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Foreword

The dramatic technological, social, and economic progress of the twentieth century has yet to prevent the use of armed conflict to resolve political differences among nations. As those of us in military medicine prepare to support our forces into the next century, we must continually be ready for the many challenges presented by modern warfare.

The Army Medical Department has embarked on an ambitious readiness initiative. This new doctrine focuses on far-forward surgical care, increased intensive-care capabilities, a policy of returning soldiers to duty as far forward as possible, improved ground and air evacuation capabilities, new medical logistics systems that incorporate blood-distribution networks, and improved management of combat stress. Our goals are to maintain our momentum as we conserve fighting strength and to support our soldiers and their families both in peacetime and in time of war.

The military health-care system is the largest comprehensive health-care organization in the United States. Because the vast majority of our patients are not active duty military personnel, it may seem that our day-to-day activities are far removed from what we would be required to do during time of war. The ability to deploy a highly trained medical corps to any area of the world, however, is our highest priority. To be effective, we must not only maintain the highest standards of technical competence, but must also be prepared to use our skills creatively and courageously in situations that may be primitive, dangerous, or unknown. Major General James H. Rumbaugh, the late commander of Walter Reed Army Medical Center (who aptly described his organization as "the largest live-fire range in the Army"), understood that everything we do in our daily practice hones our expertise. Our readiness initiative will provide a clearer combat context in which to apply that expertise. Lessons of medical survival have been learned in previous conflicts at great cost. We cannot afford to forget them.

It is my hope that you will find the *Textbook of Military Medicine* series a useful addition to your readiness training programs, and that it will stimulate you to think about and plan for what will be required of each of us should the need arise to make a transition from peace to war.

Lieutenant General Frank F. Ledford, Jr.
The Surgeon General
U.S. Army

April 1989
Washington, D.C.

Preface

Medical Consequences of Nuclear Warfare is the second volume of Part 1, *Warfare, Weaponry, and the Casualty*. It addresses the increasingly important medical challenges of the consequences and management of radiation injuries.

The presence of vast nuclear arsenals has had a paradoxical effect on our collective human consciousness: because we are unavoidably aware of the potential destruction stored in those warheads, we are less likely to use them in a global thermonuclear war. However, maintaining this deterrent carries its own high price. The likelihood of accidental detonations, small-yield nuclear attacks in regional conflicts, and radiation injuries in reactors and weapons plants increases as familiarity with this powerful force spreads. Arms limitations agreements among superpowers are important, but third world nations now too have access to the materials and technology necessary to enter the nuclear arena. The volatility of world politics may be moving beyond the ability of any policy- or lawmaking group to control. Given the devastating medical consequences that would follow a nuclear detonation or accident, the training of the medical corps in treating radiation syndromes will be a crucial factor in the effective management of casualties.

The rapidly expanding science of medical radiobiology has greatly affected the prospective readiness of the military medical corps to deal with these injuries. The Armed Forces Radiobiology Research Institute has been a leader in the establishment of the base of scientific and clinical knowledge from which the current concepts of medical management have evolved. In addition to research, the institute is involved in continuing medical education and in our nation's emergency response system. It is in a unique position to understand the importance of converting vast amounts of laboratory data into practical, efficient medical techniques and treatments. The authors have written their chapters from a combined academic and military perspective in order to specifically help the military physician.

Captain Richard I. Walker, MC, U.S. Navy, and Major T. Jan Cerveny, MC, U.S. Air Force, provided the expertise in the organization of this textbook. The first chapter is an overview of nuclear events and their consequences. The following chapters examine the effects of radiation exposure on humans and the ways they will affect triage, diagnosis, and treatment protocols as well as military logistics. A discussion of the latest prospects for radioprotection concludes the text.

It is possible that no amount of knowledge or training will help any medical unit to deal with the mass casualties that a large-scale radiation incident or accident would incur. However, data from accidental and therapeutic radiation exposures, together with ongoing clinical research results, are all useful in determining the treatment of individual victims of smaller incidents who are in a position to be saved.

The *Textbook of Military Medicine* series is a reality because of the vision and support of the late Major General James H. Rumbaugh; Lieutenant General Frank F. Ledford, Jr., the Surgeon General of the Army; Lieutenant General (ret.) Quinn H. Becker, our former Surgeon General; and Major General Robert H. Buker, Deputy Surgeon General of the Army.

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Colonel Russ Zajtchuk
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