

Table B. Disease-specific Isolation Precautions

DISEASE	PRECAUTIONS INDICATED				INFECTIVE MATERIAL	APPLY PRECAUTIONS HOW LONG?	COMMENTS
	PRIVATE ROOM?	MASKS?	GOWNS?	GLOVES?			
Gonorrhea	No	No	No	No	Discharge may be		
Granulocytopenia	No	No	No	No			Wash hands well <i>before</i> taking care of patient (see separate section on Care of Severely Compromised Patients).
Granuloma inguinale (donovaniasis, granuloma venereum)	No	No	No	No	Drainage may be		
Guillain-Barré syndrome	No	No	No	No			
Hand, foot, and mouth disease	Yes if patient hygiene is poor	No	Yes if soiling is likely	Yes for touching infective material	Feces	For 7 days after onset	
Hemorrhagic fevers (for example, Lassa fever)	Yes with special ventilation	Yes	Yes	Yes	Blood, body fluids, and respiratory secretions	Duration of illness	Call the State Health Department and Centers for Disease Control for advice about management of a suspected case.
Hepatitis, viral							
Type A (infectious)	Yes if patient hygiene is poor	No	Yes if soiling is likely	Yes for touching infective material	Feces may be	For 7 days after onset of jaundice	Hepatitis A is most contagious before symptoms and jaundice appear; once these appear, small, inapparent amounts of feces, which may contaminate the hands of personnel during patient care, do not appear to be infective. Thus, gowns and gloves are most useful when gross soiling with feces is anticipated or possible.
Type B ("serum hepatitis"), including hepatitis B antigen (HBsAg) carrier	No	No	Yes if soiling is likely	Yes for touching infective material	Blood and body fluids	Until patient is HBsAg-negative	Use caution when handling blood and blood-soiled articles. Take special care to avoid needle-stick injuries. Pregnant personnel may need special counseling (see CDC Guideline for Infection Control in Hospital Personnel). Gowns are indicated when clothing may become contaminated with body fluids or blood

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Hepatitis, viral Type B (cont.)							(for example, when blood splattering is anticipated). If gastrointestinal bleeding is likely, wear gloves if touching feces. A private room may be indicated if profuse bleeding is likely to cause environmental contamination.
Non-A, Non-B	No	No	Yes if soiling is likely	Yes for touching infective material	Blood and body fluids	Duration of illness	Currently, the period of infectivity cannot be determined.
Unspecified type, consistent with viral etiology							Maintain precautions indicated for the infections that are most likely.
Herpangina	Yes if patient hygiene is poor	No	Yes if soiling is likely	Yes for touching infective material	Feces	For 7 days after onset	
Herpes simplex (<i>Herpesvirus hominis</i>)							
Encephalitis	No	No	No	No			
Mucocutaneous, disseminated or primary, severe (skin, oral, and genital)	Yes	No	Yes if soiling is likely	Yes for touching infective material	Lesion secretions from infected site	Duration of illness	
Mucocutaneous, recurrent (skin, oral, and genital)	No	No	No	Yes for touching infective material	Lesion secretions from infected site	Until all lesions are crusted	
Neonatal (see comments for newborn with perinatal exposure)	Yes	No	Yes if soiling is likely	Yes for touching infective material	Lesion secretions	Duration of illness	The same isolation precautions are indicated for infants delivered (either vaginally or by cesarean section if membranes have been ruptured for more than 4–6 hours) to women with active genital herpes simplex infections. Infants delivered by cesarean section to women with active genital herpes simplex infections before and probably within 4–6 hours after membrane rupture are at minimal risk of develop-

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Herpes simplex Neonatal (cont.)							ing herpes simplex infection; the same isolation precautions may still be indicated, however. (American Academy of Pediatrics Committee on Fetus and Newborn. Perinatal herpes simplex virus infections. Pediatrics 1980; 66:147-9. Also: Kibrick S. Herpes simplex infection at term. JAMA 1980; 243:157-60.)
Herpes zoster (varicella-zoster), Localized in immunocompromised patient, or disseminated	Yes	Yes	Yes	Yes for touching infective material	Lesion secretions and possibly respiratory secretions	Duration of illness	Localized lesions in immunocompromised patients frequently become disseminated. Because such dissemination is unpredictable, use the same isolation precautions as for disseminated disease. Persons who are not susceptible do not need to wear a mask. Persons susceptible to varicella-zoster (chickenpox) should, if possible, stay out of room. Special ventilation for the room, if available, may be advantageous, especially for outbreak control. Exposed susceptible patients should be placed on isolation precautions beginning at 10 days after exposure and continuing until 21 days after last exposure. See CDC Guideline for Infection Control in Hospital Personnel for recommendations for exposed susceptible personnel.
Localized in normal patient	Yes if patient hygiene is poor	No	No	Yes for touching infective material	Lesion secretions	Until all lesions are crusted	Persons susceptible to varicella-zoster (chickenpox) should, if possible, stay out of room. Roommates should not be susceptible to chickenpox.

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	PRIVATE ROOM?	MASKS?	GOWNS?	GLOVES?			
Histoplasmosis at any site	No	No	No	No			
Hookworm disease (ancylostomiasis, uncinariasis)	No	No	No	No			
Immunocompromised status	No	No	No	No			Wash hands well <i>before</i> taking care of patients (see separate section on Care of Severely Compromised Patients).
Impetigo	Yes if patient hygiene is poor	No	Yes if soiling is likely	Yes for touching infective material	Lesions	For 24 hours after start of effective therapy	
Infectious mononucleosis	No	No	No	No	Respiratory secretions may be		
Influenza Adults	No	No	No	No	Respiratory secretions may be		In the absence of an epidemic, influenza may be difficult to diagnose on clinical grounds. Most patients will have fully recovered by the time laboratory diagnosis is established; therefore, placing patients with suspect influenza on isolation precautions, although theoretically desirable, is simply not practical in most hospitals. During epidemics, the accuracy of clinical diagnosis increases, and patients believed to have influenza may be placed in the same room (cohorting). Amantadine prophylaxis may be useful to prevent symptomatic influenza A infections in high-risk patients during epidemics.
Infants and young children	Yes	No	Yes if soiling is likely	No	Respiratory secretions	Duration of illness	In the absence of an epidemic, influenza may be difficult to diagnose. During epidemics, patients believed to have influenza may be placed in the same room (cohorting).

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Jakob-Creutzfeldt disease	No	No	No	Yes for touching infective material	Blood, brain tissue, and spinal fluid	Duration of hospitalization	Use caution when handling blood, brain tissue or spinal fluid. (Jarvis WR. Precautions for Creutzfeldt-Jakob disease. Infect Control 1982; 3:238-9.)
Kawasaki syndrome	No	No	No	No			
Keratoconjunctivitis, infective	Yes if patient hygiene is poor	No	No	Yes for touching infective material	Purulent exudate	Duration of illness	
Lassa fever	Yes with special ventilation	Yes	Yes	Yes	Blood, body fluids, and respiratory secretions	Duration of illness	Call the State Health Department and Centers for Disease Control for advice about management of a suspected case.
Legionnaires' disease	No	No	No	No	Respiratory secretions may be		
Leprosy	No	No	No	No			
Leptospirosis	No	No	No	Yes for touching infective material	Blood and urine	Duration of hospitalization	
Listeriosis	No	No	No	No			
Lyme disease	No	No	No	No			
Lymphocytic choriomeningitis	No	No	No	No			
Lymphogranuloma venereum	No	No	No	No	Drainage may be		
Malaria	No	No	No	Yes for touching infective material	Blood	Duration of illness	
Marburg virus disease	Yes with special ventilation	Yes	Yes	Yes	Blood, body fluids, and respiratory secretions	Duration of illness	Call the State Health Department and Centers for Disease Control for advice about management of a suspected case.
Measles (rubella) atypical presentations	Yes	Yes for those close to patient	No	No	Respiratory secretions	For 4 days after start of rash, except in immunocompromised patients with whom precautions should be maintained for duration of illness	Persons who are not susceptible do not need to wear mask. Susceptible persons should, if possible, stay out of room.

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	PRIVATE ROOM?	MASKS?	GOWNS?	GLOVES?			
Melioidosis, all forms	No	No	No	No	Respiratory secretions may be, and, if a sinus is draining, drainage may be		
Meningitis							
Aseptic (nonbacterial or viral meningitis) (also see specific etiologies)	Yes if patient hygiene is poor	No	Yes if soiling is likely	Yes for touching infective material	Feces	For 7 days after onset	Enteroviruses are the most common cause of aseptic meningitis.
Bacterial, gram-negative enteric, in neonates	No	No	No	No	Feces may be		During a nursery outbreak, cohort ill and colonized infants, and use gowns if soiling is likely and gloves if touching feces.
Fungal	No	No	No	No			
<i>Haemophilus influenzae</i> , known or suspected	Yes	Yes for those close to patient	No	No	Respiratory secretions	For 24 hours after start of effective therapy	
<i>Listeria monocytogenes</i>	No	No	No	No			
<i>Neisseria meningitidis</i> (meningococcal), known or suspected	Yes	Yes for those close to patient	No	No	Respiratory secretions	For 24 hours after start of effective therapy	See CDC Guideline for Infection Control in Hospital Personnel for recommendations for prophylaxis after exposure.
Pneumococcal	No	No	No	No			
Tuberculous	No	No	No	No			Patient should be examined for evidence of current (active) pulmonary tuberculosis. If present, precautions are necessary (see tuberculosis).
Other diagnosed bacterial	No	No	No	No			
Meningococcal pneumonia	Yes	Yes for those close to patient	No	No	Respiratory secretions	For 24 hours after start of effective therapy	See CDC Guideline for Infection Control in Hospital Personnel for recommendations for prophylaxis after exposure.

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	PRIVATE ROOM?	MASKS?	GOWNS?	GLOVES?			
Meningococemia (meningococcal sepsis)	Yes	Yes for those close to patient	No	No	Respiratory secretions	For 24 hours after start of effective therapy	See CDC Guideline for Infection Control in Hospital Personnel for recommendations for prophylaxis after exposure.
<i>Molluscum contagiosum</i>	No	No	No	No			
Mucormycosis	No	No	No	No			
Multiply-resistant organisms,* infection or colonization.†							
Gastrointestinal	Yes	No	Yes if soiling is likely	Yes for touching infective material	Feces	Until off antimicrobials and culture-negative	In outbreaks, cohorting of infected and colonized patients may be indicated if private rooms are not available.
Respiratory	Yes	Yes for those close to patient	Yes if soiling is likely	Yes for touching infective material	Respiratory secretions and possibly feces	Until off antimicrobials and culture-negative	In outbreaks, cohorting of infected and colonized patients may be indicated if private rooms are not available.
Skin, Wound, or Burn	Yes	No	Yes if soiling is likely	Yes for touching infective material	Pus and possibly feces	Until off antimicrobials and culture-negative	In outbreaks, cohorting of infected and colonized patients may be indicated if private rooms are not available.
Urinary	Yes	No	No	Yes for touching infective material	Urine and possibly feces	Until off antimicrobials and culture-negative	Urine and urine-measuring devices are sources of infection, especially if the patient (or any nearby patients) has indwelling urinary catheter. In outbreaks, cohorting of infected and colonized patients may be indicated if private rooms are not available.
Mumps (infectious parotitis)	Yes	Yes for those close to patient	No	No	Respiratory secretions	For 9 days after onset of swelling	Persons who are not susceptible do not need to wear mask.

*The following multiply-resistant organisms are included:

- 1) Gram-negative bacilli resistant to all aminoglycosides that are tested. (In general, such organisms should be resistant to gentamicin, tobramycin, and amikacin for these special precautions to be indicated.)
- 2) *Staphylococcus aureus* resistant to methicillin (or nafcillin or oxacillin if they are used instead of methicillin for testing).
- 3) *Pneumococcus* resistant to penicillin.
- 4) *Haemophilus influenzae* resistant to ampicillin (beta-lactamase positive) and chloramphenicol.
- 5) Other resistant bacteria may be included if they are judged by the infection control team to be of special clinical and epidemiologic significance.

†Colonization may involve more than 1 site.

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	PRIVATE ROOM?	MASKS?	GOWNS?	GLOVES?	INFECTIVE MATERIAL	HOW LONG?	
Mycobacteria, nontuberculous (atypical)							
Pulmonary	No	No	No	No			
Wound	No	No	Yes if soiling is likely	Yes for touching infective material	Drainage may be	Duration of drainage	
Mycoplasma pneumonia	No	No	No	No	Respiratory secretions may be		A private room may be indicated for children.
Necrotizing enterocolitis	No	No	Yes if soiling is likely	Yes for touching infective material	Feces may be	Duration of illness	In nurseries, cohorting of ill infants is recommended. It is not known whether or how this disease is transmitted; nevertheless, gowns are recommended if soiling is likely, and gloves are recommended for touching feces.
Neutropenia	No	No	No	No			Wash hands well <i>before</i> taking care of patient (see separate section on Care of Severely Compromised Patients).
Nocardiosis							
Draining lesions	No	No	No	No	Drainage may be		
Other	No	No	No	No			
Norwalk agent gastroenteritis	Yes if patient hygiene is poor	No	Yes if soiling is likely	Yes for touching infective material	Feces	Duration of illness	
Orf	No	No	No	No	Drainage may be		
Parainfluenza virus infection, respiratory in infants and young children	Yes	No	Yes if soiling is likely	No	Respiratory secretions	Duration of illness	During epidemics, patients believed to have parainfluenza virus infection may be placed in the same room (cohorting).
Pediculosis	Yes if patient hygiene is poor	No	Yes for close contact	Yes for close contact	Infested area	For 24 hours after start of effective therapy	

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	PRIVATE ROOM?	MASKS?	GOWNS?	GLOVES?			
Pertussis ("whooping cough")	Yes	Yes for those close to patient	No	No	Respiratory secretions	For 7 days after start of effective therapy	See CDC Guideline for Infection Control in Hospital Personnel for recommendations for prophylaxis after exposure.
Pharyngitis, infective, etiology unknown							
Adults	No	No	No	No	Respiratory secretions may be		
Infants and young children	Yes if patient hygiene is poor	No	Yes if soiling is likely	No	Respiratory secretions	Duration of illness	Because adenoviruses, influenza viruses, and parainfluenza viruses have been associated with this syndrome (Committee on Infectious Diseases, American Academy of Pediatrics, 1982 Red Book), precautions to prevent their spread are generally indicated.
Pinworm infection	No	No	No	No			
Plague							
Bubonic	No	No	Yes if soiling is likely	Yes for touching infective material	Pus	For 3 days after start of effective therapy	
Pneumonic	Yes	Yes	Yes if soiling is likely	Yes for touching infective material	Respiratory secretions	For 3 days after start of effective therapy	
Pleurodynia	Yes if patient hygiene is poor	No	Yes if soiling is likely	Yes for touching infective material	Feces	For 7 days after onset	Enteroviruses frequently cause infection.
Pneumonia							
Bacterial not listed elsewhere (including gram-negative bacterial)	No	No	No	No	Respiratory secretions may be		
<i>Chlamydia</i>	No	No	No	Yes for touching infective material	Respiratory secretions	Duration of illness	

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	PRIVATE ROOM?	MASKS?	GOWNS?	GLOVES?			
Pneumonia (cont.) Etiology unknown							Maintain precautions indicated for the etiology that is most likely.
Fungal	No	No	No	No			
<i>Haemophilus influenzae</i>							
Adults	No	No	No	No	Respiratory secretions may be		
Infants and children (any age)	Yes	Yes for those close to patient	No	No	Respiratory secretions	For 24 hours after start of effective therapy	
<i>Legionella</i>	No	No	No	No	Respiratory secretions may be		
Meningococcal	Yes	Yes for those close to patient	No	No	Respiratory secretions	For 24 hours after start of effective therapy	See CDC Guideline for Infection Control in Hospital Personnel for recommendations for prophylaxis after exposure.
Multiply-resistant bacterial	Yes	Yes for those close to patient	Yes if soiling is likely	Yes for touching infective material	Respiratory secretions and possibly feces	Until off antimicrobials and culture-negative	In outbreaks, cohorting of infected and colonized patients may be necessary if private rooms are not available.
<i>Mycoplasma</i> (primary atypical pneumonia, Eaton agent pneumonia)	No	No	No	No	Respiratory secretions may be		A private room may be useful for children
Pneumococcal	No	No	No	No	Respiratory secretions may be for 24 hours after start of effective therapy		
<i>Pneumocystis carinii</i>	No	No	No	No			
<i>Staphylococcus aureus</i>	Yes	Yes for those close to patient	Yes if soiling is likely	Yes for touching infective material	Respiratory secretions	For 48 hours after start of effective therapy	
<i>Streptococcus</i> , group A	Yes	Yes for those close to patient	Yes if soiling is likely	Yes for touching infective material	Respiratory secretions	For 24 hours after start of effective therapy	

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	PRIVATE ROOM?	MASKS?	GOWNS?	GLOVES?			
Pneumonia (cont.)							
Viral (see also specific etiologic agents)							
Adults	No	No	No	No	Respiratory secretions may be		
Viral Infants and young children	Yes	No	Yes if soiling is likely	No	Respiratory secretions	Duration of illness	Viral pneumonia may be caused by various etiologic agents, such as parainfluenza viruses, influenza viruses, and, particularly, respiratory syncytial virus, in children less than 5 years old (Committee on Infectious Diseases, American Academy of Pediatrics, 1982 Red Book); therefore, precautions to prevent their spread are generally indicated.
Poliomyelitis	Yes if patient hygiene is poor	No	Yes if soiling is likely	Yes for touching infective material	Feces	For 7 days after onset	
Psittacosis (ornithosis)	No	No	No	No	Respiratory secretions may be		
Q fever	No	No	No	No	Respiratory secretions may be		
Rabies	Yes	Yes for those close to patient	Yes if soiling is likely	Yes for touching infective material	Respiratory secretions	Duration of illness	See CDC Guideline for Infection Control in Hospital Personnel for recommendations for prophylaxis after exposure.
Rat-bite fever (<i>Streptobacillus moniliformis</i> disease, <i>Spirillum minus</i> disease)	No	No	No	Yes for touching infective material	Blood	For 24 hours after start of effective therapy	
Relapsing fever	No	No	No	Yes for touching infective material	Blood	Duration of illness	
Resistant bacterial (see multiply-resistant bacteria)							

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	PRIVATE ROOM?	MASKS?	GOWNS?	GLOVES?			
Respiratory infectious disease, acute (if not covered elsewhere)							
Adults	No	No	No	No	Respiratory secretions may be		
Infants and young children							Maintain precautions indicated for the bacterial or viral infections that are most likely.
Respiratory syncytial virus (RSV) infection, in infants and young children	Yes	No	Yes if soiling is likely	No	Respiratory secretions	Duration of illness	During epidemics, patients believed to have RSV infection may be placed in the same room (cohorting). The use of masks has not been recommended since they have proven ineffective in controlled studies.
Reye syndrome	No	No	No	No			
Rheumatic fever	No	No	No	No			
Rhinovirus infection, respiratory							
Adults	No	No	No	No	Respiratory secretions may be		
Infants and young children	Yes	No	Yes if soiling is likely	No	Respiratory secretions	Duration of illness	
Rickettsial fevers, tickborne (Rocky Mountain spotted fever, tickborne typhus fever)	No	No	No	No	Blood may be		
Rickettsialpox (vesicular rickettsiosis)	No	No	No	No			
Ringworm (dermatophytosis, dermatomycosis, tinea)	No	No	No	No			
Ritter's disease (staphylococcal scalded skin syndrome)	Yes	No	Yes if soiling is likely	Yes for touching infective material	Lesion drainage	Duration of illness	
Rocky Mountain spotted fever	No	No	No	No	Blood may be		

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	PRIVATE ROOM?	MASKS?	GOWNS?	GLOVES?			
Roseola infantum (exanthem subitum)	No	No	No	No			
Rotavirus infection (viral gastroenteritis)	Yes if patient hygiene is poor	No	Yes if soiling is likely	Yes for touching infective material	Feces	Duration of illness or 7 days after onset, whichever is less	
Rubella ("German measles") (see also congenital rubella)	Yes	Yes for those close to patient	No	No	Respiratory secretions	For 7 days after onset of rash	Persons who are not susceptible do not need to wear a mask. Susceptible persons should, if possible, stay out of room. Pregnant personnel may need special counseling (see CDC Guideline for Infection Control in Hospital Personnel).
Salmonellosis	Yes if patient hygiene is poor	No	Yes if soiling is likely	Yes for touching infective material	Feces	Duration of illness	
Scabies	Yes if patient hygiene is poor	No	Yes for close contact	Yes for close contact	Infested area	For 24 hours after start of effective therapy	
Scalded skin syndrome, staphylococcal (Ritter's disease)	Yes	No	Yes if soiling is likely	Yes for touching infective material	Lesion drainage	Duration of illness	
Schistosomiasis (bilharziasis)	No	No	No	No			
Shigellosis (including bacillary dysentery)	Yes if patient hygiene is poor	No	Yes if soiling is likely	Yes for touching infective material	Feces	Until 3 consecutive cultures of feces, taken after ending antimicrobial therapy, are negative for infecting strain	
Smallpox (variola)	Yes with special ventilation	Yes	Yes	Yes	Respiratory secretions and lesion secretions	Duration of illness	As long as smallpox virus is kept stocked in laboratories, the potential exists for cases to occur. Call the State Health Department and Centers for Disease Control for advice about management of a suspected case.

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	PRIVATE ROOM?	MASKS?	GOWNS?	GLOVES?			
Sporotrichosis	No	No	No	No			
<i>Spirillum minus</i> disease (rat-bite fever)	No	No	No	Yes for touching infective material	Blood	For 24 hours after start of effective therapy	
Staphylococcal disease (<i>S. aureus</i>)							
Skin, wound, or burn infection							
Major	Yes	No	Yes if soiling is likely	Yes for touching infective material	Pus	Duration of illness	Major = draining and not covered by dressing or dressing does not adequately contain the pus.
Minor or limited	No	No	Yes if soiling is likely	Yes for touching infective material	Pus	Duration of illness	Minor or limited = dressing covers and adequately contains the pus, or infected area is very small.
Enterocolitis	Yes if patient hygiene is poor	No	Yes if soiling is likely	Yes for touching infective material	Feces	Duration of illness	
Pneumonia or draining lung abscess	Yes	Yes for those close to patient	Yes if soiling is likely	Yes for touching infective material	Respiratory secretions	For 48 hours after start of effective therapy	
Scalded skin syndrome	Yes	No	Yes if soiling is likely	Yes for touching infective material	Lesion drainage	Duration of illness	
Toxic shock syndrome	No	No	Yes if soiling is likely	Yes for touching infective material	Vaginal discharge or pus	Duration of illness	
<i>Streptobacillus moniliformis</i> disease (rat-bite fever)	No	No	No	Yes for touching infective material	Blood	For 24 hours after start of effective therapy	
Streptococcal disease (group A <i>Streptococcus</i>)							
Skin, wound, or burn infection							
Major	Yes	No	Yes if soiling is likely	Yes for touching infective material	Pus	For 24 hours after start of effective therapy	Major = draining and not covered by dressing or dressing does not adequately contain the pus.

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Streptococcal disease (group A—cont.) Minor or limited	No	No	Yes if soiling is likely	Yes for touching infective material	Pus	For 24 hours after start of effective therapy	Minor or limited = dressing covers and adequately contains the pus, or infected area is very small.
Endometritis (puerperal sepsis)	Yes if patient hygiene is poor	No	Yes if soiling is likely	Yes for touching infective material	Vaginal discharge	For 24 hours after start of effective therapy	
Pharyngitis	Yes if patient hygiene is poor	No	No	No	Respiratory secretions	For 24 hours after start of effective therapy	
Pneumonia	Yes	Yes for those close to patient	Yes if soiling is likely	Yes for touching infective material	Respiratory secretions	For 24 hours after start of effective therapy	
Scarlet fever	Yes if patient hygiene is poor	No	No	No	Respiratory secretions	For 24 hours after start of effective therapy	
Streptococcal disease (group B <i>Streptococcus</i>), neonatal	No	No	No	No	Feces may be		During a nursery outbreak, cohorting of ill and colonized infants and use of gowns and gloves is recommended.
Streptococcal disease (not group A or B) unless covered elsewhere	No	No	No	No			
Strongyloidiasis	No	No	No	No	Feces may be		If the patient is immunocompromised and has pneumonia or has disseminated disease, respiratory secretions may be infective.
Syphilis							
Skin and mucous membrane, including congenital, primary, and secondary	No	No	No	Yes for touching infective material	Lesion secretions and blood	For 24 hours after start of effective therapy	Skin lesions of primary and secondary syphilis may be highly infective.
Latent (tertiary) and seropositivity without lesions	No	No	No	No			

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	PRIVATE ROOM?	MASKS?	GOWNS?	GLOVES?			
Tapeworm disease							
<i>Hymenolepis nana</i>	No	No	No	No	Feces may be		
<i>Taenia solium</i> (pork)	No	No	No	No	Feces may be		
Other	No	No	No	No			
Tetanus	No	No	No	No			
Tinea (fungus infection dermatophytosis, dermatomycosis, ringworm)	No	No	No	No			
"TORCH" syndrome (If congenital forms of the following diseases are seriously being considered, see separate listing for these diseases: toxoplasmosis, rubella, cytomegalovirus, herpes, and syphilis.)							
Toxoplasmosis	No	No	No	No			
Toxic shock syndrome (staphylococcal disease)	No	No	Yes if soiling is likely	Yes for touching infective material	Vaginal discharge and pus	Duration of illness	
Trachoma, acute	No	No	No	Yes for touching infective material	Purulent exudate	Duration of illness	
Trench mouth (Vincent's angina)	No	No	No	No			
Trichinosis	No	No	No	No			
Trichomoniasis	No	No	No	No			
Trichuriasis (whipworm disease)	No	No	No	No			
Tuberculosis							
Extrapulmonary, draining lesion (including scrofula)	No	No	Yes if soiling is likely	Yes for touching infective material	Pus	Duration of drainage	A private room is especially important for children.
Extrapulmonary, meningitis	No	No	No	No			

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	PRIVATE ROOM?	MASKS?	GOWNS?	GLOVES?			
Tuberculosis (cont.)							
Pulmonary, confirmed or suspected (sputum smear is positive or chest X-ray appearance strongly suggests current [active] TB, for example, a cavitory lesion is found), or laryngeal disease.	Yes with special ventilation	Yes if patient is coughing and does not reliably cover mouth	Yes if gross contamination of clothing is likely	No	Airborne droplet nuclei	In most instances the duration of isolation precautions can be guided by clinical response and a reduction in numbers of TB organisms on sputum smear. Usually this occurs within 2-3 weeks after chemotherapy is begun. When the patient is likely to be infected with isoniazid-resistant organisms, apply precautions until patient is improving and sputum smear is negative for TB organisms.	Prompt use of effective antituberculous drugs is the most effective means of limiting transmission. Gowns are not important because TB is rarely spread by fomites, although gowns are indicated to prevent gross contamination of clothing. For more detailed guidelines refer to "Guidelines for Prevention of TB Transmission in Hospitals" (1982), Tuberculosis Control Division, Center for Prevention Services, Centers for Disease Control, Atlanta, GA, (HHS Publication No. [CDC] 82-8371) and CDC Guideline for Infection Control in Hospital Personnel. In general, infants and young children do not require isolation precautions because they rarely cough and their bronchial secretions contain few TB organisms compared to adults with pulmonary TB.
Skin-test positive with no evidence of current pulmonary disease (sputum smear is negative, X-ray not suggestive of current [active] disease)	No	No	No	No			
Tularemia							
Draining lesion	No	No	Yes if soiling is likely	Yes for touching infective material	Pus may be	Duration of illness	
Pulmonary	No	No	No	No	Respiratory secretions may be		

Table B. Disease-specific Isolation Precautions

DISEASE	PRECAUTIONS INDICATED				INFECTIVE MATERIAL	APPLY PRECAUTIONS HOW LONG?	COMMENTS
	PRIVATE ROOM?	MASKS?	GOWNS?	GLOVES?			
Typhoid fever	Yes if patient hygiene is poor	No	Yes if soiling is likely	Yes for touching infective material	Feces	Duration of illness	
Typhus, endemic and epidemic	No	No	No	No	Blood may be		
Urinary tract infection (including pyelonephritis), with or without urinary catheter	No	No	No	No			See multiply-resistant bacteria if infection is with these bacteria. Spatially separate infected and uninfected patients who have indwelling catheters (see CDC Guideline for Prevention of Catheter-associated Urinary Tract Infection).
Vaccinia							
At vaccination site	No	No	Yes if soiling is likely	Yes for touching infective material	Lesion secretions	Duration of illness	
Generalized and progressive, eczema vaccinatum	Yes	No	Yes if soiling is likely	Yes for touching infective material	Lesion secretions	Duration of illness	
Varicella (chickenpox)	Yes	Yes	Yes	Yes	Respiratory secretions and lesion secretions	Until all lesions are crusted	Persons who are not susceptible do not need to wear a mask. Susceptible persons should, if possible, stay out of the room. Special ventilation for the room, if available, may be advantageous, especially for outbreak control. Neonates born to mothers with active varicella should be placed on isolation precautions at birth. Exposed susceptible patients should be placed on isolation precautions beginning 10 days after exposure and continuing until 21 days after last exposure. See CDC Guideline for Infection Control in Hospital Personnel for recommendations for exposed susceptible personnel.

Table B. Disease-specific Isolation Precautions

DISEASE	PRECAUTIONS INDICATED				INFECTIVE MATERIAL	APPLY PRECAUTIONS HOW LONG?	COMMENTS
	PRIVATE ROOM?	MASKS?	GOWNS?	GLOVES?			
Variola (smallpox)	Yes with special ventilation	Yes	Yes	Yes	Respiratory secretions and lesion secretions	Duration of illness	Call the State Health Department and Centers for Disease Control for advice about management of a suspected case.
<i>Vibrio parahaemolyticus</i> gastroenteritis	Yes if patient hygiene is poor	No	Yes if soiling is likely	Yes for touching infective material	Feces	Duration of illness	
Vincent's angina (trench mouth)	No	No	No	No			
Viral diseases							
Pericarditis, myocarditis, or meningitis	Yes if patient hygiene is poor	No	Yes if soiling is likely	Yes for touching infective material	Feces and possibly respiratory secretions	For 7 days after onset	Enteroviruses frequently cause these infections.
Respiratory (if not covered elsewhere)							
Adults	No	No	No	No	Respiratory secretions may be		
Infants and young children	Yes	No	Yes if soiling is likely	No	Respiratory secretions	Duration of illness	Various etiologic agents, such as respiratory syncytial virus, parainfluenza viruses, adenoviruses, and influenza viruses, can cause viral respiratory infections (Committee on Infectious Diseases, American Academy of Pediatrics, 1982 Red Book); therefore, precautions to prevent their spread are generally indicated.
Whooping cough (pertussis)	Yes	Yes for those close to patient	No	No	Respiratory secretions	For 7 days after start of effective therapy	See CDC Guideline for Infection Control in Hospital Personnel for recommendations for prophylaxis after exposure.
Wound infections							
Major	Yes	No	Yes if soiling is likely	Yes for touching infective material	Pus	Duration of illness	Major = draining and not covered by dressing or dressing does not adequately contain the pus.

Table B. Disease-specific Isolation Precautions

DISEASE	PRECAUTIONS INDICATED				INFECTIVE MATERIAL	APPLY PRECAUTIONS HOW LONG?	COMMENTS
	PRIVATE ROOM?	MASKS?	GOWNS?	GLOVES?			
Wound infections (cont.) Minor or limited	No	No	Yes if soiling is likely	Yes for touching infective material	Pus	Duration of illness	Minor or limited = dressing covers and adequately contains the pus, or infected area is very small, such as a stitch abscess.
<i>Yersinia enterocolitica</i> gastroenteritis	Yes if patient hygiene is poor	No	Yes if soiling is likely	Yes for touching infective material	Feces	Duration of illness	
Zoster (varicella-zoster).							
Localized in immunocompromised patient or disseminated	Yes	Yes	Yes	Yes for touching infective material	Lesion secretions	Duration of illness	Localized lesions in immunocompromised patients frequently become disseminated. Because such dissemination is unpredictable, use the same isolation precautions as with disseminated disease. Persons who are not susceptible do not need to wear a mask. Persons susceptible to varicella-zoster (chickenpox) should, if possible, stay out of the room. Special ventilation for room, if available, may be advantageous, especially for outbreak control. Exposed susceptible patients should be placed on isolation precautions beginning 10 days after exposure and continuing until 21 days after last exposure. See CDC Guideline for Infection Control in Hospital Personnel for recommendations for exposed susceptible personnel.
Localized in normal patient	Yes if patient hygiene is poor	No	No	Yes for touching infective material	Lesion secretions	Until all lesions are crusted	Persons susceptible to varicella-zoster (chickenpox) should, if possible, stay out of room. Roommates should not be susceptible to chickenpox.
Zygomycosis (phycomycosis, mucormycosis)	No	No	No	No			

SECTION 4: MODIFICATION OF ISOLATION PRECAUTIONS

MODIFICATION OF ISOLATION PRECAUTIONS IN INTENSIVE CARE UNITS

Patients requiring intensive care are usually at higher risk than other patients of becoming colonized or infected with organisms of special clinical or epidemiologic significance. Three reasons are that contacts between these patients and personnel are frequent, the patients are clustered in a confined area, and many of them are unusually susceptible to infection. Moreover, critically ill patients are more likely to have multiple invasive procedures performed on them. Because there is ample opportunity for cross-infection in the Intensive Care Unit (ICU), infection control precautions must be done scrupulously. Frequent in-service training and close supervision to ensure adequate application of infection control and isolation precautions are particularly important for ICU personnel. (See Guideline for Hospital Environmental Control: Intensive Care Units.)

Most ICUs pose special problems for applying isolation precautions, hence some modifications that will neither compromise patient care nor increase the risk of infection to other patients or personnel may be necessary. The isolation precaution that will most often have to be modified is the use of a private room. Ideally, private rooms should be available in ICUs, but some ICUs do not have them or do not use them for patients who are critically ill if frequent and easy accessibility by personnel is crucial. When a private room is not available or is not desirable because of the patient's critical condition, and if airborne transmission is *not* likely, an isolation area can be defined within the ICU by curtains, partitions, or an area marked off on the floor with tape. Instructional cards can be posted to inform personnel and visitors about the isolation precautions in use.

Patients with infections that can cause serious illness (for example, chickenpox) if transmitted in hospitals, should be put in a private room even when the ICU does not have one. Because the risk of these highly contagious or virulent infections to patients and personnel is great, the inconvenience and expense associated with intensive care in a private room outside the ICU must be accepted.

One isolation precaution that should never be modified in intensive care units is frequent and appropriate handwashing. Hands should be washed between patients and may need to be washed several times during the care of a patient so that microorganisms are not transmitted from 1 site to another on the same patient; for example, from urinary tract to wound. Antiseptics, rather than soap, should be considered for handwashing in intensive care units. (See Guideline for Hospital Environmental Control: Antiseptics, Handwashing, and Handwashing Facilities.)

MODIFICATION OF ISOLATION PRECAUTIONS FOR NEWBORNS AND INFANTS

Isolation precautions for newborns and infants may have to be modified from those recommended for adults because 1) usually only a small number of private rooms are available for newborns and infants, and 2) during outbreaks, it is frequently necessary to establish cohorts of newborns and infants. Moreover, a newborn may need to be placed on isolation precautions at delivery because its mother has an infection.

It has often been recommended that infected newborns or those suspected of being infected (regardless of the pathogen and clinical manifestations) should be put in a private room. This recommendation was based on the assumptions that a geographically isolated room was necessary to protect uninfected newborns and that infected newborns would receive closer scrutiny and better care in such a room. Neither of these assumptions is completely correct.

Separate isolation rooms are seldom indicated for newborns with many kinds of infection if the following conditions are met: 1) an adequate number of nursing and medical personnel are on duty and have sufficient time for appropriate handwashing, 2) sufficient space is available for a 4- to 6-foot aisle or area between newborn stations, 3) an adequate number of sinks for handwashing are available in each nursery room or area, and 4) continuing instruction is given to personnel about the mode of transmission of infections. When these criteria are not met, a separate room with handwashing facilities may be indicated.

Another incorrect assumption regarding isolation precautions for newborns and infants is that forced-air incubators can be substituted for private rooms. These incubators may filter the incoming air but not the air discharged into the nursery. Moreover, the surfaces of incubators housing newborns or infants can easily become contaminated with organisms infecting or colonizing the patient, so personnel working with the patient through portholes may have their hands and forearms colonized. Forced-air incubators, therefore, are satisfactory for limited "protective" isolation of newborns and infants but should not be relied on as a major means of preventing transmission from infected patients to others.

Isolation precautions for an infected or colonized newborn or infant, or for a newborn of a mother suspected of having an infectious disease can be determined by the specific viral or bacterial pathogen, the clinical manifestations, the source and possible modes of transmission, and the number of colonized or infected newborns or infants. Other factors to be considered include the overall condition of the newborn or infant and the kind of care required, the available space and facilities, the nurse-to-patient ratio, and the size and type of nursery services for newborns and infants.

In addition to applying isolation precautions, cohorts may be established to keep to a minimum the transmission of organisms or infectious diseases among different groups of newborns and infants in large nurseries. A cohort usually consists of all well newborns from the same 24- or 48-hour birth period; these newborns are admitted to and kept in a single nursery room and, ideally, are taken care of by a single group of personnel who do not take care of any other cohort during the same shift. After the newborns in a cohort have been discharged, the room is thoroughly cleaned and prepared to accept the next cohort.

Cohorting is not practical as a routine for small nurseries or in neonatal intensive care units or graded care nurseries. It is useful in these nurseries, however, as a control measure during outbreaks or for managing a group of infants or newborns colonized or infected with an epidemiologically important pathogen. Under these circumstances, having separate rooms for each cohort is ideal, but not mandatory for many kinds of infections if cohorts can be kept separate within a single large room and if personnel are assigned to take care of only those in the cohort.

During outbreaks, newborns or infants with overt infection or colonization and personnel who are carriers, if indicated, should be identified rapidly and placed in cohorts; if rapid identification is not possible, exposed newborns or infants should be placed in a cohort separate from those with disease and from unexposed infants and newborns and new admissions. The success of cohorting depends largely on the willingness and ability of nursing and ancillary personnel to adhere strictly to the cohort system and to meticulously follow patient-care practices.

CARE OF SEVERELY COMPROMISED PATIENTS

Patients with certain diseases (for example, leukemia, cancer, and extensive skin conditions, such as severe burns or dermatitis) and patients who are receiving certain therapeutic regimens (for example, total body irradiation, steroid or antimetabolite therapy) are highly susceptible to infection. These compromised patients are often on special "protective" patient-care regimens intended to reduce the risk of infection. One such regimen, Protective Isolation (as outlined in the previous editions of *Isolation Techniques for Use in Hospitals*), does not appear to reduce this risk any more than strong emphasis on appropriate handwashing during patient care.

Protective isolation, as previously outlined, may fail to reduce the risk of infection because compromised patients are often infected by their own (endogenous) microorganisms or are colonized and infected by microorganisms transmitted by the inadequately washed hands of personnel or by nonsterile items used in routine protective isolation. Such items may include patient-care equipment, food, water, and air. Some

studies suggest that vigorous efforts to exclude all microorganisms by using patient-isolator units, eradicating endogenous flora, and sterilizing food, water, and fomites may prevent or delay onset of some infections; thus, these procedures have been recommended by some for use with very-high-risk patients who have a predictable temporary period of high susceptibility. However, these extraordinary and expensive precautions do not appear warranted for most compromised patients.

In general, compromised patients should be taken care of by using precautions that are no different from routine good patient-care techniques, but for these patients, routine techniques must be emphasized and enforced. All personnel must frequently and appropriately wash their hands before, during, and after patient care. Compromised patients should be kept separate from patients who are infected or have conditions that make infection transmission likely. They should be put in private rooms whenever possible.

CARE OF PATIENTS WITH BURNS

Burn wounds have been classified as major or minor by various investigators according to several risk factors for burn-associated complications. We have considered only the infectious complications of burns. Therefore, we have classified major burn wounds as those that cannot effectively be covered or whose drainage cannot effectively be contained by use of dressings. The drainage from a minor burn can be covered and contained by dressings.

Most major burn wounds and many minor ones have become infected by the second or third day after the burn occurs. Care of burn patients, therefore, involves efforts to prevent colonization and infection of the wound, and isolation precautions to prevent transmission to other patients. Other important methods of care include use of topical and systemic antimicrobials, vaccines, and general supportive measures.

It is beyond the scope of this guideline to present comprehensive infection control recommendations for taking care of patients with burns. We have, however, made recommendations for isolation precautions for both major and minor burns infected with various pathogens. Rather than listing burn wounds separately, we have grouped them under the subheading "skin, wound, or burn infection."

Isolation precautions and infection control techniques for major burn wounds vary among burn centers. These precautions may involve the use of strictly enforced, frequent handwashing, sterile gowns, sterile gloves, and masks. Since it is not possible to "isolate" a major wound by use of dressings, a private room or a special burn center is indicated for such patients. (American College of Surgeons. Total care for burn patients: a guide to hospital resources. *Bull Am Coll Surgeons* 1977; 62:6-14.)

Guideline for Infection Control in Hospital Personnel

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CDC GUIDELINES ON INFECTION CONTROL

The Guideline for Infection Control in Hospital Personnel is part of the *Guidelines for Prevention and Control of Nosocomial Infections*. The CDC guidelines were developed to provide a central reference for professionals involved in infection control that contains CDC recommendations and is easily accessible to the infection control personnel in hospitals. It should be emphasized that these guidelines represent the advice of CDC on questions commonly asked of the Hospital Infections Program, but are not intended to have the force of law or regulation. These guidelines can be expected to change in response to the acquisition of new knowledge.

Each guideline begins with a preamble that describes the approaches that have been used or advocated to deal with infection control issues and evaluate, where data exist, their efficacy. The preamble is followed by a group of succinct recommendations. The guidelines are assembled in a loose-leaf notebook to allow for the addition of new guidelines as they are developed and revisions as necessary.

Optimally, recommendations should be based on rigorously controlled scientific studies because recommendations of this type have the highest probability of value. There are some recommended practices that have not been adequately evaluated by controlled scientific trials, but are based on such inherent logic and broad experience that experts generally agree that they are useful. At the other extreme are recommendations that are of uncertain benefit and may be quite controversial. To address these last 2 types of practices, realizing that hospitals must make decisions in the absence of definitive data, we have sought the advice of working groups composed of non-CDC experts with broad experience in infection control. CDC has endorsed such recommendations if members of the working group have determined that the recommended practices are likely to be effective.

To assist infection control staff in critically assessing the value of these recommendations, we developed a ranking scheme that takes into account considerations of scientific validity, applicability, and practicality (Table 1). The last 2 considerations are clearly important since scientifically valid infection control practices that are applicable in one setting (e.g., debilitated patients in tertiary referral centers) might not necessarily be applicable or practical in another (e.g., acutely ill patients in community hospitals). Cost effectiveness, another important consideration, is taken into account in the ranking process when possible, although adequate data are generally lacking. We have ranked each recommendation according to the degree to which it has been substantiated by

scientific data or the strength of the working group's opinion on the effectiveness and practical value of the particular practice. The rankings thus provide additional useful information for hospital officials who must decide on the recommendations (e.g., those in Category II and, especially, Category III) that best suit their hospital's needs and resources.

Finally, the adoption of these recommendations by hospitals does not guarantee that hospital personnel will adhere to them. The reduction of nosocomial infection risks depends largely on the actual performance of correct patient-care practices. Personnel may be motivated to follow those practices if they are given adequate training, followed by periodic in-service education. Continuous or periodic evaluation of patient-care practices, preferably under the supervision of the infection control staff, might assure continued performance of correct practices.

Table 1. RANKING SCHEME FOR RECOMMENDATIONS*

Category I. Strongly Recommended for Adoption:

Measures in Category I are strongly supported by well-designed and controlled clinical studies that show effectiveness in reducing the risk of nosocomial infections or are viewed as useful by the majority of experts in the field. Measures in this category are judged to be applicable to the majority of hospitals—regardless of size, patient population, or endemic nosocomial infection rate—and are considered practical to implement.

Category II. Moderately Recommended for Adoption:

Measures in Category II are supported by highly suggestive clinical studies or by definitive studies in institutions that might not be representative of other hospitals. Measures that have not been adequately studied, but have a strong theoretical rationale indicating that they might be very effective are included in this category. Category II measures are judged to be practical to implement. They are *not* to be considered a standard of practice for every hospital.

Category III. Weakly Recommended for Adoption:

Measures in Category III have been proposed by some investigators, authorities, or organizations, but, to date, they lack both supporting data and a strong theoretical rationale. Thus, they might be considered as important issues that require further evaluation; they might be considered by some hospitals for implementation, especially if such hospitals have specific nosocomial infection problems or sufficient resources.

*Recommendations that advise against the adoption of certain measures can be found in the guidelines. These negative recommendations are also ranked into 1 of the 3 categories depending on the strength of the scientific backing or opinions of the members of the working group. A negative recommendation in Category I means that scientific data or prevailing opinion strongly indicate that the measure not be adopted. A negative recommendation in Category III means that, given the available information, the measure under consideration should probably not be adopted; such a measure, however, requires further evaluation.

Contents

	Page
Introduction	4
Objectives of a personnel health service for infection control	4
Elements of a personnel health service for infection control	4
Epidemiology and control of selected infections transmitted among hospital personnel and patients	6
Group I. Transmission to and from personnel	
Acquired immunodeficiency syndrome	7
Acute diarrhea	7
Hepatitis	8
Hepatitis A	8
Hepatitis B	8
Hepatitis non-A, non-B	10
Herpes simplex viruses	10
<i>Staphylococcus aureus</i> and <i>Streptococcus</i> , group A and group B	11
Tuberculosis	11
Varicella zoster	13
Viral respiratory infections	13
Group II. Transmission to personnel	
Cytomegalovirus	14
Meningococcal disease	14
Pertussis	15
Scabies	15
Glossary	16
Recommendations	16
References	23

Guideline for Infection Control in Hospital Personnel

INTRODUCTION

In the United States, about 5 million persons work in more than 7,000 hospitals. These personnel may become infected through exposure to infected patients if proper precautions are not used, or acquire infection outside the hospital. They may then transmit the infection to susceptible patients or other hospital personnel, members of their households, or other community contacts. In this guideline, we focus on diseases that are of particular concern to hospital personnel because of the possibility of transmission. In some instances we focus our discussion on transmission of infectious disease from patient-care personnel to patients. In other instances we focus on transmission of disease from patients to patient-care personnel. Recommendations for prevention and control are limited to these areas. We frequently refer to the Guideline for Isolation Precautions in Hospitals, where suggestions can be found on precautions that personnel may use when taking care of patients to prevent the spread of infection to themselves, other personnel or patients, and visitors.

Personnel who have direct contact with patients include nursing personnel, medical house staff, clinical faculty, attending physicians, paramedical staff, and nursing and medical students. Since other hospital personnel may have exposure to patients that is comparable in quality, intensity, and duration to that of patient-care personnel, hospitals may also consider them in applying these recommendations. Risk to patients from personnel with whom patients have only brief casual contact, or risk to these personnel, is generally felt to be low.

In the glossary key words or phrases used in this guideline are defined. Issues related to management of outbreaks, exposure to agents in microbiologic and biomedical laboratories, and risks from exposure to noninfectious hazards are not discussed in this guideline.

OBJECTIVES OF A PERSONNEL HEALTH SERVICE FOR INFECTION CONTROL

The infection control objectives of a personnel health service should be part of the hospital's general programs for infection control. The objectives can include 1) stressing maintenance of sound habits in personal hygiene and individual responsibility in infection control; 2) monitoring and investigating infectious diseases, potentially harmful infectious exposures, and outbreaks of infections among personnel; 3) providing care to personnel for work-related illnesses or exposures; 4) identifying infection risks related to employment and instituting appropriate preventive measures; and 5) containing costs by eliminating unnecessary procedures and by preventing infectious disease that results in absenteeism and disability. For these objectives to be met, the support of the administration, medical staff, and other hospital staff is essential.

Whether programs or services other than those for infection control are offered will depend on whether the hospital's personnel health service is devoted mainly to controlling infectious diseases or to providing a comprehensive health program for personnel.

ELEMENTS OF A PERSONNEL HEALTH SERVICE FOR INFECTION CONTROL

The organization of a health service for hospital personnel will depend on many factors, for example, the size of the institution, the number of personnel, and the services offered. These factors will determine the size, location, and staffing of the service. Regardless of how the service is provided, certain elements will assist in effectively attaining infection control goals. These elements are as follows:

1. Placement evaluations
2. Personnel health and safety education
3. Immunization programs
4. Protocols for surveillance and management of job-related illnesses and exposures to infectious diseases
5. Counseling services for personnel regarding infection risks related to employment or special conditions
6. Guidelines for work restriction because of infectious disease
7. Maintenance of health records

Placement Evaluations

When personnel are initially appointed or are reassigned to different jobs or areas, a placement evaluation can be used to ensure that persons are not placed in jobs that would pose undue risk of infection to them, other personnel, patients, or visitors. A health inventory is an important part of this evaluation. This inventory can include determining a health worker's immunization status, and obtaining a history of any conditions that may predispose the health worker to acquiring or transmitting infectious diseases, for example, a history of such childhood diseases as chickenpox and measles, history of exposure to or treatment for tuberculosis, history of hepatitis, dermatologic conditions, chronic draining infections or open wounds, and immunodeficient conditions. Physical examinations may be useful to detect conditions that may increase the likelihood of transmitting disease to patients, or unusual susceptibility to infection, and to serve as a baseline for determining whether any future problems are work-related. There are no data, however, to suggest that routine complete physical examinations are needed for infection control purposes. Neither are there data to suggest that routine laboratory testing (such as complete blood counts, serologic tests for syphilis, urinalysis, chest roentgenograms) or preemployment screening for enteric or other pathogens are cost-beneficial. The health inventory can be used to determine whether physical examinations or laboratory tests are needed. In some areas, however, local public health ordinances may still mandate that certain screening procedures be used.

It is important that initial placement evaluations be done when personnel are hired or as soon after as possible. After the placement evaluation, later appraisals may be done as needed for ongoing programs or evaluation of work-related problems.

Personnel Health and Safety Education

Personnel are more likely to comply with an infection control program if they understand its rationale. Thus, staff education should be a central focus of the infection control

program. Clearly written policies, guidelines, and procedures are needed in many instances for uniformity, efficiency, and effective coordination of activities. Since job categories vary, not all personnel need the same degree of instruction in infection control. Educational programs should be matched to the needs of each group.

Immunization Programs

Since hospital personnel are at risk of exposure to and possible transmission of vaccine-preventable diseases because of their contact with patients or material from patients with infections, maintenance of immunity is an essential part of a hospital's personnel health and infection control program. Optimal use of immunizing agents will not only safeguard the health of personnel but also protect patients from becoming infected by personnel. Following a consistent program of immunizations could eliminate the problem of susceptible personnel and avoid unnecessary work restrictions.

Immunization recommendations are made by the U.S. Public Health Service Immunization Practices Advisory Committee (ACIP) and are published periodically in the *Morbidity and Mortality Weekly Report* (MMWR). Indications for use of licensed vaccines are generally the same for hospital personnel as for the general population; however, immunity to some diseases, such as rubella, may be more important for persons who work in hospitals. Decisions about which vaccines to include in immunization programs can be made by considering 1) the risk of exposure to an agent in a given area, 2) the nature of employment, and 3) the size and kind of institution. The suggestions included in this guideline summarize ACIP recommendations as they apply to hospital personnel. The categories reflect the views of the Working Group for this guideline. The ACIP guidelines should be consulted for a detailed discussion of the rationale for active or passive immunization of hospital personnel and the general population. The ACIP guidelines can be requested from Public Inquiries, Building 1, Room B63, Centers for Disease Control, Atlanta, Georgia 30333.

• Screening for Susceptibility to Hepatitis B or Rubella.

The decision to screen potential vaccine recipients for susceptibility to hepatitis B virus (HBV) is an economic one, because vaccinating HBV carriers or persons already immune does not appear to present a hazard.^{1,2} In the United States the prevalence of previous infection in any targeted group, the cost of screening, and the cost of immunizing personnel determine whether screening would be cost-effective.^{3,4}

Routinely performing serologic tests to determine susceptibility to rubella to be sure vaccine is given only to proven susceptibles may be very expensive. The ACIP believes that rubella immunization of men and women not known to be pregnant is justifiable without serologic testing.⁵

• Vaccine Administration

The most efficient use of vaccines with high-risk groups is to immunize personnel before they enter high-risk situations. It is crucial that persons administering immunizing agents be well-informed about indications, storage, dosage, preparation, and contraindications for each of the vaccines, toxoids, and immune globulins they may use. Product information should be available at all times, and pertinent health history should be obtained from each health worker before an agent is given.

How immunizations are provided to personnel and who pays for vaccines are topics not addressed in this guideline.

Work Restrictions and Management of Job-related Illnesses and Exposures

Major functions of the personnel health service include arranging for prompt diagnosis and management of job-related illnesses and providing prophylaxis for certain preventable diseases to which personnel may be exposed. If susceptible personnel contract a serious infection that is potentially transmissible or are exposed to an illness that leads to a period during which infection may be spread, the hospital's responsibility to prevent the spread of infection to patients and other personnel may sometimes require that these persons be excluded from direct patient contact. For any exclusion policy to be enforceable and effective, all personnel—especially department heads, area supervisors, and head nurses—must know when an illness must be reported. Any policy for work restriction should be designed to encourage personnel to report their illnesses or exposures and not penalize them with loss of wages, benefits, or job status.

Health Counseling

Access to health counseling about illnesses they may acquire from or transmit to patients is especially important for all hospital personnel, but particularly for women of child-bearing age and persons with special clinical conditions. All personnel should know about infection risks related to employment. Female personnel who may be pregnant or who might become pregnant should know about potential risks to the fetus due to work assignments and preventive measures that will reduce those risks. Among the diseases with potential for risk to a fetus if contracted by the mother are cytomegalovirus infection, hepatitis B, and rubella.

Coordinated Planning With Other Departments

For infection control objectives to be achieved, the activities of the personnel health service must be coordinated with the infection control program and with various hospital departments. This coordination will help assure adequate surveillance of infections in personnel and maintenance of effective infection control programs. During case investigations, outbreaks, and other epidemiologic studies that involve hospital personnel, coordinating activities will help to assure that investigations can be conducted efficiently and control measures implemented promptly.

Epidemiology and Control of Selected Infections Transmitted Among Hospital Personnel and Patients

Almost any transmissible infection may occur in the community at large or within the hospital and can affect both personnel and patients. However, only those infectious diseases that occur frequently in the hospital setting or are most important to personnel are discussed below. These diseases have been divided into 2 groups, according to what we know about the epidemiology and whether the primary concern is 1) preventing transmission of infection both to and from personnel and patients or 2) preventing transmission of infection primarily from infected patients to personnel. Within each sec-

tion, diseases are listed alphabetically. Relevant epidemiology, microbiology, and preventive measures are reviewed for each disease. Infections that are unusual or are not major nosocomial problems in this country receive only a brief comment or none at all.

In all patient-care activities, personnel can decrease the risk of acquiring or transmitting infection by careful handwashing and by taking care of patients with potentially transmissible infections according to the CDC Guideline for Isolation Precautions in Hospitals.