

COMMUNICABLE DISEASES

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preface to the eighth edition

This text has now been before the nursing profession for a quarter of a century. Each succeeding edition has profited by the constructive criticisms of many of those engaged in teaching Communicable Disease throughout the world. To these advisers the authors continue to be grateful.

In this eighth edition a chapter on newer virus diseases has been added, and the chapter on staphylococcal infections has been enlarged. Discussions on the new measles vaccine and the oral poliomyelitis vaccine are presented. The list of reference readings has been expanded and brought up to date. In addition, many minor corrections, deletions and additions have been made to the basically unchanged material of the previous edition.

Acknowledgment is again made to the American Public Health Association for the basic material used in preparing the unit "Rarer Communicable Diseases."

Thanks are due to Dr. Anastacia E. Fabie, of the teaching and medical staff of San Lazaro Hospital in Manila, for material help in revising the chapter "Tropical Diseases Rare in the United States."

JOHN FITCH LANDON
HELEN T. SIDER

preface to the first edition

The nursing of communicable disease is so different in many aspects from general nursing that it is justifiable to call it a *specialty*. A competent communicable-disease nurse should be thoroughly familiar with both the theory and practice of her specialty. Particularly in the home does the nurse find it difficult to adapt institutional technic satisfactorily to conditions very dissimilar from the hospital. In the home, there is little equipment for illness, and often insufficient funds to supply nursing care for the entire twenty-four hours, with the result that the mother or caretaker, often overworked, must be initiated into the mysteries of medical asepsis. Yet sometimes it is better for the child to stay at home and not suffer the change of personnel and environment which a hospital would involve. It is felt that if the nurse has in her mind a clear-cut picture of both the course of the disease and the methods of treatment, she is better qualified to educate the family and, when necessary, to delegate responsibility intelligently. Therefore, the broad, general principles underlying medical asepsis and technic have been stressed, and supplemented by more detailed information concerning the methods of carrying these out.

The authors have attempted to make definite suggestions for the adaptation of hospital methods, and the improvisation of new

means, with the specific purpose of aiding the nurse who is alone with the family. They have tried also to devote space to the various diseases in proportion to the frequency with which they are commonly seen in most sections of this country. It is hoped that this textbook will justify the authors' desire to present a simple, direct, and properly balanced guide for care in communicable disease. To make the book more suitable for teaching purposes, a list of test questions has been put at the end of each chapter, and pertinent references to the current literature included in the body of the text, with a list of general works added at the end of the volume.

It has been difficult for the authors to decide what subjects should be selected for presentation. The term "communicable" is a broad one; and if all the diseases and conditions which strictly come under this heading were included, this volume would assume the proportions of a reference work instead of a practical textbook. Some diseases, however, which although obviously are more properly and adequately handled in general textbooks of medicine, such as tuberculosis and pneumonia, it has seemed wise to present in a final unit, since these conditions may be encountered in public-health work and in communicable-disease hospitals.

Our thanks are due to numerous friends who have read the manuscript and offered valuable suggestions for its improvement, and to the many students who have worked with the authors, and carried out their methods while this book was in preparation.

JOHN FITCH LANDON
HELEN T. SIDER

general terms*

CARRIER: A person who, without apparent symptoms of a communicable disease, harbors and disseminates the specific micro-organisms.

CLEANING: The removal by scrubbing and washing, as with hot water, soap, and washing soda, of organic matter on which and in which bacteria may find favorable conditions for prolonging life and virulence; also the removal by the same means of bacteria adherent to surfaces.

COMMUNICABLE PERIOD: The period or periods during which the etiologic agent may be transferred directly or indirectly from the body of the infected person to the body of another person.

In some diseases such as diphtheria and scarlet fever, in which mucous membranes are involved from the first entry of the pathogen, the period of communicability should be considered to be from the date of first exposure to a source of infection until the infecting organism is no longer disseminated from the involved mucous membranes; *i. e.*, from before the prodromata until the termination of a carrier state if such develops.

In some diseases such as tuberculosis, syphilis, and gonorrhea, the communicable condition may be at any time over a long period when unhealed lesions of the disease permit the discharge of the infecting organisms from the surface of the skin or through any of the body orifices. In certain diseases, communicability does not occur during the early incubation period or after full recovery; *e. g.*, measles and chickenpox.

In some diseases, such as malaria and yellow fever, transmitted by insects the period of communicability is that period during which the etiologic organism is found in the peripheral blood of the infected person in infective form.

CONTACT: A "contact" is any person or animal known to have been in such association with an infected person or animal as to have been presumably exposed to infection.

CONTAMINATION: Contamination of a surface (wound) or article (handkerchief) or matter (water or milk) implies the presence of a certain amount of undesirable substance or material, which may contain pathogenic micro-organisms.

DELOUSING: The process by which a person and his personal apparel are treated so that neither the adults nor the eggs of *Pediculus humanus* survive.

DISINFECTION: Destruction of the vitality of pathogenic micro-organisms by chemical or physical means directly applied.

When the word "concurrent" is used as qualifying disinfection, it indicates the application of disinfection immediately after the discharge of infectious material from the body of an infected person, or after the soiling of articles with such infectious discharges, all personal contacts with such discharges or articles being prevented prior to such disinfection.

When the word "terminal" is used as qualifying disinfection, it indicates the

* Because the definitions are so succinct and authoritative, it has seemed best to the authors to present those formulated by the Subcommittee on Communicable Disease Control of the Committee on Research and Standards of the American Public Health Association (Sixth Edition).

process of rendering the personal clothing and immediate physical environment of the patient free from the possibility of conveying the infection to others, at the time when the patient is no longer a source of infection.

DISINFESTING: Any physical or chemical process by which insects* or rodents known to be capable of conveying or transmitting infection and living on the body or in and around human habitations may be destroyed upon the person, or his clothing, or in his environment.

EDUCATION IN PERSONAL CLEANLINESS: This phrase is intended to include all the various means available to impress upon all members of the community, young and old, and especially when communicable disease is prevalent or during epidemics, by spoken and printed word, and by illustration and suggestion, the necessity of:

- a. Keeping the body clean by sufficiently frequent soap and water baths.
- b. Washing hands in soap and water immediately after voiding bowels or bladder and always before eating.
- c. Keeping hands and unclean articles, or articles which have been used for toilet purposes by others, away from the mouth, nose, eyes, ears, and genitalia.
- d. Avoiding the use of common or unclean eating, drinking, or toilet articles of any kind, such as towels, handkerchiefs, hairbrushes, drinking cups, pipes, etc.
- e. Avoiding close exposure of persons to spray from the nose and mouth, as in coughing, sneezing, laughing, or talking.

FUMIGATION: Any process by which the destruction of insects, as mosquitoes, fleas, bedbugs, and body lice, and animals, as rats, is accomplished by the employment of gaseous agents.

INCUBATION PERIOD: The time interval between the infection of a susceptible person and the appearance in him of symptoms of the disease in question.

INFECTED PERSON: Infected persons include patients or sick persons, persons with subclinical or inapparent infection, and carriers.

INFECTION: The entry and multiplication of the particular pathogen in the body of man or animal. The presence of living pathogenic organisms on hands or other parts of the skin or upon articles of human use as apparel or toilet articles, is not infection, but soiling of such surfaces and articles. The term infection should not be used to describe conditions of inanimate matter such as soil, water, sewage, milk, or food which are described under the term "contamination."

INFESTED PERSON OR ANIMAL, ARTICLES OR PREMISES:

- a. By infestation of persons and animals is meant the lodgment, development and reproduction of insects on the surface of the body or in the clothing.
- b. Infested articles or premises are such as harbor or give shelter to insects or rodents capable of carrying disease.

ISOLATION: The separation for the period of communicability of infected persons from other persons, in such places and under such conditions as will prevent the direct or indirect conveyance of the infectious agent from infected persons to other persons.

It is considered necessary to require strict isolation of the patient for the

* The term "insects" is used throughout this report to include ticks and mites as well as mosquitoes, fleas, flies, etc.

period of communicability and to quarantine or immunize contacts in certain diseases, notably smallpox. However, in some other diseases, such as poliomyelitis, isolation of the patient has but little apparent effect in limiting the spread of the disease, and the period of communicability is not known with reasonable accuracy in any given case.

In diseases of this latter sort the patient must be regarded as a potential source of infection and suitable precautions must be taken, even if these barriers to transmission of the disease are but partially effective. Uncertainty as to the exact duration of the period of communicability does not justify neglect of reasonable isolation measures but rather adds to our obligation to educate patients, the family, and the attending physician in the advantages to be had from separating the sick from the well, and in taking precautionary measures voluntarily when the presence of a communicable disease is suspected and before a diagnosis is established, after the official period of isolation is past, and generally during the epidemic prevalence of such diseases in the community.

When the term "isolation" is used in connection with such diseases as the common cold, influenza, chickenpox, and mumps, it is not to be understood that the establishment of isolation is under ordinary circumstances, a necessary or practicable procedure for official requirement or enforcement, but a practice to be instituted under the direction of the attending physician, and its duration to be generally, if not exclusively, at his discretion.

Isolation of a patient with a communicable disease from visitors is often of benefit to the patient by reducing the likelihood of additional and complicating infections, as well as a protection to others; quiet, freedom from excitement and fatigue of visits, and complete rest are important factors in the medical and nursing management of such patients and directly contribute to recovery.

PATIENT OR SICK PERSON: A person suffering from a clinically recognizable attack of a communicable disease.

PLACARDING: This official procedure under local or state authority consists of posting a warning notice upon the door or entrance to living quarters of persons isolated because of communicable disease. The object of such placarding is primarily to keep unauthorized persons from entering upon the premises during the period of communicability of the isolated patient. Such placarding may incidentally protect the patient against additional or secondary infection which may be carried to him by visitors. Its use may have some educational value.

Placarding, however, does not aid significantly the efforts of a health department to control the acute communicable diseases ordinarily spread directly from person to person in the United States (chickenpox, mumps, pertussis, measles, diphtheria, scarlet fever, anterior poliomyelitis, meningococcus meningitis, pneumonia, typhoid fever, gonorrhea, syphilis); consequently it is not recommended for these diseases.

Placarding has definite disadvantages: it is difficult to enforce, it may be a deterrent to reporting, it is costly in transportation. The most serious objection is the loss of time of public health nurses and other health department employees which should be devoted to practical instruction in the observance of isolation and concurrent disinfection at the bedside of patients suffering from the more serious communicable diseases.

QUARANTINE: By quarantine is meant the limitation of freedom of movement of such susceptible persons or animals as have been exposed to communicable

disease for a period of time equal to the longest usual incubation period of the disease to which they have been exposed.

REPORT OF A DISEASE: By report of a disease is meant the immediate notification, preferably by telephone, to the proper health or sanitary authority and, in the case of communicable disease in animals, also to the respective Department of Agriculture, or livestock sanitary authority which has immediate jurisdiction, that a case of communicable disease exists or is suspected of existing in a specified person or animal at a given address.

Each administrative health jurisdiction will ordinarily determine what diseases should be reportable, according to their prevalence or their practical importance from the points of view of the administrator, the epidemiologist, and the statistician.

It is expected that local or state regulation will require the reporting to the appropriate health authority of any unusual or group expression of illness which may be of public concern whether or not known to be or suspected of being communicable in nature.

SEGREGATION: This term applies to the separation for special consideration, control, or observation of some part of a group of persons from the others to facilitate the control of some communicable disease, particularly for the purpose of separating susceptible from immune persons.

SUBCLINICAL OR INAPPARENT INFECTION: A person with a subclinical or inapparent infection is one whom the infecting organism, following the period of incubation, affects in so mild or atypical a manner that even though the infection is present it is likely to be unrecognized.

SUSCEPTIBLE: A "susceptible" is a person or animal that is not known to have become immune to a particular disease by natural or artificial process.

SUSPECT: A person whose medical history and symptoms suggest that he may now have or be developing a case of some communicable disease. Verification of the suspicion awaits the establishment of the diagnosis by clinical observation and laboratory procedures.

VECTOR: A biting insect or arthropod which conveys the pathogenic organism from a person or an animal to another person or animal. The conveyance may be by mere contact with the skin or mucous membrane of the person or by inoculation of the pathogenic matter into or through some part of the skin or mucous surface in the course of biting the person. Mosquitoes, fleas, ticks, mites, flies, may place the role of vectors of various communicable diseases.

VEHICLE OF TRANSMISSION: Matter, usually inanimate, in or upon which pathogenic organisms are present and survive until there is physical contact with, or ingestion occurs in, a person or persons. Body discharges, including blood, pus, saliva, urine, feces, may contain such pathogenic organisms. Hands, eating and toilet articles, water, air, sewage, milk, other foods, and clothing may be the vehicle of transmission.

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I

General Principles and Care

1

General Principles of Infection and Immunity

Outline

- I. Introduction
 - II. Infection
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I. Introduction

In order to gain a competent working knowledge of the communicable diseases, it is essential that certain broad principles underlying infection and immunity be thoroughly understood. Furthermore, the student should be familiar with the terms or definitions so commonly employed in describing and discussing infectious disease. Thus this introductory chapter reviews briefly the essential immunologic tenets and familiarizes the reader with the terminology.

Common usage has made the terms "contagious disease" and

"communicable" or "infectious diseases" practically interchangeable. Strictly speaking, however, all diseases which are caused by living organisms are infectious regardless of how transmission occurs, whereas contagious diseases include only those which are spread by direct contact with the infectious agents causing the disease.

The changing nature of communicable disease, especially in recent times, should be borne in mind. Older diseases, such as scarlet fever, diphtheria, and typhoid fever, which used to be much dreaded, have become milder, at least in this country. On the other hand, newer diseases have been described and considerable advance made in their control.

II. Infection

Infection is produced by the invasion of the body tissues with pathogenic micro-organisms which multiply and produce the signs and symptoms of disease. In many diseases, both a focal and a general infection are present. By focal, or local, infection is meant a localization of the disease at one point in the body, as in diphtheria where the