



ISOLATION TECHNIQUES

for use in

HOSPITALS

SECOND EDITION — 1975

**U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service
Center for Disease Control**



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Atlanta, Georgia 30333**

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PREFACE TO THE SECOND EDITION

MORE THAN 70,000 COPIES of *Isolation Techniques for Use in Hospitals* have been distributed since it was first published in 1970. Many hospitals have adopted the manual in its entirety as the established isolation practice, while others have used it as the framework on which to build their own guidelines. Because of this broad acceptance of the first edition, we have approached the revision of this manual with some reluctance, realizing that each change will require re-educating hospital personnel. Nonetheless, we have become convinced that changes in the manual are necessary because of the continuing rapid growth of knowledge about risk factors and modes of transmission of nosocomial infections.

In order to ease the conversion from the old guidelines to those outlined in this edition, we have kept the same organization and format. Communicable diseases likely to be seen in hospitals in the United States are grouped according to their presumed modes of transmission; for each category, methods of preventing nosocomial transmission are outlined.

Isolation recommendations for infections of burns, skin, and wounds have been revised. Table 1 (facing page) summarizes the placement of these infections based upon the responsible microorganism and the extent of infection.

As a further aid to institutions that have been using this isolation manual, we include here a brief outline of the major changes incorporated in this second edition. Table 2 lists diseases according to their current placement and notes their previous placement. In addition to these changes of placement in categories of isolation, we have altered a number of recommendations as to methods of isolation. Many of these alterations are minor, but some have substantial import. We urge those charged with the responsibility for controlling nosocomial infections to review the entire manual.

Undoubtedly, changes in medical practice and our understanding of the epidemiologic characteristics of diseases will make further revision of this manual necessary. The editors and consultants appreciate the criticisms and suggestions offered by those who have used the first edition, and we hope that users of this revised edition will also offer their comments.

Table 1. Isolation category of burn, wound, and skin infections, by microorganism and extent of infection

MICROORGANISM	INFECTION		
	Major ¹	Limited ²	Minor ³
<i>Staphylococcus aureus</i>	SI	WSP	SeP
Group A streptococcus	SI	WSP	SeP
All other microorganisms	WSP	WSP	SeP

¹ When infected area is not covered with dressings, or when dressings do not adequately contain the purulent drainage.

² When dressings cover the infected area and also adequately contain all purulent discharges.

³ When the infected area is very small, such as with stitch abscesses.

SI - Strict Isolation

WSP - Wound & Skin Precautions

SeP - Secretion Precautions—Lesions

Table 2. Changes in isolation categories, by disease

DISEASE	ISOLATION CATEGORY	
	Current (2nd ed.)	Former (1st ed.)
Acute diarrhea, suspected infectious etiology	ENTERIC	—
Amebiasis	EXCRETION	none
Candidiasis, mucocutaneous	SECRETION	none
Conjunctivitis, viral	SECRETION	—
Cryptococcosis	none	Secretion
Enterotoxigenic <i>Escherichia coli</i> —diarrhea	ENTERIC	—
Hepatitis, type unspecified, syndrome compatible with viral etiology	BLOOD and ENTERIC	—
Herpangina	SECRETION and EXCRETION	Excretion
<i>Herpesvirus hominis</i> (herpes simplex)	SECRETION — LESIONS and ORAL	Secretion—Oral
Herpes zoster		
disseminated	STRICT	Respiratory
localized	WOUND & SKIN	Respiratory
Infectious mononucleosis	SECRETION	—
Lassa fever	STRICT	—
Marburg virus disease	STRICT	—
Melioidosis		
extrapulmonary with draining sinuses	WOUND & SKIN	Strict
pulmonary	SECRETION	Strict
Plague, bubonic	WOUND & SKIN	Strict
Puerperal sepsis, Group A streptococcus—vaginal discharge	WOUND & SKIN	—
Rubella (except Congenital rubella syndrome)	RESPIRATORY	Strict*
Staphylococcal enterocolitis	ENTERIC	Strict
Varicella (chickenpox)	STRICT	Respiratory
Venezuelan equine encephalitis	none	Respiratory
<i>Yersinia enterocolitica</i> gastroenteritis	ENTERIC	—

“—” no recommendation in 1st ed.

“none” isolation specifically not called for

* rubella appeared in Strict (error) and Respiratory (correct) Isolation

PREFACE TO THE FIRST EDITION

HUNDREDS OF REQUESTS for information about effective methods of isolating hospitalized patients have been received by the Center for Disease Control. Several monographs (1-6) on isolation are currently available, but most have failed to satisfy the needs of hospitals for either of 2 reasons: 1) The isolation recommendations are too abbreviated to serve as an adequate guide for hospital personnel, or 2) the recommended practices are much too costly, complicated, or time-consuming to be effectively utilized. A need, therefore, exists for a manual of isolation procedures that are described in adequate detail and that can be applied by small community hospitals with limited resources, intermediate-size hospitals, and large, metropolitan, university-associated medical centers. This manual has been designed to meet this need and to establish a balance between the ideal and the practical. These recommendations have been extended to cover all communicable diseases that can reasonably be expected to occur within the United States, as well as those that might be imported.

Many of the procedures discussed in this manual are applicable when ministering to the needs of any hospitalized patient, not just those with infectious diseases. Personnel can be lulled into a false sense of security when applying these principles to infected patients and practice poor techniques when handling noninfected patients. One excellent example of a principle that should be applied in the general care of all hospitalized patients is handwashing before and after each patient contact.

Disagreement with some of the suggestions is expected since there are gaps in the knowledge of the epidemiology of some infections. Additionally, there is conflicting evidence as to the route of spread of certain diseases, as well as the effectiveness of specific control measures. There are some diseases for which there are 2 routes of transmission: 1 that accounts for almost all instances of spread within hospitals, and the other that is very rare, possibly only theoretical. In these instances, the type of isolation recommended is that which considers the common route of transmission.

The recommendations in this manual are considered to be reasonable proposals derived from analysis of current epidemiologic and microbiologic data. An attempt has been made to eliminate ritual and establish practical, effective procedures—based on fact—for isolating the disease and not the patient. Revisions of some of these proposals may be necessary as information about hospital-associated infections accumulates. Hospitals are encouraged to modify or supplement this manual to meet their own needs.

These principles of isolation can also be applied in other patient-care institutions, such as nursing homes, sanatoria, and mental institutions; the specific techniques may need to be modified for each.

This manual has been designed for general use by all hospital personnel. The main body of the manual, defining the different categories of isolation and precautions, is divided into 6 sections. Each section is a self-contained unit with all the necessary information pertaining to the 1 particular category of isolation or precautions; thus, there is some repetition among sections. One appendix lists the infectious diseases, grouped according to the requirements for private room, masks, gowns, gloves, and control of excretions and secretions necessary to limit cross-infection (Appendix I). Diseases are then listed alphabetically, with the type and duration of isolation (Appendix II). Other appendices detail methods of laundering clothing of patients who are placed in Strict Isolation (Appendix III), the classification and handling of patients with burns (Appendix IV), the precautions for smallpox (Appendix V), the requirements for an effective hospital surveillance program (Appendix VI) [not included in the second edition], and current recommendations for chemical disinfection and sterilization of medical and surgical materials and other inanimate objects in hospitals (Appendix VII [VI in the second edition]).

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Introduction

TO PREVENT the spread of communicable diseases within hospitals, special procedures should be followed for patients with these diseases. The decisions regarding which diseases to isolate and which isolation procedures to utilize require an understanding of the epidemiology of each infectious disease in the hospital setting.

SPREAD OF INFECTION

Spread of infection within the hospital requires only 3 essential elements: a source of infecting organisms, a means of transmission for the organism, and a susceptible host.

I. Source

The *sources* of the infecting agent may be patients, visitors, or employees and include persons with active disease, ones in the incubation period of the disease, or persons who are colonized by the infectious agent but have no apparent disease (carriers). Another direct source of infection can be the patient's own endogenous flora (autogenous infection). Other potential sources include inanimate objects in the environment that have become contaminated.

II. Transmission

Microorganisms are *transmitted* by various routes, and the same microorganism may be transmitted by more than 1 route. For example, the virus of smallpox can spread either by the airborne route (droplet nuclei or dust) or by direct contact. Shigellae are transmitted by direct contact, either with contaminated excretions, food, or hands. The differences in infectivity and in the mode of transmission of the various agents form the basis for the several categories of isolation and precautions that have been devised. There are 4 main *routes of transmission*—contact, vehicle, airborne, and vectorborne.

A. The CONTACT ROUTE can be further divided into 3 subgroups:

1. **Direct contact**—This involves direct physical transfer between a susceptible host and an infected person, such as occurs between patient and hospital personnel when they are giving baths or back rubs, changing dressings, or performing other procedures requiring direct personal contact. Direct contact can also occur between 2 patients, 1 serving as the source of infection and the other as susceptible host.

2. **Indirect contact**—This involves personal contact of the susceptible host with inanimate articles, such as bed linens, clothing, instruments, and dressings that have become contaminated.

3. **Droplet contact**—Infectious agents may come in contact with the conjunctivae, nose, or mouth of a susceptible individual as a result of coughing, sneezing, or talking by an infected person with clinical disease or a carrier of the organism. This is considered a “contact” infection because close association is necessary since droplets usually travel no more than about 3 feet.

B. The **VEHICLE ROUTE** applies in diseases transmitted through the medium of contaminated

1. **food**, such as salmonellosis,
2. **water**, such as shigellosis,
3. **drugs**, such as bacteremia resulting from infusion of a contaminated infusion product, or
4. **blood**, such as hepatitis.

C. **AIRBORNE TRANSMISSION** occurs by the dissemination of either droplet nuclei (residue of evaporated droplets that may remain suspended in the air for long periods of time) or dust particles in the air containing the infectious agent. Organisms carried in this manner are subsequently inhaled by, or deposited on, the susceptible host.

D. **VECTORBORNE** transmission, the fourth route, is of greater significance in other countries; for example, mosquito-transmitted malaria. It is of little significance in hospitals in the United States.

III. Host

The third element necessary for the establishment of an infection is the *susceptible host*. Resistance to pathogenic microorganisms varies markedly. Persons with diabetes mellitus, lymphomas, leukemia, neoplasia, agranulocytosis, or uremia and those treated with certain antibiotics, corticosteroids, irradiation, or immunosuppressive agents may be particularly prone to infection. Age, chronic debilitating disease, shock, coma, and trauma (accidental or surgical) also influence susceptibility. Some individuals may be immune 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 healthy carriers, while others may develop clinical disease.

PRINCIPLES OF ISOLATION

Isolation procedures are designed to prevent the spread of microorganisms among patients, hospital personnel, and visitors. Since agent and host factors are more difficult to control, interruption of the chain of infection is directed primarily at transmission. Isolation presents certain disadvantages to both the hospital and the patient. The procedures may be time-consuming and add to the cost of hospitalization. They may render frequent visits by physicians, nurses, and aides inconvenient, and they may discourage the hospital staff from giving the best possible care