected with Hepatitis C or has risk factors for infection. Testing for Hep C should include a viral RNA for Hep C and Hep C AB at 4-6 weeks, and a Hep C Antibody at 3-4 months, and 6 months.
18. All employees/students who sustain a potential exposure to blood or bodily fluids should make certain an incident report is filed within 24 hours (at Yale-New Haven Hospital or Yale Medical School, this is done at the Medical-Legal Affairs Office, 203 Clinic Building). Employees should also make certain a Yale University Report of Injury is filed.
19. All record of testing and treatment of HCW should follow established confidentiality guidelines and should be forwarded to the physician who will be following the patient (either in Employee Health or Student Health).
20. Employees who refuse to get initial HIV testing may choose to have their initial serum drawn and stored in the laboratory. They must be informed that their refusal to submit to HIV testing within 72 hours post accident will make it impossible to order testing of the source patient without consent.
21. Please see Table A1 for alternative PEP regimens and Table B1 for side effects information.

Reference: "JSTOR: Infection Control and Hospital Epidemiology, Vol. 34, No. 9 (September 2013)

Needle Stick Procedure Appendix 1

Situations for Which Expert Consultation for Human Immunodeficiency Virus (HIV) Post exposure Prophylaxis (PEP) Is Recommended

Delayed (i.e., later than 72 hours) exposure report

- Interval after which benefits from PEP are undefined

Unknown source (e.g., needle in sharps disposal container or laundry)

- Use of PEP to be decided on a case-by-case basis
- Consider severity of exposure and epidemiologic likelihood of HIV exposure
- Do not test needles or other sharp instruments for HIV

Known or suspected pregnancy in the exposed person

- Provision of PEP should not be delayed while awaiting expert consultation

Breast-feeding in the exposed person

- Provision of PEP should not be delayed while awaiting expert consultation

Known or suspected resistance of the source virus to antiretroviral agents

- If source person's virus is known or suspected to be resistant to 1 or more of the drugs considered for PEP, selection of drugs to which the source person's virus is unlikely to be resistant is recommended
- Do not delay initiation of PEP while awaiting any results of resistance testing of the source person's virus

Toxicity of the initial PEP regimen

- Symptoms (e.g., gastrointestinal symptoms and others) are often manageable without changing PEP regimen by prescribing antimotility or antiemetic agents
- Counseling and support for management of side effects is very important, as symptoms are often exacerbated by anxiety

Serious medical illness in the exposed person

- Significant underlying illness (e.g., renal disease) or an exposed provider already taking multiple medications may increase the risk of drug toxicity and drug-drug interactions

Expert consultation can be made with local experts or by calling the National Clinicians' Post-Exposure Prophylaxis Hotline (PEPline) at 888-448-4911.

Needle Stick Procedure Appendix 2

Counseling of Healthcare Personnel (HCP) Exposed to Known or Suspected Human Immunodeficiency Virus (HIV)–Positive Sources

Counseling (at the time of exposure and at follow-up appointments). Exposed HCP should be advised to use precautions (e.g., use of barrier contraception and avoidance of blood or tissue donations, pregnancy, and, if possible, breast-feeding) to prevent secondary transmission, especially during the first 6–12 weeks after exposure.

For exposures for which post exposure prophylaxis (PEP) is prescribed, HCP should be informed regarding the following:

- Possible drug toxicities (e.g., rash and hypersensitivity reactions that could imitate acute HIV seroconversion and the need for monitoring)
- Possible drug interactions
- The need for adherence to PEP regimens

TABLE 3. Postexposure management of health-care personnel after occupational percutaneous and mucosal exposure to blood and body fluids, by health-care personnel HepB vaccination and response status

Health-care personnel status	Postexposure testing		Postexposure prophylaxis		Post-vaccination serologic testing[†]
	Source patient (HBsAg)	HCP testing (anti-HBs)	HBIG*	Vaccination	
Documented responder[§] after complete series (≥3 doses)	**No action needed**				
Documented nonresponder[¶] after 6 doses	Positive/unknown	—**	HBIG x2 separated by 1 month	—	No
	Negative	**No action needed**			
Response unknown after 3 doses	Positive/unknown	<10mIU/mL **	HBIG x1	Initiate revaccination	Yes
	Negative	<10mIU/mL	None		
	Any result	≥10mIU/mL	**No action needed**		
Unvaccinated/incompletely vaccinated or vaccine refusers	Positive/unknown	—**	HBIG x1	Complete vaccination	Yes
	Negative	—	None	Complete vaccination	Yes

Abbreviations: HCP = health-care personnel; HBsAg = hepatitis B surface antigen; anti-HBs = antibody to hepatitis B surface antigen; HBIG = hepatitis B immune globulin.

* HBIG should be administered intramuscularly as soon as possible after exposure when indicated. The effectiveness of HBIG when administered >7 days after percutaneous, mucosal, or nonintact skin exposures is unknown. HBIG dosage is 0.06 mL/kg.

† Should be performed 1–2 months after the last dose of the HepB vaccine series (and 4–6 months after administration of HBIG to avoid detection of passively administered anti-HBs) using a quantitative method that allows detection of the protective concentration of anti-HBs (≥10 mIU/mL).

§ A responder is defined as a person with anti-HBs ≥10 mIU/mL after ≥3 doses of HepB vaccine.

¶ A nonresponder is defined as a person with anti-HBs <10 mIU/mL after ≥6 doses of HepB vaccine.

** HCP who have anti-HBs <10mIU/mL, or who are unvaccinated or incompletely vaccinated, and sustain an exposure to a source patient who is HBsAg-positive or has unknown HBsAg status, should undergo baseline testing for HBV infection as soon as possible after exposure, and follow-up testing approximately 6 months later. Initial baseline tests consist of total anti-HBc; testing at approximately 6 months consists of HBsAg and total anti-HBc.

Table A1. Human Immunodeficiency Virus (HIV) Postexposure Prophylaxis (PEP) Regimens

View table image

Preferred HIV PEP Regimen
Raltegravir (Isentress; RAL) 400 mg PO twice daily
Plus
Truvada, 1 PO once daily
(Tenofovir DF [Viread; TDF] 300 mg + emtricitabine [Emtriva; FTC] 200 mg)

Alternative Regimens
(May combine 1 drug or drug pair from the left column with 1 pair of nucleoside/nucleotide reverse-transcriptase inhibitors from the right column; prescribers unfamiliar with these agents/regimens should consult physicians familiar with the agents and their toxicities)[a,b]

Raltegravir (Isentress; RAL)	Tenofovir DF (Viread; TDF) + emtricitabine (Emtriva; FTC); available as Truvada
Darunavir (Prezista; DRV) + ritonavir (Norvir; RTV)	Tenofovir DF (Viread; TDF) + lamivudine (Epivir; 3TC)
Etravirine (Intelence; ETR)	Zidovudine (Retrovir; ZDV; AZT) + lamivudine (Epivir; 3TC); available as Combivir
Rilpivirine (Edurant; RPV)	Zidovudine (Retrovir; ZDV; AZT) + emtricitabine (Emtriva; FTC)
Atazanavir (Reyataz; ATV) + ritonavir (Norvir; RTV)	
Lopinavir/ritonavir (Kaletra; LPV/RTV)	

The following alternative is a complete fixed-dose combination regimen, and no additional antiretrovirals are needed: Stribild (elvitegravir, cobicistat, tenofovir DF, emtricitabine)

Alternative Antiretroviral Agents for Use as PEP Only with Expert Consultation[b]
Abacavir (Ziagen; ABC)
Efavirenz (Sustiva; EFV)
Enfuvirtide (Fuzeon; T20)
Fosamprenavir (Lexiva; FOSAPV)
Maraviroc (Selzentry; MVC)
Saquinavir (Invirase; SQV)
Stavudine (Zerit; d4T)

Antiretroviral Agents Generally Not Recommended for Use as PEP
Didanosine (Videx EC; ddI)
Nelfinavir (Viracept; NFV)
Tipranavir (Aptivus; TPV)

Antiretroviral Agents Contraindicated as PEP
Nevirapine (Viramune; NVP)

Note For consultation or assistance with HIV PEP, contact the National Clinicians' Post-Exposure Prophylaxis Hotline at telephone number 888-448-4911 or visit its website at http://www.nccc.ucsf.edu/about_nccc/pepline/. DF, disoproxil fumarate; PO, per os.

a The alternatives regimens are listed in order of preference; however, other alternatives may be reasonable based on patient and clinician preference.

b For drug dosing information, see Appendix B.

Table B1. Information on Human Immunodeficiency Virus (HIV) Postexposure Prophylaxis (PEP) Medications

View table image (1), (2), (3), (4), (5)

Drug name	Drug class	Dosing (dosage form)	Advantages	Disadvantages
Abacavir (Ziagen; ABC)	Nucleoside reverse-transcriptase inhibitor (NRTI)	ABC: 300 mg daily; available as 300-mg tablet Also available as component of fixed-dose combination Epzicom, dosed daily (300 mg of 3TC + 600 mg of ABC) Trizivir, dosed twice daily (150 mg of 3TC + 300 mg of ABC + 300 mg of AZT)	Take without regard for food	Potential for life-threatening ABC hypersensitivity reaction (rash, fever, nausea, vomiting, diarrhea, abdominal pain, malaise, respiratory symptoms) in patients with HLA-B*5701; requires patient testing prior to use, which may not be available or practical prior to initiating PEP
Atazanavir (Reyataz; ATV)	Protease inhibitor (PI)	ATV: 300 mg + RTV: 100 mg once daily (preferred dosing for PEP[a]) ATV: 400 mg once daily without RTV (alternative dosing—may not be used in combination with TDF) Available as 100-, 150-, 200-, and 300-mg capsules	Well tolerated	Indirect hyperbilirubinemia and jaundice common Rash Nephrolithiasis Potential for serious or life-threatening drug interactions that may affect dosing Absorption depends on low pH; caution when coadministered with H_2 antagonists, antacids, and proton pump inhibitors PR interval prolongation Caution in patients with underlying conduction defects or on concomitant medications that can cause PR prolongation Must be given with food
Darunavir (Prezista; DRV)	PI	DRV: 800 mg once daily + RTV: 100 mg once daily (preferred dosing for PEP[a]) DRV: 600 mg twice daily + RTV: 100 mg twice daily (alternative dosing) Available as 75-, 150-, 400-, and 600-mg tablets	Well tolerated	Rash (DRV has sulfonamide moiety) Diarrhea, nausea, headache Hepatotoxicity Potential for serious or life-threatening drug interactions that may affect dosing Must be given with food and with RTV
Efavirenz (Sustiva; EFV)	Nonnucleoside reverse-transcriptase inhibitor (NNRTI)	EFV: 600 mg daily; available as 50- and 200-mg capsules and 600-mg tablets Also available as component of fixed-dose combination Atripla, dosed daily (200 mg of FTC + 300 mg of TDF + 600 mg of EFV)	Available as a complete regimen dosed once per day	Rash Neuropsychiatric side effects (eg, dizziness, somnolence, insomnia, abnormal dreaming) common; severe psychiatric symptoms possible (dosing before bedtime might minimize these side effects); use with caution in shift workers Do not use during pregnancy; teratogen in nonhuman primates Potential for serious or life-threatening drug interactions that may affect dosing May cause false-positive results with some cannabinoid and benzodiazepine screening assays Take on an empty stomach
Elvitegravir (EVG)	Integrase strand transfer inhibitor (INSTI)	Available as a component of fixed-dose combination Stribild, dosed daily (150 mg of EVG + 150 mg of cobicistat + 300 mg of TDF + 200 mg of FTC)	Well tolerated Available as a complete regimen dosed once per day	Diarrhea, nausea, headache Nephrotoxicity; should not be administered to individuals with acute or chronic kidney injury or those with eGFR <70 Cobicistat is a pharmacokinetic enhancer to increase EVG exposures and has no antiviral activity but is a potent CYP3A inhibitor Potential for serious or life-threatening

Drug name	Drug class	Dosing (dosage form)	Advantages	Disadvantages
				drug interactions Must be given with food
Emtricitabine (Emtriva; FTC)	NRTI	200 mg once daily; available as 200-mg capsule Also available as component of fixed-dose combination Atripla, dosed daily (200 mg of FTC + 300 mg of TDF + 600 mg of EFV) Complera, dosed daily (25 mg of RPV + 300 mg of TDF + 200 mg of FTC) Stribild, dosed daily (150 mg of EVG + 150 mg of cobicistat + 300 mg of TDF + 200 mg of FTC) Truvada, dosed daily (200 mg of FTC + 300 mg of TDF)	Well tolerated Minimal toxicity Minimal drug interactions Take without regard for food	Rash perhaps more frequent than with 3TC Hyperpigmentation/skin discoloration If the PEP recipient has chronic hepatitis B, withdrawal of this drug ma cause an acute hepatitis exacerbation
Enfuvirtide (Fuzeon; T20)	Fusion inhibitor (FI)	T20: 90 mg (1 mL) twice daily by subcutaneous injection; available as single-dose vial, reconstituted to 90 mg/mL	…	Local injection-site reactions occur in almost 100% of patients Never studied among antiretroviral-naive or HIV-negative patients False-positive EIA HIV antibody tests might result from formation of anti-T2 antibodies that cross-react with anti-gp41 antibodies Twice-daily injection
Etravirine (Intelence; ETR)	NNRTI	200 mg twice daily; available as 100- and 200-mg tablets	Well tolerated and has not had the same frequency of CNS side effects reported as EFV	Rash (including SJS) and hypersensitivity (sometimes with organ dysfunction, including hepatic failure) Nausea Potential for serious or life-threatening drug interactions that may affect dosing Must be given with food
Fosamprenavir (Lexiva; FOSAPV)	PI	FOSAPV: 1,400 mg daily + RTV: 100 mg once daily (preferred dosing for PEP) FOSAPV: 1,400 mg twice daily without RTV (alternative dosing) Available as 700-mg tablet	Well tolerated	Diarrhea, nausea, vomiting, headache, rash (FOSAPV has sulfonamide moiety Potential for serious or life-threatening drug interactions that may affect dosing Oral contraceptives decrease FOSAPV concentrations Take with food if given with RTV
Lamivudine (Epivir; 3TC)	NRTI	3TC: 300 mg once daily (preferred dosing for PEP) 3TC: 150 mg twice daily (alternative dosing) Available as 150- and 300-mg tablets Also available as component of fixed-dose combination generic lamivudine/zidovudine, dosed twice daily (150 mg of 3TC + 300 mg of AZT) Combivir, dosed twice daily (150 mg of 3TC + 300 mg of AZT) Epzicom, dosed daily (300 mg of 3TC + 600 mg of ABC) Trizivir, dosed twice daily (150 mg of 3TC + 300 mg of ABC + 300 mg of AZT)	Well tolerated Minimal toxicity Minimal drug interactions Take without regard for food	If the PEP recipient has chronic hepatitis B, withdrawal of this drug ma cause an acute hepatitis exacerbation
Lopinavir/ritonavir (Kaletra; LPV/RTV)	PI	Kaletra: 400/100 mg = 2 tablets twice daily (preferred dosing for PEP)	Take without regard for food	GI intolerance, nausea, vomiting, diarrhea are common PR and QT interval prolongation have

Drug name	Drug class	Dosing (dosage form)	Advantages	Disadvantages
		Kaletra: 800/200 mg = 4 tablets once daily (alternative dosing) Available as 200/50-mg tablets		been reported; use with caution in patients at risk of cardiac conduction abnormalities or receiving other drugs with similar effect Potential for serious or life-threatening drug interactions that may affect dosing
Maraviroc (Selzentry; MVC)	CCR5 coreceptor antagonist	MVC: 300 mg twice daily (if on concomitant CYP3A inducers, dose may need adjustment by expert consultant); available as 150- and 300-mg tablets	Well tolerated	Abdominal pain, cough, dizziness, musculoskeletal symptoms, pyrexia, rash, orthostatic hypotension Hepatotoxicity that may present with an allergic reaction, including rash Requires HIV tropism testing of source virus before treatment to ensure CCR5-tropic virus and efficacy, which may not be available or practical prior to initiating PEP Potential for serious or life-threatening drug interactions that may affect dosing Dose adjustments for MVC required when given with potent CYP3A inhibitors or inducers
Raltegravir (Isentress; RAL)	INSTI	400 mg twice daily; available as 400-mg tablet	Well tolerated Minimal drug interactions Take without regard for food	Insomnia, nausea, fatigue, headache, and severe skin and hypersensitivity reactions have been reported
Rilpivirine (Edurant; RPV)	NNRTI	25 mg once daily; available as 25-mg tablet Also available as component of fixed-dose combination Complera, dosed daily (25 mg of RPV + 300 mg of TDF + 300 mg of FTC)	Well tolerated and fewer rashes and discontinuations for CNS adverse effects compared with EFV Available as a complete regimen dosed once per day	Depression, insomnia, rash, hypersensitivity, headache Potential for serious or life-threatening drug interactions that may affect dosing Caution when coadministered with H_2 antagonists and antacids Coadministration with proton pump inhibitors is contraindicated Use RPV with caution when coadministered with a drug having a known risk of torsades de pointes Must be given with food
Saquinavir (Invirase; SQV)	PI	SQV: 1,000 mg + RTV: 100 mg twice daily (preferred dosing for PEP); available as 500 mg tablet	Well tolerated, although GI events common	GI intolerance, nausea, diarrhea, headache Pretreatment ECG recommended SQV/r is not recommended for patients with any of the following: (1) congenital or acquired QT prolongation, (2) pretreatment ECG >450 msec, (3) receiving concomitant therapy with other drugs that prolong QT interval, (4) complete AV block without implanted pacemakers, and (5) risk of complete AV block PR and QT interval prolongations, torsades de pointes has been reported Potential for serious or life-threatening drug interactions that may affect dosing Must be given with food
Stavudine (Zerit; d4T)	NRTI	d4T: 40 mg twice daily if body weight is >60 kg d4T: 30 mg twice daily if body weight is <60 kg Available as 15-, 20-, 30-, and 40-mg tablets	Take without regard for food	GI side effects include diarrhea and nausea Hepatotoxicity, neurologic symptoms (eg, peripheral neuropathy), pancreatitis
Tenofovir DF (Viread; TDF)	NRTI	300 mg once daily; available as 300-mg tablet Also available as component of fixed-dose combination Atripla, dosed daily (200 mg of FTC + 300 mg of TDF + 600 mg of EFV) Complera, dosed daily (25 mg of RPV + 300 mg of TDF + 200 mg of FTC) Stribild, dosed daily (150 mg of EVG + 150 mg of cobicistat + 300 mg of TDF + 200 mg of FTC) Truvada, dosed daily (200 mg of FTC + 300 mg of TDF)	Well tolerated Take without regard for food	Asthenia, headache, diarrhea, nausea, vomiting Nephrotoxicity; should not be administered to individuals with acute or chronic kidney injury or those with eGFR <60 If the PEP recipient has chronic hepatitis B, withdrawal of this drug may cause an acute hepatitis exacerbation Drug interactions
Zidovudine (Retrovir; ZDV; AZT)	NRTI	AZT: 300 mg twice daily; available as 100-mg capsule or 300-mg tablet Also available as component of fixed-dose combination generic lamivudine/zidovudine, dosed twice daily (150 mg of 3TC + 300 mg of AZT) Combivir, dosed twice daily (150 mg of 3TC + 300 mg of AZT) Trizivir, dosed twice daily (150 mg of 3TC + 300 mg of ABC + 300 mg of AZT)	Take without regard for food	Side effects (especially nausea, vomiting, headache, insomnia, and fatigue) common and might result in low adherence Anemia and neutropenia

Note This appendix does not provide comprehensive information on each individual drug. For detailed information, please refer to individual drug package inserts. AV, atrioventricular; CNS, central nervous system; ECG, electrocardiogram; eGFR, estimated glomerular filtration rate; EIA, enzyme immunoassay; GI, gastrointestinal; SJS, Stevens-Johnson syndrome.

a Certain antiretroviral agents, such as PIs, have the option of once- or twice-daily dosing depending on treatment history and use with ritonavir. For PEP, the selection of dosing and schedule is to optimize adherence while minimizing side effects where possible. This table includes the preferred dosing schedule for each agent, and in all cases with the exception of Kaletra the once-daily regimen option is preferred for PEP. Twice-daily administration of Kaletra is better tolerated with respect to GI toxicities compared with the once-daily regimen. Alternative dosing and schedules may be appropriate for PEP in certain circumstances and should preferably be prescribed by individuals experienced in the use of antiretroviral medications.

APPENDIX C: HIV Counseling Guidelines

Risks

The risk of HIV infection after percutaneous exposure to human blood and body fluids is estimated to be 0.3% on average. The risk is estimated to be higher in cases where the exposure involves a deep injury with a hollow bore instrument from a patient that has end stage AIDS or an early retro viral syndrome. The risks of a mucous membrane or skin exposure to HIV infected material is estimated to be lower.

Symptoms

Patients who are exposed to material that is potentially infected with HIV should be counseled about the symptoms of the acute retroviral syndrome. Symptoms include

- fever
- sore throat
- nausea
- headache
- enlarged lymph nodes
- rash

The symptoms will generally appear within six weeks after an exposure to HIV. The symptoms may be similar to a viral illness due to other agents, so that patients should be told not to assume the worst if they experience symptoms after an exposure. Patients should be encouraged to report any suspicious symptoms to their primary care provider in order to have them evaluated.

Precautions to prevent infection

All patients who have had a potential exposure to HIV should take precautions to avoid possible secondary transmission. These precautions are the following:

- use a condom when engaging in sexual activities
- refrain from open mouth kissing
- avoid sharing shaving instruments
- refrain from donating blood, organs, or other tissues
- avoid breast-feeding or becoming pregnant.

Patients should be encouraged to come back for follow up testing at 6 weeks, 3 months, and 6 months. Patients should continue these precautions until testing at 6 months post exposure confirms lack of seroconversion.

Antiviral Drugs

Patients should be prescribed anti viral drugs based on the needlestick protocol guidelines and risk categories. Patients should be instructed to begin taking the drugs immediately since the greatest potential benefit results when the drugs are taken within the first one to two hours post exposure. Patients may be given an initial 72-hour supply of anti-HIV medications at the time of evaluation. They must contact their clinician and arrange for further medication without interruption, for a total treatment course of four weeks.

APPENDIX Yale Health 1: Quality Control of Single and Multi-dose Vials/Sterile Solutions

Subject:

Quality control of single dose and multidose vials, non-preservative irrigation solutions, dated and undated items and topicals

Standard:

Sterility of multidose medication vials/containers will be maintained.

Quality control of multidose medication vials, single use vials, non-preservative irrigation solutions, non-dated items (alcohol, H_2O_2, and green soap), dated items (Betadine), and topicals will be documented.

Policy

1. All single and multidose vials/medications will be discarded after single patient use.
    - Medications will be ordered and stocked as single dose vials when possible.
    - Medications only available as multidose vials will still only be used for single patient administration.
    - Injectable medication administered in the department are basic medical treatment. There is no charge to the patient.
    - Medications supplied in the department include but are not limited to:
        - Anesthetics (i.e. Lidocaine 1%, 2% with and without Epinephrine, Benzocaine, Sodium Bicarbonate).
        - Steroids (i.e. Kenalog, Celestone, Depo-Medrol, etc.)
2. Non-preservation irrigation solutions must be discarded at the end of single patient procedure or at the end of each clinic day. (Normal Saline Irrigation or Sterile Water Irrigation).
3. Opened solutions i.e., alcohol, peroxide, green soap, betadine will have an expiration sticker applied when opened. The expiration date will reflect the 1st day of the next month. (Example: Betadine opened August 15th will have expiration date September 1) All open solutions must be discarded on the first clinic day of each month.
    - Solutions will be ordered and stocked in the smallest volume when possible.
4. Expensive allergy extract (single patient use) and multidose vials for vaccines unavailable in single-dose vial/syringe will expire per manufacturer's expiration date (i.e., meningococcal vaccine and certain insulin solutions). Exceptions are: "Vial Open Expires..." stickers are available through the Purchasing Department and should be used to document date opened and expiration date. Lot number and manufacturers expiration date must not be occluded by sticker. Exceptions are outlined in the compliance with the Connecticut DPH recommendations.
5. Manufacturer recommendation must be followed for the storage of multidose vials/containers.
6. Any exceptions must be approved by the Yale Health Center's Pharmacy and Therapeutic Committee and Infection Control.

7. Control testing solutions for CLIA waived tests (HCG, Strep A , glucose, ISTAT, Bianox, A1C, etc.) are exempt from the monthly discard policy. The solutions are of known consistency and deliver an expected result. Abnormal results result in removal from service of the testing device/cartridges/strips. The solutions are not used in direct patient care but rather in calibration of direct patient care devices. In all cases the manufacturer's instructions for use, retention and discarding of testing solutions will be followed.

8. Aseptic technique must be maintained when accessing multidose vials/containers.

9. Sterile products must be accessed and prepared in areas functionally separate from general work area.

10. Eating and drinking must not be allowed in the prep area.

11. Multidose vials/containers must be inspected for defects, manufacturers expiration date and product integrity before use. If the product is defective or has expired, it MUST NOT BE USED. Defective products should be promptly reported to Yale Health Center's Pharmacy.

12. The rubber stopper of the container must be wiped with 70% alcohol before entry.

13. Personnel should avoid touch contamination of sterile supplies.

Procedure:

1. Identify patient, use 2 identifiers (name, DOB).

2. Assess for allergies.

3. Medication is verified against physician or PA order.

4. Expiration date is checked.

5. Medication is prepared and administered as per MD or PA order by the MD/PA/APRN/RN using aseptic technique. (See Policy: **Intra Articular Injections**)

6. All medication is discarded after single patient use.

APPENDIX Yale Health 2: Laundry

Standard:

Appropriate laundry procedures are followed to minimize potential nosocomial and occupations risks associated with soiled linen.

Policy & Procedure:

A. Collection

1. Soiled linen will be collected in a manner that minimizes agitation to prevent contamination of the environment and personnel and will be bagged at the site of use.
2. Linens are placed in white plastic bags. Linens are double bagged when leakage onto the environment or contamination of transporting personnel is expected.
3. All linen is transported to a collection area via linen carts located in the dirty utility room. Laundry bags will not be overfilled to prevent mechanical obstruction.
4. In situations in which laundry is heavily soiled with blood or body fluids, standard precautions will be followed.

B. Transportation

1. Soiled linen will be picked up daily in the morning, Monday, Wednesday and Friday by Unitex Corporation.
2. Clean linen is pressed, folded, and delivered to the fifth floor, Inpatient Care Facility Monday, Wednesday and Friday. it is covered and wrapped for protection. The laundry staff places laundry on the shelves of the linen closet, the housekeeping staff assist in keeping the linen neat and monitor the cleanliness of the closet.

C. Linen Supply

1. The Director of Nursing and/or the purchasing department, with the assistance of the housekeeping department will maintain sufficient levels of linens for three (3) times the licensed capacity of the facility.

D. Infection Control

1. Standard isolation procedures will be followed.
2. The Infection Control Committee will monitor laundry procedures for compliance with this policy.

APPENDIX Yale Health 3: Clean Up Spills

Standard:

Clean-up of Spills with Potential for Staff and Patient Exposure to Bloodborne Pathogens.

Policy:

Provide a safe and clean environment for staff and patients while minimizing the risk of exposure to bloodborne pathogens: for staff members assigned to decontaminate and clean spills, and for patients and staff by the timely decontamination and clean-up of spills posing a risk of exposure to bloodborne pathogens.

Procedure:

1. Person discovering or receiving report of a spill must, **immediately** cover spill with "Red Z", spray with Cavicide and cover spill utilizing supplies and directions located in all spill kits (available through Building Services, Monday - Friday, 8:30a.m. - 5:00p.m.). Managers or persons responsible for ordering supplies should be sure enough spill kits are readily available in their department.

2. Clean-up of spills occurring in a clinic area are the responsibility of the personnel of that specific clinic, utilizing the supplies and step-by-step directions located in the spill kit.

3. Contact Yale Health Building Services Emergency phone at 2-0276 to have the day housekeeping staff continue the disinfecting process. Yale Health Day Housekeeping Staff is available: Monday through Friday 7:30 a.m. to 5:00p.m., Saturday at 8:30 a.m. and Sunday 8:30 a.m. to 5:00 p.m.

4. Report Incident into the Report Tracker system.

5. Spills occurring at any time in elevator interiors will be reported to the main desk. The main desk personnel will shut down the elevator and notify the building Services Manger of the spill.

6. Cleaning up of spills occurring in a non-clinical area will be the responsibility of the following departments for their respective floors, utilizing the supplies and step-by-step directions located in the spill kit.

Non-Clinical Area	Responsible Department
Lower Level	Building Services
First Floor	Acute Care
Second Floor	Surgical Specialties
Third Floor	Pediatrics
Fourth Floor	Inpatient Care
Elevator Interiors	Building Services

7. During weeknights 5:00p.m.to 12:00a.m., and weekend hours, Acute Care will be responsible for any spills ocurring on the First floor and Inpatient Care will be responsible for spills occurring on the Fourth floor. If a spill occurs on any other floor during weeknights, 5:00p.m. to 8:30a.m. or weekends due to after hours clinic, seminars, classes, or special arrangements to see a patient in a clinci area, the person responsible for the clinic, seminar, class or provider seeing a patient is responsible for the clean-up of any spill related to persons attending these sessions or patient seen after hours. These spills must be decontaminated and cleaned up immediately, not left for housekeeping upon their return to duty.

8. Spill kits are available through Building Services and include all supplies and the written protocol to be used in the clean-up of any spill with potential for exposure to bloodborne pathogens. Be sure enough spill kits are available in your department since Building Services is not accessible after 5:00p.m. on weekdays and is closed on weekends/holidays.

9. Assure that all members of your staff, including per diem, casual and off-hours staff, with risk for exposure to bloodborne pathogens receive their annual bloodborne Pathogens Training when yearly sessions are scheduled. These training sessions are **mandated by OSHA** and address the issues required to afford staff members the information they need to maintain a safe environment for both patients and employees and proper handling of materials with potential for risk of exposure to bloodborne pathogens. Training sessions are given throughout the year for all new Yale Health employees.

10. Assure that all staff members are instructed in the location and use of the spill kits and spill protocol including all per diem, casual and off-hour staff.

APPENDIX Yale Health 4: Infection Control Protocol

Section II. Infection Control/Quality Assurance Rounds

Protocol and Procedure:

I. Primary function is to measure compliance of each individual Yale Health Department to the procedures and protocols outlined in the Yale Health Infection Control Manual and Standards of Care.

A. During unannounced walking rounds by the Infection Control Practitioner and surveillance team, use a check list and document non-compliance.

B. A form will be utilized to communicate any recommendations by the infection control practitioner and surveillance team to the responsible Department Manager/Chief to correct or improve department compliance.

C. A form will be utilized by the responsible departmental staff to communicate to the Infection Control Practitioner the action taken to improve or correct compliance with set criteria.

II. Surveillance Information is used as a teaching tool and guideline for responsible departmental staff to meet and maintain compliance.

III. The responsible departmental manager/chief will be sent a copy of the surveillance information with the Infection Control Practitioner's recommended action for correction of non-compliance, when appropriate, or comments. The responsible departmental manager/chief will receive the completed report after the inspection is completed.

IV. The responsible departmental manager/chief will respond in writing when cited for non-compliance with set criteria. Infection Control Practitioner /Surveillance Team must receive this response within two (2) weeks of date of report. The response must include the department action taken to improve or correct the area of non-compliance cited. The copy of the report sent by the Infection Control Practitioner /Surveillance Team includes a column for department action. The responsible departmental manager/chief will utilize this system for the department response.

V. The surveillance team will re-visit a department cited for non-compliance following the initial visit to assess action taken.

Non-compliance with the potential for serious risk of injury or safety to patients or staff members will require immediate action and reassessment.

APPENDIX Yale Health 5: TB Exposures at Yale Health

Standard:

Yale Health will follow up on any potential exposure to infectious TB in our facility.

Procedure:

The following steps are to be taken if a case of active TB is diagnosed in the Yale Health patient population.

1. The clinician who diagnoses or who is first notified of the diagnosis of active TB in one of their Yale Health patients must immediately notify the Infection Control practitioner for the facility with the name of the patient, dates that patient was seen in the facility for the evaluation of potential TB and names of any other clinicians or staff members known to have contact with the patient during the visit.

2. The Infection Control Practitioner will obtain the medical record of the index patient, verify the diagnosis of active TB and begin a list of staff members that had contact with the patient during the visits where the patient was symptomatic and/or diagnosed with TB. The managers of any department involved in the care of the patient may need to be consulted in order to identify additional exposed staff members. The chart will also be reviewed to determine whether the appropriate infection control practices were used in caring for the patient once the diagnosis of active TB was suspected. This review of the infection control practices will be reported at the Infection Control committee. The Infection control practitioner will report the index TB case to the State of Connecticut if the diagnosis was made by a Yale Health clinician as per the Reportable Disease policy.

3. The Infection Control Practitioner, in conjunction with the Chief of Employee Health will inform all staff members who had contact with the index case that they need to have a baseline ppd now (unless one has been placed within the past 3 months) and a follow up ppd in 3 months time to identify any potential secondary cases. Any staff member who is determined to have evidence of new TB infection as a result of this testing will be evaluated as per the facility TB control plan. Any exposed staff who have a previous history of a past positive ppd will notified to be alert and report any signs or symptoms consistent with TB disease to employee health.

4. The Infection Control practitioner will check the computerized department clinic schedules for the days that the index patient was seen in the facility in the respective department and begin a list of patients who were likely to have been in the waiting room in close proximity to the index patient along with their primary providers.

5. The Infection control staff and/or employee health staff will forward a notice to the patients who may have been exposed to the index case to alert them of this fact and recommend that they contact their primary physician for a ppd or evaluation. The primary physicians will also be notified so that they will be aware of the case. If any exposed patient subsequently is discovered to be infected with TB by way of a skin test conversion, their primary physician will notify the Infection control and employee health staff.

6. At the end of the follow up period, the employee health chief will report to the Infection Control committee about the outcome of the monitoring period including any evidence of secondary spread of TB from the index case by identification of new ppd conversions.

7. The Infection Control Committee will review the entire infection control practices surrounding the case as well as the outcome from the monitoring period to document adherence to the facility TB control plan and to make any recommendations for future cases.

APPENDIX Yale Health 6: Universal Respiratory Etiquette

Standard:

Many respiratory pathogens are transmitted in health care settings (examples: influenza, mycoplasma, coronaviruses, adenoviruses). Respiratory etiquette practices can decrease the rate of transmission of these pathogens to patients, visitors, and staff.

Policy:

Yale Health will implement Universal Respiratory Etiquette practices in the clinical areas of the facility.

Procedure:

1. Patients and visitors with fever, cough or other respiratory symptoms will be offered a surgical mask to wear while waiting for their health care appointments.

2. Patients who have the above respiratory symptoms and cannot wear a surgical mask will be advised to use a tissue to cover their nose or mouth while coughing or sneezing.

3. Hand hygiene materials will be available in clinical waiting areas. Patients with respiratory symptoms will be encouraged to perform frequent hand washing using these products.

4. Clinical staff will be educated about respiratory hygiene and encouraged to wear surgical masks when assessing patients who have respiratory symptoms. Clinical staff will perform frequent hand washing when caring for patients with respiratory symptoms.

5. Clinical managers will be responsible for ensuring that their respective departments keep the supplies on hand in order to implement this respiratory etiquette policy.

APPENDIX Yale Health 7: Clinical Guidelines for Severe Acute Respiratory Syndrome - Corona Virus (SARS CoV) Infection

The following guidelines should be used as clinical guidance for evaluating patients with community-acquired illness for possible SARS-CoV Disease.

In the absence of SARS-CoV transmission anywhere in the world, the diagnosis of SARS-CoV disease should be considered only in patients who require hospitalization for radiographically confirmed pneumonia and who have an epidemiologic history that raises the suspicion of SARS-CoV disease. The suspicion for SARS-CoV disease is raised if, within 10 days of symptom onset, the patient:

- Has a history of recent travel to mainland China, Hong Kong, or Taiwan (see Figure 1, footnote 3) or close contact with ill persons with a history of recent travel to such areas, or
- Is employed in an occupation at particular risk for SARS-CoV exposure, including a healthcare worker with direct patient contact or a worker in a laboratory that contains live SARS-CoV, or
- Is part of a cluster of cases of atypical pneumonia without an alternative diagnosis

Persons with such a clinical and exposure history should be evaluated for possible SARS CoV disease as per CDC guidelines.

Once SARS-CoV transmission has been documented in the world, the diagnosis should still be considered in patients who require hospitalization for pneumonia and who have the epidemiologic history described above. In addition, all patients with fever or respiratory symptoms should be questioned about whether within 10 days of symptom onset they have had:

- Close contact with someone suspected of having SARS-CoV disease, OR
- A history of foreign travel (or close contact with an ill person with a history of travel) to a location with documented or suspected SARS-CoV, OR
- Exposure to a domestic location with documented or suspected SARS-CoV (including a laboratory that contains live SARS-CoV), or close contact with an ill person with such an exposure history.

Persons with such an exposure history should be evaluated for SARS-CoV disease according to established CDC guidelines (See CDC web site for most current guidelines)

See attached matrix for CDC recommendations for Outpatient Facilities.

Matrix 1: Recommendations for Inpatient Facilities and Emergency Departments

Level of SARS activity	Suggested actions
No cases of SARS in the facility	Triage activities/facility access controls Notify the SARS coordinator or designee of any transfers from facilities that have SARS cases. In accordance with recommendations for respiratory hygiene/cough etiquette, instruct all patients with respiratory illnesses to perform hand hygiene and cover the nose/mouth when coughing or sneezing. Manage these patients with Droplet Precautions until determined that they are not needed. **In the presence of person-to person SARS-CoV transmission in the world but no known transmission in the area around the facility**: Place signs at all entry points detailing symptoms of and current epidemiologic risk factors for SARS and directing persons meeting these criteria to an appropriate area for evaluation. Initiate screening of patients on entry to the emergency department for symptoms and epidemiologic links suggesting SARS. Patients with fever or lower respiratory symptoms ***and*** SARS risk factors should perform hand hygiene, wear a surgical mask (if possible), and be isolated in accordance with the recommendations in Supplement I. If airborne isolation is not possible, consider cohorting, with all patients wearing surgical masks. Evaluate patients according to the algorithm (Figure 2) in *Clinical Guidance on the Identification and Evaluation of Possible SARS-CoV Disease among Persons Presenting with Community-Acquired Illness* (www.cdc.gov/ncidod/sars/clinicalguidance.htm). If a patient's risk of exposure to SARS-CoV is high (e.g., close contact with a laboratory-confirmed case of SARS-CoV disease), the clinical criteria should be expanded to include other early symptoms of SARS-CoV disease. **In the presence of SARS-CoV transmission in the area around the facility**: All persons should perform hand hygiene on entry. Actively screen all persons entering the facility for fever and lower respiratory symptoms. All patients presenting with fever or lower respiratory symptoms should perform hand hygiene, wear a surgical mask (if possible), and be isolated for SARS in accordance with the recommendations in Supplement I. If airborne isolation is not possible, consider cohorting, with all patients wearing surgical masks. Evaluate patients according to the algorithm (Figure 2) in *Clinical Guidance on the Identification and Evaluation of Possible SARS-CoV Disease among Persons Presenting with Community-Acquired Illness* (www.cdc.gov/ncidod/sars/clinicalguidance.htm). If a patient's risk of exposure to SARS-CoV is high (e.g., close contact with a laboratory-confirmed case of SARS-CoV disease), the clinical criteria should be expanded to include other early symptoms of SARS-CoV disease. Intake/triage staff should follow SARS infection control and PPE guidance, as specified in Supplement I. Limit visitors (e.g., one per patient per day). Screen all visitors for SARS risk factors and symptoms. Limit elective admissions and procedures. Consider designating an area as a "SARS evaluation center" and sending all patients presenting with fever or respiratory symptoms to the center for evaluation.

Matrix 1: Recommendations for Inpatient Facilities and Emergency Departments (continued)

Level of SARS activity	Suggested actions
No cases of SARS in the facility (continued)	Patient placement **In the presence of person-to-person SARS-CoV transmission in the world but NO known transmission in the area around the facility:** Patients presenting with fever or lower respiratory symptoms ***and*** epidemiologic risk factors for SARS should perform hand hygiene, wear a surgical mask (if possible), and be isolated for SARS in accordance with the recommendations in Supplement I. If airborne precautions are not possible, consider cohorting, with all patients wearing surgical masks. Evaluate patients according to the algorithm (Figure 2) in *Clinical Guidance on the Identification and Evaluation of Possible SARS-CoV Disease among Persons Presenting with Community-Acquired Illness* (www.cdc.gov/ncidod/sars/clinicalguidance.htm). If a patient's risk of exposure is high (e.g., close contact with a laboratory-confirmed case of SARS-CoV disease), the clinical criteria should be expanded to include, in addition to fever or lower respiratory symptoms, the other early symptoms of SARS-CoV disease. **In the presence of person-to-person SARS-CoV transmission in the world but NO known transmission in the area around the facility:** Patients presenting with fever or lower respiratory symptoms should perform hand hygiene, wear a surgical mask (if possible), and be isolated in accordance with the recommendations in Supplement I. If airborne isolation is not possible, consider cohorting, with all patients wearing surgical masks. Evaluate patients according to the algorithm (Figure 2) in *Clinical Guidance on the Identification and Evaluation of Possible SARS-CoV Disease among Persons Presenting with Community-Acquired Illness* (www.cdc.gov/ncidod/sars/clinicalguidance.htm). If a patient's risk of exposure is high (e.g., close contact with a laboratory-confirmed case of SARS-CoV disease), the clinical criteria should be expanded to include, in addition to fever or lower respiratory symptoms, the other early symptoms of SARS-CoV disease. 3) Designated personnel Assign only selected, trained, and fit-tested emergency department staff to evaluate possible SARS cases. Staff should follow SARS infection control and PPE guidance, as specified in Supplement I. 4) Surveillance Depending on directives from local/state health departments, consider reporting of patients requiring hospitalization for unexplained pneumonia who have risk factors for SARS, as specified in Supplement B. 5) Healthcare worker restrictions Healthcare workers should notify the SARS coordinator at each facility where they work and have at least daily symptom checks if: They are caring for a SARS patient in another facility. They are also working in another facility that has reported nosocomial SARS-CoV transmission. They have close contact with SARS patients outside the hospital.

Matrix 1: Recommendations for Inpatient Facilities and Emergency Departments (continued)

Level of SARS activity	Suggested actions
A few cases in the facility, but all cases are imported (NO nosocomial transmission)	Triage activities/facility access controls Same as for "No cases of SARS in the facility." Add: No visitors to SARS patients unless necessary (e.g., parents, translators); visitors must receive infection control training. Designate specific SARS patient-flow routes (e.g., emergency department to designated elevator to AIIR; AIIR to radiology). Clean rooms housing SARS patients in accordance with current recommendations (see Supplement I). Patient placement Same as for "No cases of SARS in the facility." Add: Place admitted known or potential SARS patients in AIIRs if available. Consider cohorting admitted patients in private rooms on designated SARS units, depending on personnel and availability of AIIRs. Modify designated floors/rooms as possible. Designated personnel Same as for "No cases of SARS in the facility." Add: Assign only selected, trained, and fit-tested staff to SARS patient care (includes designated ancillary personnel). Assign a selected, trained, and fit-tested team with access to appropriate respiratory protection (see Supplement I) for emergency resuscitation or respiratory procedures in known or potential SARS patients. Surveillance Conduct active surveillance targeted to healthcare workers providing care to SARS patients (e.g., symptom monitoring). Healthcare worker restrictions Same as for "No cases of SARS in the facility." Add: No eating or drinking in SARS patient-care areas. Furlough healthcare workers with unprotected exposures to SARS patients during high-risk procedures, and institute checks to evaluate possible symptoms. Healthcare workers with other (non-high-risk) unprotected exposures to a SARS patient should undergo checks for possible symptoms. Furlough of these workers could be considered.

Matrix 1: Recommendations for Inpatient Facilities and Emergency Departments (continued)

Level of SARS activity	Suggested actions
A larger number of SARS cases in the facility OR nosocomial transmission with all cases linked to a clearly identified source	Triage activities/access controls Same as for "A few cases in the facility but all cases are imported." Add: Regardless of the level of SARS activity in the community around the facility: Limit visitors (e.g., one per patient per day). Maintain a log of all visitors to SARS patients to aid in contact tracing. Limit elective admissions/procedures. All healthcare workers and visitors should have a fever check and perform hand hygiene on entry. Patient placement Same as for "A few cases in the facility but all cases are imported." Add: Designated personnel Same as for "A few cases in the facility but all cases are imported." Surveillance Implement active healthcare worker surveillance (symptom monitoring) throughout the facility. Monitor all healthcare worker absenteeism and illnesses (e.g., through the occupational medicine clinic); evaluate for links to known SARS cases. Monitor for and evaluate all new fevers and lower respiratory illnesses among patients. Place any patient with unexplained fever or lower respiratory symptoms on SARS precautions, and evaluate in accordance with the algorithm (Figure 2) in *Clinical Guidance on the Identification and Evaluation of Possible SARS-CoV Disease among Persons Presenting with Community-Acquired Illness* (www.cdc.gov/ncidod/sars/clinicalguidance.htm). If a patient's risk of exposure is high (e.g., close contact with a laboratory-confirmed case of SARS-CoV disease), the clinical criteria should be expanded to include, in addition to fever or lower respiratory symptoms, the other early symptoms of SARS-CoV disease. Healthcare worker restrictions Same as for "A few cases in the facility but all cases are imported."

Matrix 1: Recommendations for Inpatient Facilities and Emergency Departments (continued)

Level of SARS activity	Suggested actions
Cases attributed to nosocomial transmission with NO clearly identified source	Triage activities/access controls Same as for "A larger number of cases or linked transmission." Add: No visitors allowed in hospital unless necessary (e.g., parents, translators); visitors must receive infection control training. Close emergency department and facility to admissions and transfers. Patient placement Same as for "A larger number of cases or linked transmission." Add: Consider cohorting patients and staff to care for patients in the following categories: Afebrile patients with no close SARS contact -- discharge as soon as medically indicated Afebrile patients with close SARS contact -- discharge as soon as medically indicated, with contact restrictions and health department follow-up per recommendations in Supplement D Febrile or symptomatic patients not meeting case definition Patients meeting case definition Designated personnel Same as for "A larger number of cases or linked transmission." Add: All persons in the facility should wear a surgical mask when not providing patient care (this is not meant to serve as SARS PPE but to limit potential SARS-CoV transmission from someone who develops SARS). When in contact with SARS patients, all persons should continue to follow SARS infection control guidance and PPE as specified in Supplement I. Surveillance Same as for "A larger number of cases or linked transmission." Add: Place any patient with new fever or lower respiratory illness (not just unexplained) on SARS precautions and evaluate in accordance with the SARS clinical algorithm. If a patient's risk of exposure is high (e.g., close contact with a laboratory-confirmed case of SARS-CoV disease), the clinical criteria should be expanded to include, in addition to fever or lower respiratory symptoms, the other early symptoms of SARS-CoV disease. Healthcare worker restrictions Same as for "A larger number of cases or linked transmission." Add: Depending on staffing issues, either: Implement home/work restrictions for all healthcare workers in the facility, or Restrict movement to work and home for all healthcare workers who worked in an area of the facility where nosocomial transmission may have occurred.

Matrix 2: Recommendations for Outpatient Facilities/Areas

Level of SARS activity	Suggested actions
No person-to-person SARS transmission reported anywhere in the world	Patient screening and precautions In accordance with recommendations for respiratory hygiene/cough etiquette, instruct all patients with symptoms of a respiratory infection to perform hand hygiene and cover the nose/mouth. Manage these patients with Droplet Precautions until it is determined that they are not needed. If there are likely to be delays in moving patients out of the waiting area, consider dividing the area so that patients with respiratory illnesses do not sit near others. Healthcare worker precautions Healthcare workers seeing patients with respiratory illness should use Droplet Precautions. During respiratory illness season, intake/triage staff should practice frequent hand hygiene and could be given the option of wearing surgical masks. Infrastructure issues The facility will need a supply of waterless hand-hygiene products, surgical masks, and other applicable PPE and will need to consider the logistics of implementing a respiratory hygiene/cough etiquette strategy.

Matrix 2: Recommendations for Outpatient Facilities/Areas (continued)

Level of SARS activity	Suggested actions
Presence of person-to-person SARS transmission worldwide but no known transmission in the area around the facility	Patient screening and precautions Same as for "No person-to-person SARS transmission in the world." Add: Screen all patients and visitors with fever or lower respiratory symptoms for SARS epidemiologic links (e.g., travel to endemic areas or contact with known cases). Instruct anyone with fever or lower respiratory symptoms ***and*** epidemiologic risks for SARS to wear a surgical mask (if tolerated) and to perform hand hygiene. Place these patients immediately in a private room. Transfer these patients as soon as possible to a facility where they can be isolated appropriately during the evaluation. Notify receiving facilities that the patient is being sent for evaluation of SARS. If a patient's risk of exposure is high (e.g., close contact with a laboratory-confirmed case of SARS-CoV disease), the clinical criteria should be expanded to include, in addition to fever or lower respiratory symptoms, the other early symptoms of SARS-CoV disease. Manage outpatients in accordance with *Clinical Guidance on the Identification and Evaluation of Possible SARS-CoV Disease among Persons Presenting with Community-Acquired Illness* (www.cdc.gov/ncidod/sars/clinicalguidance.htm). Healthcare worker precautions Same as for "No person-to-person SARS transmission in the world." Add: Healthcare workers who are in direct contact with patients who might have SARS should wear full SARS PPE (see Supplement I). Infrastructure issues Same as for "No person-to-person SARS transmission in the world." Add: The facility will need a supply of PPE (e.g., gowns, gloves, eye protection, respirators [N-95 or higher level]).
Known transmission in the area around the facility	1) Patient screening and precautions Screen all patients and visitors for fever and lower respiratory symptoms both when appointments are made and when they arrive at the clinic. Refer persons with these symptoms to a facility where they can be isolated appropriately during evaluation. Warn receiving facilities that the patient is being sent for evaluation of SARS. If a patient's risk of exposure is high (e.g., close contact with a laboratory-confirmed case of SARS-CoV disease), the clinical criteria should be expanded to include, in addition to fever or respiratory symptoms, the other early symptoms of SARS-CoV disease. Healthcare worker precautions Same as for "Person-to-person SARS transmission worldwide but no known transmission in the area around the facility." Infrastructure issues Same as for "Person-to-person SARS transmission worldwide but no known transmission in the area around the facility."

Matrix 3: Recommendations for Long-Term Care Facilities

Level of SARS activity	Suggested actions
No person-to-person SARS transmission reported anywhere in the world	Patient precautions In accordance with recommendations for respiratory hygiene/cough etiquette, patients who develop symptoms of a respiratory infection should be placed on Droplet Precautions until determined that they are not needed. Healthcare worker precautions Healthcare workers seeing patients with respiratory illness should use Droplet Precautions and practice frequent hand hygiene. Infrastructure issues The facility will need supplies for Droplet Precautions (masks, gloves and gowns) and hand hygiene.
Presence of person-to-person SARS transmission worldwide, but no known transmission in the area around the facility	Patient precautions Same as for "No person-to-person SARS transmission reported anywhere in the world." Add: Screen all potential admissions for symptoms and epidemiologic links to SARS. Healthcare worker precautions Same as for "No person-to-person SARS transmission reported anywhere in the world." Infrastructure issues Same as for "No person-to-person SARS transmission reported anywhere in the world." Access controls Visitors should be screened for symptoms and epidemiologic links to SARS cases. Visitors with symptoms and epidemiologic links should not be allowed into the facility.
Known transmission in the area around the facility	1) Patient precautions Same as for "No person-to-person SARS transmission reported anywhere in the world." All new admissions should be evaluated at an acute-care facility (no direct admissions). Patients with fever or lower respiratory symptoms should be evaluated according to the algorithm (Figure 2) in *Clinical Guidance on the Identification and Evaluation of Possible SARS-CoV Disease among Persons Presenting with Community-Acquired Illness* (www.cdc.gov/ncidod/sars/clinicalguidance.htm) before being admitted. Patients who are asymptomatic but had exposures should be observed for 10 days for the development of symptoms before they are admitted. If there is significant transmission in the community around the facility, initiate surveillance for nosocomial lower respiratory illness, and transfer all patients who develop such illness to an acute-care facility for evaluation. Acute-care facilities should be notified that the patients are being transferred for evaluation of SARS. 2) Healthcare worker precautions Same as for "No person-to-person SARS transmission reported anywhere in the world." Healthcare workers should undergo symptom monitoring. Symptomatic healthcare workers should be furloughed and evaluated according to the algorithm (Figure 2) in *Clinical Guidance on the Identification and Evaluation of Possible SARS-CoV Disease among Persons Presenting with Community-Acquired Illness* (www.cdc.gov/ncidod/sars/clinicalguidance.htm). 3) Infrastructure issues Same as for "No person-to-person SARS transmission reported anywhere in the world." 4) Access controls Visitors should be actively screened for symptoms. Visitors with symptoms should not be allowed into the facility.

APPENDIX Yale Health 8: Varicella Exposure at Yale Health

Standard:

Yale Health Center will prevent the spread of Varicella when it is diagnosed in a patient or staff member.

Policy:

Yale Health Center staff will identify, report and use appropriate transmissions based precautions and personal protective measures to prevent further transmission when a patient is diagnosed with varicella in our facility.

Procedure:

1. Patients who call with symptoms of fever and a pruritic vesicular rash should be referred to a nurse or a CLINICIAN for phone triage. Obtain the name and telephone number of the patient. Before advising them to come into the facility, Varicella should be considered as a diagnosis. Please note that varicella requires airborne isolation.

    a. Patients with possible varicella who are severely ill or at risk for complications (immunocompromised patients, pregnant women) should be referred to Yale-New Haven Hospital (YNHH) for further evaluation and treatment. The ED at YNHH should be notified so that the patient can be evaluated with the appropriate airborne precautions.

    b. Patients who are not severely ill or at risk for complications should speak with a clinician to make arrangements to have the patient come to the facility wearing a surgical mask at a specific time or be given a surgical mask at the door. The ambulance enters should be used. The patient should be immediately escorted into the airborne isolation room in the Inpatient Care. The patient should only be cared for by immune staff. If an advance notice is possible, please notify the charge nurse in the Inpatient Care to confirm availability of the isolation room.

    c. If the patient is well enough to be discharged to home, they must be informed that they are infectious until all lesions are crusted over (generally about 7 days) and that they must stay out of work or school and avoid contact with anyone who is not immune to Varicella.

    e. If an undergraduate who lives in the dormitory is diagnosed with varicella, they may not be sent back to the dormitory and should be offered admission to the isolation room in the Inpatient Care if available. The policy **Managing Students With VaricellaChickenpox Or Other Potentially Serious Communicable Diseases** will be followed.

    g. Any exam room used for a Varicella patient can be cleaned according to the regular room cleaning procedure.

2. The clinician who makes the diagnosis of varicella will notify the Infection Control Practitioner, who will then report it to the State of Connecticut as per the Reportable Disease policy. The Infection Control practitioner will review the infection control practices used in caring for the index patient and report on this to the Infection Control committee. In off-

hours cases, the clinician of record for the case is responsible for instituting appropriate Infection Control precautions.

3. The Infection control practitioner will identify any staff members who were directly exposed to the index patient and either contact each of them or consult the employee health clinician to determine the staff members' varicella immunity status.

4. Any staff member who is determined not to have an immunity to varicella will be required to get a varicella titer immediately under the direction of the employee health clinician. A staff member with a history of the varicella vaccination only (not natural immunity) will also be required to get a varicella titer.

5. Any staff member whose varicella titer is negative will be placed on mandatory furlough or removed from patient care from day 10 to 21(the incubation period) post exposure to the index case to prevent possible varicella transmission to immunocompromised patients. At this time, the staff member can be offered the varicella vaccination (up to 72 hrs post exposure) if not previously vaccinated, which might help prevent a severe infection should they develop varicella. If they develop varicella during this incubation period, they must report it to the employee health department as well as notifying their primary provider to seek treatment. If they do not develop varicella beyond the incubation period, they are unlikely to become ill .Upon their return to duty, staff members who were not previously vaccinated should be encouraged to receive the vaccine.

6. Any exposed non –immune staff member who is immunocompromised or pregnant should be evaluated for possible administration of varicella-zoster immune globulin by a clinician with expertise in this area.

7. The Infection Control practitioner will also determine a list of potential patient contacts who may have shared the waiting room with the index case. The records of these patients will be reviewed if available to determine if any of them were immunocompromised or currently pregnant. All potentially exposed patients will be notified either by phone or letter if unavailable, that they may have been exposed to varicella. The patients will be advised that if they had a history of chicken pox, a positive varicella titer, or the varicella vaccine, they are unlikely to become ill. They will be advised to contact their own doctor immediately if they do not have a history of immunity, or if they are pregnant or immunocompromised. The primary physicians of any identified immunocompromised or pregnant patient will also be notified.

8. An asymptomatic patient who worries about exposure can be seen to have a baseline Varicella titer drawn and be offered the Varicella vaccine (if clinically appropriate).

9. At the end of the incubation period (post day 21), the Infection control committee will review the exposure history, along with any evidence of secondary transmission and review the infection control practices to make any recommendations for handling of future cases.

APPENDIX Yale Health 9: PnP for Visitors to Inpatient Care

Standard:

Yale Health's visitor policy balances the needs of patients and their families with heightened awareness of infectious disease control.

Policy:

It is important to have a policy for visitors to the IC that both protects visitors from infectious risks from patients and protects patients from infections that might be brought into the facility by visitors.

Procedure:

1. All visitors to patients in IC must check in at the nursing station before entering the patient's room. Visitors are encouraged to speak with the charge nurse for any questions or concerns.

2. Visitors who are suffering from cold or flu symptoms or other illness that may be contagious such as chicken pox, diarrhea, fever, cough, draining uncontained skin wounds, should refrain from visiting patients in the IC so as not to transmit a potentially contagious illness to patients who are already ill with other conditions. You should be free of any symptoms for 48 hours before coming to IC.

3. Visitors must observe all procedures related to transmission based precautions that pertain to the patients with whom they are visiting. The nursing staff will instruct visitors on the steps to observe the proper precautions including items such as the use of gowns, gloves, or masks, as well as proper hand washing and respiratory etiquette.

4. For patients on enhanced precautions, do not sit on the bed or use the patients' toilets, share patient toiletries, tissues, etc. or handle items of hospital equipment such as intravenous tubing or drains.

5. The nursing staff on duty and the administrators of Yale Health reserve the right to deny visitors permission to visit if it is determined that the visitors pose a potential increased threat of communicable disease, or if the visitors are unable or unwilling to follow the transmission based precautions.

6. Visitors may be asked to leave at any time if a patient's condition is judged to be deteriorating, if the patient is becoming fatigued or a clinical intervention is necessary.

APPENDIX Yale Health 10: PnP for Negative Pressure Rooms Inpatient Care and Use

Standard:

To provide a negative air pressure environment to safely care for persons requiring respiratory isolation.

Policy:

Patients admitted to Inpatient Care who require respiratory isolation will be placed in one of the two negative pressure rooms. Negative pressure will be maintained and monitored at all times.

Procedure:

1. The Inpatient Care charge nurse is alerted to the admission of a patient requiring respiratory isolation.
2. The room, either 10 or 11, is checked for all appropriate furniture and equipment required. Any unnecessary equipment is removed from the room.
3. The door to the room is shut and appropriate the signage is placed on the door.
4. The nurse will set the room to negative pressure by turning the key to the control switch at the nurse's station.
5. The monitoring box outside the room is checked by the nurse to assure negative pressure is attained.
6. After negative pressure is attained, the door is opened to test that the alarm sounds when the pressure is no longer negative.
7. The door is closed again and the nurse verifies that the pressure monitor goes back to the negative and the alarm stops.
8. Staff entering the room will open the door after donning PPE and will close the door immediately after entering the room.
    a. Traffic in and out of the room will be held to a minimum.
    b. No visitors will be allowed unless they have been authorized by the attending clinician, have been fit tested for a respirator, and have been instructed by staff on the proper use of personal protective equipment (PPE).
9. PPE will be removed by staff immediately after exiting the room and disposed of in the designated waste container outside of the room. Staff will take care to avoid contaminating themselves while removing the personal protective equipment and will wash hands immediately upon completion of this step.
10. When negative pressure rooms are in use, the pressure monitor outside the room will be checked by the nurse hourly.

11. If the negative pressure cannot be maintained, the patient will don an molded surgical mask and will be transported to the hospital via AMR as soon as possible.

. The receiving facility as well as the ambulance services will be informed of the need to use respiratory protection while caring for this patient.

12. The patient will remain in the room for the duration of their inpatient stay. Only transport within the building that is absolutely necessary for procedures will be authorized and the patient will wear a molded surgical mask during any required transport. The attending clinician can discontinue respiratory protection procedures after a diagnosis is established that does not require these procedures or once the patient is deemed noninfectious. Consultation with the Infection Control Staff or Medical Director is encouraged if there is any doubt about continuation of respiratory isolation.

13. Internal and external appointments for patients who are on isolation must be approved by the attending clinician.

Attached: Negative Pressure Weekly Monitoring Log

APPENDIX Yale Health 11: Guidelines for the Infection Control management and Prevention of Norovirus outbreaks

Noroviruses are the most common cause of epidemic gastroenteritis. These viruses are of particular importance in gastroenteritis outbreaks in long term care and other health care settings as well as the food service industry.
Noroviruses can cause gastroenteritis in patients of all ages. The incubation period is 12-48 hours and symptoms are characterized by acute onset of diarrhea (usually nonbloody), vomiting, nausea and abdominal cramps as well as occasional low grade fever and myalgias. Most cases resolve without treatment in 1-3 days. The virus is shed in the stool and vomitus and peak shedding is for 2-5 days, although the virus can be detected for up to 4 weeks. Norovirus is extremely contagious and is generally transmitted by person to person transmission, foodborne or waterborne transmission. Indirect exposure by contaminated fomites has also been implicated.
The following guidelines from the CDC are recommended as a response to suspected norovirus outbreaks and as prevention for the spread of the virus:

1. Report suspected norovirus outbreaks (defined as an unusually large number of cases in a patient population who either live or work in close proximity to each other) promptly to Infection Control in order that an investigation can be started to attempt to identify the source and prevent further transmission.

2. Enforce good hand hygiene by washing hands with soap and running water for at least 20 seconds. Note that alcohol-based hand sanitizers may not be as effective in the setting of norovirus outbreaks.

3. Institute contact precautions for any patients admitted to the infirmary or when caring for patients that might be incontinent or wearing diapers. In settings with widespread illness, consider assigning exposed staff members only to care for patients admitted with norovirus symptoms and re-assign non exposed staff to other patient areas.

4. During times of widespread illness, visitors to the infirmary will be screened for symptoms of gastrointestinal illness and not be admitted to the unit if they have symptoms. Visitors to patients with norovirus symptoms will be kept to the minimal number necessary for patient comfort and must adhere to strict contact precautions.

5. Employees or students who are ill with a norovirus like illness will remain home for 48-72 hours after symptom resolution.

6. Environmental surfaces will be first cleaned to remove any soiled material and then disinfected with either a 1:10 solution of bleach or the institutionally approved disinfectant for norovirus.

7. Attempt to collect specimens for testing from at least 5 acutely ill patients to test for norovirus. (whole stool specimens can be sent for PCR testing)

8. Report all suspected norovirus outbreaks to the local and state health departments using our standard reportable disease policy and procedure.

APPENDIX Yale Health 12: Yale Health Procedure for Discontinuation of Airborne Isolation for rule out Tuberculosis patients

1. All suspected or known patients with tuberculosis who are admitted to the ICF must be admitted to the airborne isolation room according to airborne transmission based precautions outlined in the Infection Control manual.
2. Airborne precautions may be discontinued when infectious TB disease is considered unlikely and either 1) another diagnosis is made that explains the clinical syndrome or 2) the patient has three consecutive, negative AFB sputum smear results. Each of the three sputum specimens should be collected in 8–24-hour intervals, and at least one specimen should be an early morning specimen.

Yale Health Infection Control Committee