

Communicable Disease Control Handbook

About the authors

Dr Jeremy Hawker is Deputy Director of the Local and Regional Services Division of the Health Protection Agency, England. He has previously worked as Regional Epidemiologist in the West Midlands region of England and as Consultant in Communicable Disease Control in Birmingham, UK. He holds an honorary academic appointment at the University of Birmingham. His particular interests are training in health protection and effective public health practice.

Dr Norman Begg is the former head of the Immunisation Division of the Public Health Laboratory Service (now the Health Protection Agency) and has served as Deputy Director of the Communicable Disease Surveillance Centre. He has published extensively in the field of immunisation, including co-editing 'Immunisation Against Infectious Disease', the book that describes immunisation policy in the UK. He is also a former chair of the WHO European Advisory Group on Immunisation. He is now Director of Medical Affairs at GlaxoSmithKline.

Dr Iain Blair is a Consultant for Communicable Disease Control (CCDC) and Director of the Hampshire and Isle of Wight Health Protection Unit (UK). He has served as CCDC in three other areas and as a Regional Infectious Disease Epidemiologist. He is an honorary senior lecturer at Birmingham University and, having originally trained as a general practitioner, has worked in Canada and the Middle East.

Professor Ralf Reintjes has worked in many European countries as a consultant for WHO and the EU. He was a Fellow of the 'European Programme for Intervention Epidemiology Training (EPIET)' at the National Institute of Public Health and the Environment (RIVM) in the Netherlands and is the former head of the Department of Hygiene, Infectious Disease Epidemiology, and Vaccinations in North Rhine-Westphalia, Germany. He is now Professor for Epidemiology and Public Health Surveillance in Hamburg, Germany, and visiting lecturer in Tampere, Finland. He has published extensively in the field of Communicable Disease Epidemiology and Surveillance.

Professor Julius Weinberg trained as an Infectious Disease Physician, and then in Public Health. He has worked in Zimbabwe and Eastern Europe as well as the UK. He was a Consultant Epidemiologist and Head of Epidemiological Programmes at the PHLS/CDSC and was involved in the development of International Infectious Disease Surveillance collaborations. He is currently involved in the development of the UK National Electronic Library for Infection and acted as expert advisor to a House of Lords Select Committee inquiry into infectious disease services. He is Pro-Vice Chancellor for Research and Director of the Institute for Health Sciences at City University in London.

Communicable Disease Control Handbook

Dr Jeremy Hawker *Deputy Director, Local and Regional Services, Health Protection Agency, UK*

Dr Norman Begg *Director of Medical Affairs, GlaxoSmithKline, Uxbridge, UK*

Dr Iain Blair *Consultant in Communicable Disease, Health Protection Agency, Hampshire, UK*

Professor Ralf Reintjes *Professor for Epidemiology and Public Health Surveillance, Hamburg University of Applied Science, Germany*

Professor Julius Weinberg *Pro-Vice Chancellor, City University, London, UK*

Second edition



**Blackwell
Publishing**

© 2005 Jeremy Hawker, Norman Begg, Iain Blair, Ralf Reintjes and Julius Weinberg
Published by Blackwell Publishing Ltd
Blackwell Publishing, Inc., 350 Main Street, Malden, Massachusetts 02148-5020, USA
Blackwell Publishing Ltd, 9600 Garsington Road, Oxford OX4 2DQ, UK
Blackwell Publishing Asia Pty Ltd, 550 Swanston Street, Carlton, Victoria 3053, Australia

The right of the Authors to be identified as the Authors of this Work has been asserted in accordance with the Copyright, Designs and Patents Act 1988.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, except as permitted by the UK Copyright, Designs and Patents Act 1988, without the prior permission of the publisher.

First published 2001
Reprinted 2002 (twice), 2003, 2004
Second edition 2005

Library of Congress Cataloging-in-Publication Data

Communicable disease control handbook / Jeremy Hawker ...[et al.].— 2nd ed.
p. ; cm.
ISBN 1-4051-2424-5
1. Communicable diseases—Handbooks, manuals, etc. I. Hawker, Jeremy.
[DNLM: 1. Communicable Disease Control—Handbooks.
WA 39 C7333 2005]
RC112.C626 2005
616.9—dc22

2005004899

ISBN-13: 978-1-4051-2424-5

ISBN-10: 1-4051-2424-5

A catalogue record for this title is available from the British Library

Set in 8/11 StoneSerif by TechBooks, New Delhi, India
Printed and bound in the United Kingdom by Replika Press PVT Ltd

Commissioning Editor: Maria Khan
Development Editor: Claire Bonnett/Fiona Pattison
Production Controller: Kate Charman

For further information on Blackwell Publishing, visit our website:
<http://www.blackwellpublishing.com>

The publisher's policy is to use permanent paper from mills that operate a sustainable forestry policy, and which has been manufactured from pulp processed using acid-free and elementary chlorine-free practices. Furthermore, the publisher ensures that the text paper and cover board used have met acceptable environmental accreditation standards.

Contents

Foreword, ix
Abbreviations, xi

Section 1: Introduction

- 1.1 How to use this book, 3
- 1.2 Basic concepts in the epidemiology and control of infectious disease, 5
- 1.3 Health protection on-call, 10

Section 2: Common topics

- 2.1 Meningitis and meningism, 17
- 2.2 Gastrointestinal infection, 20
- 2.3 Community-acquired pneumonia, 28
- 2.4 Rash in pregnancy, 29
- 2.5 Rash and fever in children, 34
- 2.6 Illness in returning travellers, 37
- 2.7 Sexually transmitted infections, 38
- 2.8 Jaundice, 42
- 2.9 Infection in the immunocompromised, 43
- 2.10 Blood-borne viral infections, 45
- 2.11 Vaccine queries, 49

Section 3: Diseases

- 3.1 Amoebic dysentery, 55
- 3.2 Anthrax, 56
- 3.3 *Bacillus cereus*, 59
- 3.4 Botulism, 60
- 3.5 Brucellosis, 65
- 3.6 *Campylobacter*, 67
- 3.7 Chickenpox and shingles (varicella-zoster infections), 71
- 3.8 *Chlamydia pneumoniae*, 73
- 3.9 *Chlamydia psittaci*, 75
- 3.10 *Chlamydia trachomatis* (genital), 77
- 3.11 Cholera, 78
- 3.12 CJD (Creutzfeldt–Jakob disease) and other human transmissible spongiform encephalopathies, 80
- 3.13 *Clostridium difficile*, 82
- 3.14 *Clostridium perfringens*, 84

- 3.15 Coxsackievirus infections, 86
- 3.16 Cryptosporidiosis, 88
- 3.17 Cyclosporiasis, 93
- 3.18 Cytomegalovirus, 93
- 3.19 Dengue fever, 94
- 3.20 Diphtheria, 95
- 3.21 Encephalitis, acute, 98
- 3.22 Enterococci, including glycopeptide-resistant enterococci, 98
- 3.23 Epstein–Barr virus, 100
- 3.24 *Escherichia coli* O157 (and other *E. coli* gastroenteritis), 101
- 3.25 Giardiasis, 106
- 3.26 Gonorrhoea, syphilis and other acute STIs, 108
- 3.27 Hantavirus, 111
- 3.28 Head lice, 112
- 3.29 *Helicobacter pylori*, 114
- 3.30 Hepatitis A, 115
- 3.31 Hepatitis B, 118
- 3.32 Hepatitis C, 122
- 3.33 Delta hepatitis, 125
- 3.34 Hepatitis E, 125
- 3.35 Herpes simplex, 126
- 3.36 *Haemophilus influenzae* type b, 127
- 3.37 HIV, 129
- 3.38 Influenza, 135
- 3.39 Japanese B encephalitis, 141
- 3.40 Kawasaki syndrome, 141
- 3.41 Legionellosis, 142
- 3.42 Leprosy, 145
- 3.43 Leptospirosis, 146
- 3.44 Listeria, 148
- 3.45 Lyme disease, 150
- 3.46 Malaria, 151
- 3.47 Measles, 154
- 3.48 Meningococcal infection, 156
- 3.49 Molluscum contagiosum, 161
- 3.50 MRSA (methicillin-resistant *Staphylococcus aureus*), 162
- 3.51 Mumps, 165
- 3.52 *Mycoplasma*, 166
- 3.53 Norovirus, 168
- 3.54 Ophthalmia neonatorum, 170
- 3.55 Paratyphoid fever, 171

- 3.56 Parvovirus B19 (fifth disease), 173
- 3.57 Plague, 174
- 3.58 Pneumococcal infection, 176
- 3.59 Poliomyelitis, 179
- 3.60 Q fever, 180
- 3.61 Rabies, 182
- 3.62 Relapsing fever, 184
- 3.63 Respiratory syncytial virus, 185
- 3.64 Ringworm, 187
- 3.65 Rotavirus, 190
- 3.66 Rubella, 192
- 3.67 Salmonellosis, 193
- 3.68 SARS (Severe acute respiratory syndrome), 197
- 3.69 Scabies, 200
- 3.70 *Shigella*, 203
- 3.71 Smallpox, 206
- 3.72 Staphylococcal food poisoning, 208
- 3.73 Streptococcal infections, 209
- 3.74 Tetanus, 212
- 3.75 Threadworms, 213
- 3.76 Tick-borne encephalitis, 214
- 3.77 *Toxocara*, 214
- 3.78 Toxoplasmosis, 215
- 3.79 Tuberculosis, 216
- 3.80 Tularaemia, 225
- 3.81 Typhoid fever, 226
- 3.82 Typhus, other rickettsial infections and ehrlichiosis, 228
- 3.83 *Vibrio parahaemolyticus*, 230
- 3.84 Viral haemorrhagic fevers, 232
- 3.85 Warts and verrucae, 235
- 3.86 West Nile virus, 236
- 3.87 Whooping cough, 237
- 3.88 Yellow fever, 240
- 3.89 Yersiniosis, 241
- 3.90 Other hazards, 243
 - 1 Helminths, 243
 - 2 Protozoa, 251
 - 3 Fungi, 251
 - 4 Rare viruses, 251
 - 5 Bites, stings and venoms, 251
 - 6 Chemical food-borne illness, 263

Section 4: Services and organisations

- 4.1 Administrative arrangements for communicable disease control, 267
- 4.2 Surveillance of communicable disease, 271

- 4.3 Managing infectious disease incidents and outbreaks, 275
- 4.4 Community infection control, 282
- 4.5 Healthcare-associated infection, 285
- 4.6 Risks to and from healthcare workers, 290
- 4.7 Co-ordination of immunisation services, 295
- 4.8 Co-ordination of services for HIV infection in the UK, 298
- 4.9 Services for tuberculosis control, 299
- 4.10 Travel health and illness in returning travellers, 302
- 4.11 Non-infectious environmental hazards, 305
- 4.12 Managing acute chemical incidents, 310
- 4.13 Managing acute radiation incidents, 313
- 4.14 Deliberate release of biological, chemical or radiological agents, 315
- 4.15 Port health, 324
- 4.16 Media relations, 325
- 4.17 Clinical governance and audit, 327

Section 5: Communicable disease control in Europe

- 5.1 Introduction, 333
- 5.2 Austria, 335
- 5.3 Belgium, 336
- 5.4 Cyprus, 339
- 5.5 Czech Republic, 340
- 5.6 Denmark, 342
- 5.7 Estonia, 344
- 5.8 Finland, 345
- 5.9 France, 347
- 5.10 Germany, 349
- 5.11 Greece, 351
- 5.12 Hungary, 352
- 5.13 Ireland, 353
- 5.14 Italy, 354
- 5.15 Latvia, 356
- 5.16 Lithuania, 358
- 5.17 Luxembourg, 358
- 5.18 Malta, 360
- 5.19 The Netherlands, 361
- 5.20 Norway, 363
- 5.21 Poland, 364

- 5.22 Portugal, 366
- 5.23 Slovakia, 368
- 5.24 Slovenia, 369
- 5.25 Spain, 371
- 5.26 Sweden, 372
- 5.27 Switzerland, 374
- 5.28 United Kingdom, 376

Appendices

- 1 Useful addresses and telephone numbers, 379
- 2 Guidance documents and books, 380

Index, 385

Foreword

In the mid 1960s, a belief began to grow that communicable diseases might soon be confined to the history books, as a major health problem of past centuries. Events over the last two decades have shown how misguided such ideas were. Infection continues to present fresh challenges, both here in this country and worldwide.

Events such as the severe acute respiratory syndrome (SARS) outbreak in 2003 demonstrate very clearly that natural threats are ever present. Worldwide, HIV and AIDS continue to cause devastating loss of life, economic ruin and poverty. Collectively, political leaders as well as the international scientific and medical community have yet to find an effective means of prevention and control. Closer to home, tuberculosis and antimicrobial resistance, including the spread of infections such as methicillin-resistant *Staphylococcus aureus* (MRSA), challenge the population's health and the safety of healthcare. The emergence of diseases like West Nile virus in hitherto unaffected parts of the world (the USA and Canada) are a warning of the ever present threat of new and emerging infectious diseases. In 2003, the identification of two incidents associated with European bat lyssa virus (a rabies virus), in England and in Scotland was just another example of how we need to expect the unexpected.

The spread in the last one to two years of avian influenza in Eastern Asia presents a real and present danger to public health worldwide. Those countries that have the responsibility for dealing with potential infection in humans, who have contact with infected poultry, need to be able to respond appropriately. The global community generally must prepare for the possibility of the emergence of a pandemic influenza strain. Influenza pandemics occur in regular cycles over the years and we need to be constantly vigilant, with the help of the World Health Organization (WHO) and its

surveillance mechanisms, to ensure early detection of such an event.

Added to these conventional threats, the spectre of bioterrorism now looms large. This brings consequences for identifying and managing previously rare diseases such as anthrax or plague, or an eliminated disease like smallpox. It underlines the need for international co-operation. SARS, although a naturally occurring disease, demonstrated how international medical and scientific networks can respond really effectively to meet the challenges posed by significant global threats. Learning, constantly updating our knowledge and experience are key components of effective disease control. Consequently, I am very pleased to see the emphasis given in this edition of the handbook to international health.

In 2002, in recognition of these various wide ranging and ongoing needs I published my strategy for Infectious Diseases *Getting Ahead of the Curve*. To make sure the UK was well placed to maintain and extend existing arrangements for protecting the public, this recommended the establishment of a new Health Protection Agency. The agency came into force in 2003 and brings expertise in infection (and toxicology and radiology) together with emergency preparedness. It builds on previously strong arrangements provided by the former Public Health Laboratory Service. The agency's aims are to develop and integrate the surveillance of disease, and also co-ordinate the response, linking in to hospitals, communities and other organisations. Veterinary surveillance networks are being aligned with health systems. Consultants in communicable disease control remain at the forefront of delivery of local infection services, together with many others – infectious disease doctors and nurses, microbiologists, community and hospital infection control nurses immunisation co-ordinators.

Today, infection is everyone's business – citizens, political leaders, doctors, scientists and other health professionals alike. It is no longer a quiet backwater of interest only to the specialist. This comprehensive and practical handbook will provide a very accessible

source of detailed information for everyone in the field of communicable disease control.

Sir Liam Donaldson
Chief Medical Officer
England

Abbreviations

ACDP	Advisory Committee on Dangerous Pathogens	HUS	Haemolytic uraemic syndrome
AIDS	Acquired immunodeficiency syndrome	ICD	Infection control doctor (hospital)
BCG	Bacille Calmette–Guérin (vaccine against TB)	ICN	Infection control nurse
CCDC	Consultant in Communicable Disease Control (local public health doctor with executive responsibilities for CDC)	ICT	Infection control team (hospital)
CDC	Communicable disease control	IDU	Intravenous drug user
CDR	Communicable disease report	IFA	Indirect immunofluorescent antibody test
CDSC	HPA Communicable Disease Surveillance Centre	IgG	Immunoglobulin class G
CICN	Community infection control nurse	IgM	Immunoglobulin class M
CJD	Creutzfeldt–Jakob disease	IPV	Inactivated poliovirus vaccine
CNS	Central nervous system	LA	Local Authority
CSF	Cerebrospinal fluid	MMR	Measles, mumps and rubella vaccine
DNA	Deoxyribonucleic acid	MRSA	Methicillin-resistant <i>Staphylococcus aureus</i>
DTP	Diphtheria, tetanus and pertussis	NCJDSU	National CJD Surveillance Unit
ECDC	European Centre for Disease Prevention and Control	OPV	Oral poliovirus vaccine
EHO	Environmental health officer	Pa	Pertussis vaccine (acellular)
ELISA	Enzyme-linked immunosorbent assay	PCR	Polymerase chain reaction
EM	Electron microscopy	PHLS	Public Health Laboratory Service (now part of HPA)
EU	European Union	PT	Phage type
GI	Gastrointestinal	RCGP	Royal College of General Practitioners
GP	General practitioner (primary care physician)	RNA	Ribonucleic acid
GUM	Genitourinary medicine	RSV	Respiratory syncytial virus
HA	Health Authority	SARS	Severe Acute Respiratory Syndrome
HAI	Hospital-acquired infection	SCIEH	Scottish Centre for Infection and Environmental Health
HBV	Hepatitis B virus	sp.	Species
HCV	Hepatitis C virus	STI	Sexually transmitted infection
HCW	Health Care Worker	TB	Tuberculosis
Hib	<i>Haemophilus influenzae</i> type b	TSE	Transmissible spongiform encephalopathy
HIV	Human immunodeficiency virus	UK	United Kingdom of Great Britain and Northern Ireland
HNIG	Human normal immunoglobulin	VHF	Viral haemorrhagic fever
HP	Health Protection	VRE	Vancomycin resistant <i>Enterococcus</i>
HPA	Health Protection Agency	VTEC	Verocytotoxin producing <i>Escherichia coli</i>
		VZIG	Varicella-zoster immunoglobulin
		WHO	World Health Organization (OMS)