

**USAMRIID's
MEDICAL MANAGEMENT
OF BIOLOGICAL CASUALTIES
HANDBOOK**



*Fifth Edition
August 2004*

**U.S. ARMY MEDICAL RESEARCH
INSTITUTE OF INFECTIOUS DISEASES**

**FORT DETRICK
FREDERICK, MARYLAND**

Emergency Response Numbers

National Response Center: (for chem/bio hazards & terrorist events)	1-800-424-8802 or 1-202-267-2675
National Domestic Preparedness Office: (for civilian use)	1-202-324-9025
Domestic Preparedness Chem/Bio Helpline: (Edgewood Ops Center – for military use)	1-410-436-4484 or DSN 584-4484
USAMRIID's Emergency Response Line:	1-888-872-7443
CDC'S Emergency Response Line:	1-770-488-7100

Handbook Download Site

An Adobe Acrobat Reader (pdf file) version of this handbook can be downloaded from the internet at the following url:

<http://www.usamriid.army.mil/education/bluebook.html>



**© 2004 by USAMRIID
Operational Medicine Department
1425 Porter Street
Fort Detrick, MD 21702-5011**

All rights reserved. No part of this handbook may be reproduced, in any form or by any means, without permission in writing from USAMRIID.

**USAMRIID's
MEDICAL MANAGEMENT
OF BIOLOGICAL CASUALTIES
HANDBOOK**

*Fifth Edition
August 2004*

Lead Editors

**CAPT Robert G. Darling, MC, USN
Lt Col Jon B. Woods, MC, USAF**

Contributing Editors

**LTC Zygmunt F. Dembek, MS, USAR
Lt Col Bridget K. Carr, MSC, USAF
COL Ted J. Cieslak, MC, USA
MAJ Anthony C. Littrell, MC, USA
LTC Mark G. Kortepeter, MC, USA
LTC Nelson W. Rebert, MS, USA
LTC Scott A. Stanek, MC, USA
COL James W. Martin, MC, USA**

**Comments and suggestions are appreciated
and should be addressed to:**

***Operational Medicine Department
Attn: MCMR-UIM-O
U.S. Army Medical Research
Institute of Infectious Diseases (USAMRIID)
Fort Detrick, Maryland 21702-5011***

PREFACE TO THE FIFTH EDITION

The Medical Management of Biological Casualties Handbook, which has become affectionately known as the "Blue Book," has been enormously successful - far beyond our expectations. Since the first edition in 1993, the awareness of biological weapons in the U.S. has increased dramatically. Over 175,000 copies have been distributed to military and civilian health-care providers around the world, primarily through USAMRIID's on-site and road Medical Management of Biological Casualties course and its four annual satellite broadcasts on this subject.

This fifth edition has been revised and updated. A new chapter on emerging infections and potential future biological weapons has been added as well as two new appendices on the use of investigational new drugs (IND) and antibiotic and vaccine considerations in special populations. References have been expanded and updated for those interested in more in-depth reading on this subject.

Our goal is to make this a reference for the health-care provider on the front lines, whether on the battlefield or in a clinic, who needs basic summary and treatment information quickly. We believe we have been successful in this regard. We want your feedback so that we might make future editions more useful and readable. Thank you for your interest in this important subject.

-The Editors

ACKNOWLEDGMENTS

Fifth edition: CDR Duane Caneva, CDR Ken Cole, LTC George Christopher, Ms. Kathy Kenyon, Dr. David Lange, Mr. Rick Stevens, and Ms. Sandy Flynn.

Previous editions: *Editors:* COL Edward Eitzen, LTC Mark Kortepeter, LTC George Christopher, COL Ted Cieslak, CDR Randy Culpepper, CAPT Rob Darling, LTC Julie Pavlin, LTC John Rowe, LTC Scott Stanek, COL Kelly McKee, COL Les Caudle. *Contributors:* Dr. Richard Dukes, COL(ret) David Franz, COL Gerald Parker, COL Gerald Jennings, SGM Raymond Alston, COL James Arthur, COL W. Russell Byrne, Dr. John Ezzell, COL (ret) Arthur Friedlander, Dr. Robert Hawley, COL Erik Henschal, COL (ret) Ted Hussey, Dr. Peter Jahrling, COL Ross LeClaire, Dr. George Ludwig, Mr. William Patrick, Dr. Mark Poli, Dr. Fred Sidell, Dr. Jonathon Smith, Mr. Richard Stevens, Dr. Jeff Teska, COL Stanley Wiener, and others too numerous to mention. The exclusion of anyone on this page is purely accidental and in no way lessens the gratitude we feel for contributions received.

DISCLAIMER

The purpose of this handbook is to provide concise supplemental reading material to assist health-care providers in the management of biological casualties. Although every effort has been made to make the information in this handbook consistent with official policy and doctrine (see FM 8-284), the information contained in this handbook is **not** official Department of the Army policy or doctrine, and should not be construed as such.

As you review this handbook, you will find specific therapies and prophylactic regimens for the diseases mentioned. The majority of these are based upon standard treatment guidelines; however, some of the regimens noted may vary from information found in standard reference materials. The reason for this is that the clinical presentation of certain diseases caused by a weaponized biological agent may vary from the endemic form of the disease. For ethical reasons, human challenge studies can only be performed with a limited number of these agents. Therefore, treatment and prophylaxis regimens may be derived from in vitro data, animal models, and limited human data. Occasionally you will find various investigational new drug (IND) products mentioned. They are often used in the laboratory to protect health-care workers. These products are not available commercially, and can only be given under a specific protocol with informed consent. For guidelines on the use of IND products, see appendix L. IND products are mentioned for the scientific completeness of the handbook, and are not necessarily to be construed as recommendations for therapy.

EXECUTIVE ORDER 13139: IMPROVING HEALTH PROTECTION OF MILITARY PERSONNEL PARTICIPATING IN PARTICULAR MILITARY OPERATIONS

On 30 September 1999, the President of the U.S. issued Executive Order 13139, which outlines the conditions under which IND and off-label pharmaceuticals can be administered to U.S. service members. This handbook discusses numerous pharmaceutical products, some of which are INDs. In certain other cases, licensed pharmaceuticals are discussed for use in a manner or for a condition other than that for which they were originally licensed (i.e., an "off-label" indication).

This executive order does not intend to alter the traditional physician-patient relationship or individual physician prescribing practices. Health-care providers remain free to exercise clinical judgement and prescribe licensed pharmaceutical products as they deem appropriate for the optimal care of their patients. This policy does, however, potentially influence recommendations that might be made by U.S. government agencies and that might be applied to large numbers of service members outside of the individual physician-patient relationship. The following text presents a brief overview of EO 13139 for the benefit of the individual provider.

EO13139

- Provides the Secretary of Defense guidance regarding the provision of IND products or products unapproved for their intended use as antidotes to chemical, biological, or radiological weapons;
- Stipulates that the U.S. government will administer products approved by the Food and Drug Administration only for their intended use;
- Provides the circumstances and controls under which IND products may be used.

In order to administer an IND product:

- Informed consent must be obtained from individual service members;
- The President may waive informed consent (at the request of the Secretary of Defense and only the Secretary of Defense) if:
 - Informed consent is not feasible
 - Informed consent is contrary to the best interests of the service member
 - Obtaining informed consent is not in the best interests of national security.

Table of Contents

Introduction	1
History of Biological Warfare and Current Threat	2
Distinguishing Between Natural and Intentional Disease Outbreaks	7
Ten Steps in the Management of Biological Casualties On the Battlefield	10
Bacterial Agents	16
Anthrax	17
Brucellosis	25
Glanders and Melioidosis	32
Plague	40
Q Fever	45
Tularemia	52
Viral Agents	58
Smallpox	59
Venezuelan Equine Encephalitis	66
Viral Hemorrhagic Fevers	72
Biological Toxins	80
Botulinum	81
Ricin	88
Staphylococcal Enterotoxin B	92
T-2 Mycotoxins	96
Emerging Infections and Future Biological Weapons	100
Detection	109
Personal Protection	112
Decontamination	115
Appendix A:	Glossary of Medical Terms
Appendix B:	Patient Isolation Precautions
Appendix C:	BW Agent Characteristics
Appendix D:	BW Agent Vaccines, Prophylactics and Therapeutics
Appendix E:	Medical Sample Collection for Bio Threat Agents
Appendix F:	Specimens for Laboratory Diagnosis
Appendix G:	BW Agent Laboratory Identification
Appendix H:	Differential Diagnosis - Toxins vs. Nerve Agents
Appendix I:	Comparative Lethality - Toxins vs. Chemical Agents
Appendix J:	Aerosol Toxicity in LD ₅₀ vs Quantity of Toxin
Appendix K:	References
Appendix L:	Use of IND Products
Appendix M:	Drug/Vaccine Considerations in Special Populations
Appendix N:	Emergency Response Contacts - State & Federal