Contents

Contributors XI
Acknowledgements XII
Foreword by M.E. Weksler XIII
Preface XVI

Overview

A. Verghese, S.L. Berk
1 Introduction and Epidemiologic Considerations I
Introduction and Definitions 1
Characteristics of Nursing Homes in the United States 3
Characteristics of Patients in Nursing Homes in the United States 3
Relationship between Acute-Care Hospitals and Nursing Homes 5
The Nursing-Home Patient as a Compromised Host 8
The ‘Teaching’ Nursing Home: Nursing-Home Medicine as an
Academic Discipline 8
Conclusion 9
References 10

Basic Principles

J.K. Smith

2 Immune Response and Host Defense in the Nursing-Home
Patient 12
Adaptive Immunity 12
Nonadaptive Immunity 19
Conclusions 23
References 24

D C. Norman, T.T. Yoshikawa
3 Clinical Features of Infection and the Significance of Fever in the Elderly Nursing-Home Patient 30
Introduction 30
Significance of Fever in the Elderly 32
References 38

S. Alvarez

4 Incidence and Prevalence of Nosocomial Infections in Nursing Homes 41
Introduction 41
Surveillance Methods 41
Incidence Studies 42
Prevalence Studies 43
Infection by site 50
Etiologic Agents 50
References 53

FA. Sarubbi
5 Infection Control in the Nursing-Home Setting 55
Infection Control Policies and Procedures 58
The Infection Control Practitioner 58
Specific Infection Control Practices 59
References 63

J.C. Lloyd, F. Lang, D.G. Doane
6 Immunization Strategies in the Nursing Home 66
Influenza 66
Pneumococcal Disease 71
Tetanus 72
Diphtheria 74
Hepatitis A 76
References 76

Infections by Organ System

T.J. Marrie
7 Bacteremia in the Nursing-Home Patient 77
Incidence 77
Epidemiology 78
DR. Burdge, A.W. Chow
11 The Pressure Ulcer 143
Etiology and Pathogenesis 144
Classification 148
Clinical Assessment 150
Investigation 150
Complications 153
Management 155
Prevention 158
Conclusion 159
References 160

S. Leicht, R. Swinfard, M. Stonecipher
12 Common Cutaneous Infections in the Nursing Home:
Mucocutaneous Candidiasis, Scabies and Herpes Zoster 162
Candidiasis 162
Cellulitis 167
Scabies 169
Herpes Zoster 174
Suggested Readings 180

Contents X

J. Huebner, F. Daschner
13 Gastro-Intestinal Infections in Nursing-Home Patients 182
Definition 182
Epidemiology 183
Etiology 185
Summary of Published Studies 189
Control Measures 190
References 191

D.W. Bentley, L. Cheney
14 AIDS in the Nursing Home 193
Description of Disease 193
Projections for Nursing-Home Care 194
AIDS Associated Infection Most Likely to Require Nursing-Home Care 195
Logistics for Providing Nursing-Home Care for AIDS Patients 198
Infection Control Guidelines 200
Conclusion 201
References 202
Treatment Considerations

S.L. Berk, A. Verghese
15 Antibiotic Therapy in the Nursing Home 203
Specific Antibiotics 207
Conclusion 218
References 219

J. Cowan, A. Verghese
16 Cost Containment and Cost-Effective Antibiotic Therapy in the
Nursing Home 221
Economics of Long-Term Care in the United States 221
Antibiotic Use and Cost Containment 224
References 229

Appendix

R.C. Hamdy, N.D. Pandita Gunawardena
Commentary on Nursing-Home Organization Outside
North America 231
Nursing and Residential Homes in the UK 231
Nursing Homes in the Netherlands 233
Nursing Homes in Denmark 234
References 234

Subject Index 235

Contributors

Alvarez, S., MD, Ochsner Clinic of Baton Rouge, Infectious Disease Section,
16777 Medical Center Drive, Baton Rouge, LA 70816 (USA)
Bentley, David W., MD, University of Rochester, School of Medicine and Dentistry,
Infectious Disease Unit, Monroe Community Hospital, 435 East Henrietta Road,
Rochester, NY 14620 (USA)
Berk, Steven L., MD, Department of Internal Medicine, East Tennessee State University,
College of Medicine, Johnson City, TN 37614 (USA)
Burdge, David R., MD, Division of Infectious Diseases, Department of Medicine,
University of British Columbia, Vancouver, B.C. (Canada)
Cheney, Lois, RN, MS, Infection Control Officer, Monroe Community Hospital,
435 East Henrietta Road, Rochester, NY 14620 (USA)
Chow, Anthony W., MD, Division of Infectious Diseases, Department of Medicine,
University of British Columbia and Vancouver General Hospital,  
2733 Heather Street, Vancouver, B.C. V5Z 1M9 (Canada)  
Cowan, James A., MD, East Tennessee State University, College of Medicine,  
Johnson City, TN 37614 (USA)  
Daschner, Franz Dieter, MD, Klinikhygiene der Universitätsklinik Freiburg, Klinik der  
Albert-Ludwigs-Universität, Hugstetter Strasse 55, D-7800 Freiburg i.Br. (FRG)  
Doane, David G., MD, Department of Family Medicine, East Tennessee State University,  
P.O. Box 21130A, Johnson City, TN 37614 (USA)  
Dontas, A.S., MD, Athens Home for the Aged, Center of Studies of Age-Related  
Changes in Man, 137 Kifissias Avenue, GR-115 24 Athens (Greece)  
Dutt, Asim K., MD, Department of Medicine, Meharry Medical College, Alvin C. York  
VA Medical Center, Murfreesboro, TN 37130 (USA)  
Hamdy, Ronald C., MD, East Tennessee University, College of Medicine,  
Geriatric Medicine, VA Medical Center, Box 21160A, Johnson City,  
TN 37614 (USA)  
Huebner, Johannes, MD, Klinikhygiene der Universitätsklinik Freiburg, Klinik der  
Albert-Ludwigs-Universität, Hugstetter Strasse 55, D-7800 Freiburg i.Br. (FRG)  
Lang, Forrest F, MD, Medical Education Family Practice Medicine, ETSU College of  
Medicine, Johnson City, TN 37614 (USA)  
Leicht, Stuart, MD, East Tennessee State University, College of Medicine, Dermatology,  
VA Medical Center, Johnson City, TN 37614 (USA)  
Lloyd, Jacqueline J., MD, Department of Family Medicine, Geriatrics, East Tennessee  
State University, P.O. Box 21130A, Johnson City, TN 37614 (USA)  
Marrie, Thomas J., MD, Dalhousie University, Department of Medicine,  
Division of Infectious Diseases, Room 4090, A.C.C. Victoria General Hospital,  
1278 Tower Road, Halifax, Nova Scotia B3H 2Y9 (Canada)  

Contributors XII  

Norman, Dean C., MD, VA Medical Center West Los Angeles, GRECC, Wilshire and  
Sawtelle Blvds., Los Angeles, CA 90073 (USA)  
Nunley, Diana, MD, East Tennessee State University, College of Medicine,  
Johnson City, TN 37614 (USA)  
Pandita Gunawardena, N.D., MD, Hither Green Hospital, Geriatrics, Hither Green  
Lane, GB-London SE 13 6RU (UK)  
Sarubbi, Felix, MD, Division of Infectious Diseases, East Tennessee State University,  
College of Medicine, ACOS/Education VA Medical Center, Johnson City,  
TN 37614 (USA)  
Smith, J. Kelly, MD, Division of Allergy and Immunology, East Tennessee State  
University, College of Medicine, Johnson City, TN 37614 (USA)  
Stead, William W., MD, Arkansas Department of Health, University of Arkansas for  
Medical Sciences, Little Rock, AR 72205 (USA)
Foreword

The nursing home is a relatively new and inadequately studied site of medical care. As the 20th century enters its final decade, the number and age of the elderly population are increasing rapidly in both the economically developing and developed countries of the world. These demographic facts are reflected in the increasing number of elderly persons who require continuing care.

In many societies, families are unable or, less commonly, unwilling to provide care for dependent elderly relatives. The costs in terms of money and effort can be overwhelming. It is as troubling to observe family members place a relative in a nursing home when little care is required as it is to observe families struggling with enormous demands that damage the fabric of the family in an attempt to forestall the admission of a relative to a nursing home.

Institutions for the care of invalids are not new. Throughout the ages religious and charitable organizations have provided for the disabled and
dying. However, as the capacity of the medical professionals to treat and even to cure chronic illness increased and as technical requirements for diagnosis as well as treatment became more complex, the modern hospital developed to provide care and treatment.

Specialization of hospitals in the first half of the 20th century led to two types of hospitals: one for acute, short-term care and another for chronic, long-term care. During the second half of this century, specific treatment for patients with protracted illness such as tuberculosis and chronic psychoses was developed, so that such patients could be discharged to rejoin their families and communities. Many long-term care institutions closed during the third quarter of the 20th century. However, a new wave of individuals was appearing for whom treatment did not end chronic dependence on medical care - the elderly.

At the same time, medical care has been redefined. The scientific enrichment of medicine led to improved treatments. Statistical techniques were developed to evaluate alternative forms of care based on outcome. If a treatment could not be shown to alter the natural history of disease, it was not considered medical but social and was no longer paid for by health insurance.

This view and the rapid increase in infirm elderly led to the growth of long-term care facilities devoted to the elderly - nursing homes. To the small number of charitable institutions devoted to the long-term care of the elderly were added large numbers of for-profit nursing homes. A new industry was born to meet the care needs of the elderly no longer provided by the medical establishment. Since nursing home care was defined as being outside the medical care system, payment for such services depended upon family resources or public resources dedicated to the support of the destitute.

Not surprisingly, nursing home care became medically underserved. Practicing physicians rarely entered the nursing home, and medical care was limited to that required by governmental regulations by physicians often under contract to the nursing home. By the 1980s, the number of nursing home residents in the USA was over 1.5 million individuals, a number greater than the total number of hospital patients in the USA.
Fortunately, the United States National Institute on Aging in Bethesda, Maryland, recognizing the absence of medical knowledge concerning the large numbers of infirm elderly residing in nursing homes, initiated the ‘Teaching Nursing Home Program’. The concept was based upon the teaching hospital with its medical school affiliation. The thrust was to offer support for research and teaching within nursing homes to academic medical centers. The greatest commitment, certainly in terms of numbers, to long-term care of the elderly has been that of the Department of Veterans Affairs. A high administrative position, the Associate Chief Medical Officer for Geriatrics and Extended Care, has been established to oversee the network of nursing homes and domiciliary facilities provided to veterans.

We are now beginning to see the fruits of such programs. Physicians are beginning to consider the nursing home as an appropriate site for medical care, teaching, and research. Physicians have found the nursing home an interesting site for study. The contributors to this volume see the nursing home as their laboratory and have carefully reviewed infectious diseases in this setting. As infections are the most common acute medical problem in nursing homes, this topic is of immense importance. This text not only provides guidance in the diagnosis and treatment of urinary, pulmonary, gastrointestinal, and cutaneous infections, but also provides the basic pathophysiology of immune senescence - age associated changes in the acute inflammatory response. Finally, policy related to infections such as infection control and cost-effective use of antibiotics are considered.

This volume, it is hoped, will be only the first of a series devoted to geriatric medicine in the nursing home. Quoting the editors of this volume: ‘We firmly believe that the nursing home is an exciting and fulfilling place to teach, carry out research, and practice medicine.’

Marc E. Weksler, MD

Wright Professor of Medicine
Cornell University Medical College,
Director, Division of Geriatrics and Gerontology
The New York Hospital, New York, N.Y.
The nursing-home patient is a familiar and frequent visitor to emergency rooms and hospitals. However, the patient’s place of residence - the nursing home - is a relatively new frontier in medicine, one that is only now being fully explored. As the number of persons entering nursing homes rises, there appears to be several incentives to intervene early in disease processes to prevent the progression that results in emergent admission to the hospital. The incentives for increased medical involvement in the nursing home include (a) the promise of minimizing suffering and achieving a better quality of life for the nursing-home resident, (b) diminishing the risk of iatrogenic illness by not transferring the patient to the hospital, (c) decreasing medical costs, and (d) establishing a data base that will lead to better understanding of the unique problems of the nursing-home patient.

Infectious diseases have a special position in the nursing home: they account for the majority of the transfers of the nursing-home patient to the hospital and are a frequent cause of demise.

In this book we have attempted to present the problems of infectious diseases in the nursing home. The sophisticated reader will recognize that in many areas the perspective is that of the hospital physician viewing the nursing-home patient who has been transferred. Although there are many excellent studies of what goes on in the nursing home, the reader will recognize a window of opportunity for research in this area, since many more areas of nursing-home infection remain to be explored.

It is hoped that this book will serve as a useful reference source for physicians, nurses, administrators, and all those involved with the nursing home.

We firmly believe that the nursing home is an exciting and fulfilling place to teach, carry out research, and practice medicine.

Abraham Verghese
Steven L. Berk