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A COMPARATIVE ANALYSIS OF THE MEDICAL SUPPORT IN THE COMBAT OPERATIONS IN THE FALKLANDS CAMPAIGN AND THE GRENADA EXPEDITION

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MASTER OF MILITARY ART AND SCIENCE

by

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This study examines the medical support of combat operations by the British in the Falklands Campaign of 1982 and by the Americans in the Grenada Expedition of 1983. Recent history portends the increased use of ground combat forces in short duration employments far from logistical bases. Medical support by the British in the Falklands and by the Americans in Grenada is analyzed by comparing the two medical support operations with each other and against established principles and operational concepts. The medical support principles and operational concepts identified are shown to be excellent tools for comparing the two medical support operations studied as well as for planning and executing future medical support operations of rapidly deployed land forces.

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The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other governmental agency. (Reference to this study should include the foregoing statement.)

ABSTRACT

A COMPARATIVE ANALYSIS OF THE MEDICAL SUPPORT IN THE COMBAT OPERATIONS IN THE FALKLANDS CAMPAIGN AND THE GRENADA EXPEDITION, by Major Thomas E. Broyles, USA, 156 pages.

This study examines the medical support of combat operations by the British in the Falklands Campaign of 1982 and by the Americans in the Grenada Expedition of 1983. Recent history portends the increased use of ground combat forces in short duration employments far from logistical bases. These two examples of rapidly deployed land forces are investigated to illustrate the principles and operational concepts of medical support shared in common by both the American and British Armies and needed to support rapidly deployed forces. Medical support by the British in the Falklands and by the Americans in Grenada is analyzed by comparing the two medical support operations with each other and against established principles and operational concepts.

The medical support principles used for this comparative analysis are conformity, proximity, flexibility, mobility, continuity, and control. The medical support operational concepts used include triage, echelons of medical support, elements of combat medicine, patient evacuation, and command and control.

The medical support operations in the Falklands, like those in Grenada, are examined both in planning and execution as well as with respect to the role of medical command and control. Lessons learned by the respective medical departments are discussed in the light of the specific combat operation and in their particular relevance to general rapid deployment force medical support requirements.

The Falklands Campaign points out the highly successful joint medical support provided by the British and the precision with which they planned their medical support operation. It also points out British problems with aeromedical evacuation. The Grenada Expedition illustrates the hazards of precluding medical participation in planning a combat operation and the severe impact on field medical support when a joint operation is poorly coordinated. Both operations reveal the vital role that medical commanders have to play in the timely provision of medical support.

The medical support principles and operational concepts identified are shown to be excellent tools for comparing the two medical support operations studied as well as for planning and executing future medical support operations of rapidly deployed land forces. The lessons derived from each operation, especially when compared with the lessons of the other, also provide vital answers to questions about how medical commanders can ensure their units are ready to medically support combat operations of rapidly deployed forces.

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From its inception this thesis enjoyed the support of a number of people without whose assistance its completion would not have been possible. First and foremost have been the members of the thesis committee. The chairman, LTC Scottie Hooker, has consistently provided encouragement and motivation plus a discerning critical eye which has been invaluable. LTC Nick Johnson has given me many important insights into the Army Medical Department's operational concepts, especially in the area of aeromedevac. COL Max Manwaring contributed most significantly in assisting me in defining my topic in the formative stages of this project and that has made the thesis writing achievable and enjoyable in the limited time available.

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Information on Grenada was gathered from a number of participants who freely shared their experiences with me. All of the interviewees provided crucial information but I

especially appreciate the assistance of MAJ Dave Nolan and CPT Doug Phelps. Without their willingness to spend their time relating their experiences and observations, I could not have composed any real narrative about Grenada medical support.

To Dr. Robert Mosebar I owe special thanks for his help in assessing the medical support both in the Falklands and Grenada. His vast experience and insightful observations have been crucial in helping me deal with the problems of understanding the important medical lessons of each operation.

Ms. Judy Ronk, medical librarian at Munson Army Community Hospital, was extremely helpful in locating sources both on Falklands medical support and field medical support in general. She has great expertise in her field and provided me the finest support possible.

Of course, any errors in the telling of the stories of the medical support in the Falklands Campaign or the Grenada Expedition are wholly mine. I have sincerely tried to relate the events as they occurred and draw from them the salient conclusions and lessons which they provide for future medical support operations of rapidly deployed land forces.

Lastly, and most importantly, I would like to acknowledge the loving support of my wife, Beth, and my daughters, Karen and Susan. The number of hours invested in this thesis came from them, and I would not have been able to complete it without their help and encouragement.

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CHAPTER I

INTRODUCTION

The United States Army has a proud tradition of providing the American soldier with the finest medical support possible. The Army Medical Department, the Army's organization tasked to provide medical support, has steadily improved the medical support of soldiers in every war America has fought. This fact is evident when the statistics since the Civil War are studied.

During the Civil War 17 percent of the soldiers who were wounded and reached a medical treatment facility died, while in World War I, this figure dropped to 8.1 percent and in World War II it was down to 4.5 percent.[1] In the Korean conflict only 2.5 percent of U.S. personnel who were wounded and reached a medical treatment facility died.[2] In Vietnam less than 1 percent of the battle-injured soldiers died after reaching an Army hospital.[3]

It is important to note that these percentages represent only the wounded personnel who died after reaching medical treatment facilities. In the Vietnamese conflict a far greater percentage of wounded personnel reached medical facilities alive than during any prior conflict. This was due primarily to the use of helicopter ambulances which were

able to rapidly evacuate severely wounded casualties who would have died in prior wars before the evacuee could have reached a medical treatment facility.[4]

Unquestionably the medical service in Vietnam was the most complete and timely medical support the American soldier has ever had. The medical support rendered there has clearly created expectations by which all future medical support will be judged. This certainly appears appropriate, but if the expectations are to be met, the Army Medical Department must closely analyze lessons learned from recent combat operations--operations which portend the increased use of ground combat forces in short duration employments far from logistical bases.

Background: Rapid Projection of Land Forces

The United States has maintained forces capable of rapid deployment to potential contingencies throughout much of its history. But only recently, as the forces of the Soviet Union have expanded and the advances of technology have created a truly interdependent world community, have U.S. forces had to be prepared to deploy within hours to protect our vital interests and the vital interests of our allies.

The need to rapidly project land forces was forcefully brought to the American public's attention in 1979. This

came about through three events which began a dramatic reinflation of U.S. military aspirations and reversed the trend of the post-Vietnam era.[5] First, debate on the SALT II Treaty revealed the significant deterioration of U.S. military forces *vis a vis* Soviet forces.[6] Second, the overthrow of the Shah of Iran and the "seizure of U.S. diplomatic personnel as hostages in Tehran ... underscored American's vulnerability and helplessness."[7] Third, the Soviet Union invaded Afghanistan in December 1979.

In his January 20, 1980, State of the Union address, President Carter proclaimed the Carter Doctrine. In it he declared that any attempt by any outside force to gain control of the Persian Gulf region would be regarded as an assault on the vital interests of the United States. Such an assault, he said, would be repelled by any means necessary, including military force.[8]

For the first time, U.S. military forces were formally committed to defend Southwest Asia, a logistically remote region where the United States does not possess secure military access ashore in peacetime.[9] The Carter Doctrine thus "imposed new and exceedingly difficult obligations on U.S. conventional forces already severely overtaxed by traditional commitments in Europe and the Far East."[10]

The gap between the military aspirations espoused by President Carter and the forces available prompted action that has resulted in military force modernization initiatives during the past seven years. Included in these initiatives

have been enhancements of the U.S. Army's special operations forces--Rangers, Special Forces, special operations aviation units--as well as conventional forces.[11] Although force modernization has not been completed, the progress that has been made has increased the Army's capability to handle missions requiring the rapid deployment of ground combat forces.

Additionally, the use of military power has become more accepted as a means to deal with situations abroad especially when the safety of American citizens is involved. This is true not only because this is the view of the current Reagan Administration, but also because of the national will of the American people which grew out of the protracted American hostage crisis in Iran from 1979 to 1981.

Yet, as Colonel Harry G. Summers of the Strategic Studies Institute has observed, there have been no dramatic improvements in recent years in the ability of a nation to project power and fight a war far from home. Even with all of the high-technology weapons that are now available, the well-trained and capably led foot soldier is still the key to victory.[12] And, as the need for a rapidly deployable land force has been recognized and forces have been enhanced for rapid deployment missions, the possible uses of that land force have appeared to increase. The United Kingdom's campaign in the Falklands is one example of the successful use of rapidly deployed land forces. Another is the United States' Grenada Expedition.

In view of the world situation today, rapidly deployed land force operations will be used increasingly. Rapidly inserting a force on the ground in a trouble spot appears to our national leaders to be the best way to handle a number of potentially explosive situations. Indeed, the advent of the U.S. Army's light infantry divisions and the expansion of special operations units grew out of this realization. One of the best ways to control volatile situations is to rapidly deploy superior and flexible combat forces so that opponents abandon their plans in reaction to U.S. maneuvers.[13]

Due to the increasing likelihood of more rapid deployment force operations, all military professionals must examine these operations. By doing so, all the lessons available from previous operations can be gleaned and future operations can be planned and executed with greater precision and higher chances for success.

Medical Support of Combat Operations of Rapidly Deployed Land Forces

Since their purpose is to gain the initiative and impose a decisive force on the ground, the combat operations of rapidly deployed land forces must be accomplished with precision. Consequently, ground combat forces must plan

their missions carefully and execute them aggressively. The combat service support of such an operation must also be accomplished with precision. This is especially true with respect to medical support because ineffectiveness and inefficiency can cost lives.

The need for precision in medical support in rapidly deployed land force operations can hardly be overemphasized. As has already been shown, the expectations of medical care for soldiers wounded in combat operations are high. The tremendous record of medical support in the Vietnam conflict underscores the expectations of the U.S. Army Medical Department by the American public and today's soldier.

Supporting a rapidly deployed ground combat force can pose unique problems in providing timely medical support. This is because of the shortage of time to plan, the difficulty of forecasting the locale of employment, and the great distance at which medical support may have to be provided away from large medical support complexes. For these reasons, the medical support of combat operations like the Falklands Campaign and the Grenada Expedition must be studied to determine if established medical support principles were followed and what the actual execution of the medical support can teach us to improve future operations.

Statement of the Thesis Subject

To compare American and British medical support of combat operations of rapidly deployed land forces. The researcher will conduct a comparative analysis of the medical support of the British Army in the Falklands Campaign and the U.S. Army in the Grenada Expedition.

Objectives

The objectives of this study are: (1) to determine what the medical support principles are for U.S. Army and British Army combat operations; (2) to determine if the principles were followed in the Falklands and Grenada respectively; and (3) to draw conclusions from a comparative analysis of both operations.

The medical support principles will be examined in the context of the respective army combat service support principles. The medical support principles of both armies will also be compared to each other.

Medical support principles will be determined by a review of the published doctrinal manuals for each army. Medical support principles and actual medical support operations will be examined at corps level or lower. The principles established by the U.S. Army Medical Department and the Royal Army Medical Corps will then be

compared and contrasted with each other to determine if they provide an adequate framework for planning and executing medical support of combat operations.

Assumptions

This study assumes that the requirement for medical support of combat operations is valid and that the expectations of medical support of combat operations, at least for the U.S. Army, are the expectations based on the Vietnam experience. Research and analysis will start from these points.

That medical support is one aspect of combat service support is a fact and medical support must, therefore, be examined in the context of the overall combat service support plan of any operation. Medical support, both in planning and execution, is unique, however, and must be reviewed in the context of special medical principles and concepts.

Planners and executors of rapidly deployed land force operations should be concerned with appropriate medical support of those operations. Like all military operations, rapid deployment force operations require adequate combat service support both to achieve initial success and to sustain that success for the duration of the operation. Therefore, the medical support which sustains the soldiers in the operation is important and is a key element in the

force's ability to complete its mission. Medical support is as essential as any part of the combat service support equation.

Actual combat operations studied are the Falklands Campaign and the Grenada Expedition. Medical support principles and operational concepts are those described in current U.S. Army and British Army field operations manuals. Primarily referenced will be U.S. Army Field Manuals 8-10 "Health Service Support in a Theater of Operations" and 8-55 "Planning for Health Service Support" and the British Army's "Administration in War" and "Medical Interoperability Handbook."

Definitions

This study will use operational terms peculiar to U.S. Army medical support as well as terms peculiar to British Army medical support. All terms will be defined in accordance with respective army doctrinal publications and British Army terms will be carefully related to the most similar U.S. Army term.

For the purpose of this study, a rapidly deployed land force will be defined as a tailored military package rapidly assembled and deployed to meet an urgent situation. Such a force is composed of essentially standard military units but is assembled for a unique mission.

To serve as a framework for conducting the comparative

analysis which is the focus of this thesis, certain principles, doctrines, and operational concepts will be identified and discussed. In the context of this research, the words *principle*, *doctrine*, and *operational concept* are defined in the following manner:

(1) principle - a fundamental truth used to guide the planning and execution of a military operation which is sanctioned in official military publications;

(2) doctrine - a body of fundamental truths or principles sanctioned in official military publications;

(3) operational concept - an idea about the conduct of military operations formed by generalization from historical military experiences and sanctioned in official military publications.

In this study, field medical support consists of unit level, division level, and corps level medical support. Although there may be higher levels of medical support deployed with the force, such medical support will be discussed only as it relates to the echelons of medical support at corps or below.

Unit level or first echelon medical support is primarily concerned with the provision of emergency medical treatment and evacuation of the wounded from battle areas as necessary. First echelon medical support is provided by unit aidmen or by battalion aid post personnel.

Division level or second echelon medical support is provided by medical companies of division medical battalions

or forward support battalions. A medical company, normally placed in support of a brigade-size force, provides definitive treatment for relatively minor injuries or resuscitates and stabilizes casualties with more complex injuries for evacuation to a corps level hospital for initial surgery.

Limitations

This study will not address non-medical aspects of combat service support of the two actual operations in detail. Research will focus on the planning, execution, command and control of the medical support operations.

Additionally, this study will concentrate on medical support of combat operations and not concern itself with medical support once combat operations in Grenada and the Falklands had ceased.

Delimitations

This study will not examine the political considerations in the employment of forces in Grenada, in the Falklands, or elsewhere. The focus of the study is a comparative analysis of the medical support of the combat operations in Grenada and in the Falklands and how the medical support in each

operation compares with common medical support principles.

Historical research will be limited to combat operations since the end of the Second World War. Although this study focuses on medical support of combat operations in a low and mid-intensity environment, it will include medical support considerations across the whole spectrum of battlefield intensity.

Since land forces may have to be rapidly deployed worldwide, this study will not be limited geographically. The medical support principles examined will be applicable to any area in the world where combat operations may take place. Consequently, different types of climatic areas in the world will not be specifically addressed.

Significance of the Study

As mentioned earlier in this introductory chapter, the lessons of medical support of recent combat operations must be closely reviewed. This is necessary to ensure that medical support of future rapid deployment force operations is conducted with the benefit of an analysis of those lessons. The present recognition of the significance of rapidly applied military force in the international arena clearly points out that rapid deployment force operations will see more extensive use in the future. To the U.S. Army Medical Department and the soldiers it serves, the

effectiveness and efficiency of combat medical support are crucial.

Outline of Subsequent Chapters

Chapter Two reviews the available literature which bears on a comparative analysis of the medical support of the combat operations in Grenada and the Falklands. Doctrinal publications by the U.S. Army and the British Army are reviewed to assess their adequacy for the planning and execution of medical support of rapidly deployed land forces. From this review principles will be established in the subsequent chapter to evaluate the actual conduct of the medical support operations. Publications on the actual combat operations are also reviewed with emphasis on the publications about the medical support of each operation.

Chapter Three specifies the relevant principles for medical support as well as for overall combat service support. Principles are identified and discussed for both the U.S. Army and the British Army. The principles and operational concepts of each army are also compared to point out similarities and differences.

Chapter Four examines the medical support provided during the Falklands Campaign and assesses whether established medical support principles and concepts were or were not followed.

Chapter Five analyzes the medical support provided to American forces in the Grenada Expedition. It also assesses whether established medical support principles and concepts were or were not followed.

Chapter Six compares the medical support in the Grenada Expedition with the medical support in the Falklands Campaign in the context of the commonly shared medical support principles and concepts.

Chapter Seven provides conclusions and recommendations. Recommendations are made as to the principles and operational concepts needed to insure future successful medical support of combat operations by rapid deployment forces. Suggestions are also given to guide future researchers.

ENDNOTES

CHAPTER I

1. LTG Joseph M. Heiser, Jr., Vietnam Studies: Logistics Support (Washington, D.C.: Department of the Army, 1974), p. 212.

2. MG Spurgeon Neel, Vietnam Studies: Medical Support of the U.S. Army in Vietnam 1965-1970 (Washington, D.C.: Department of the Army, 1973), p. 51.

3. "Copter Ambulances Improve Survival Rate," The Journal of the Armed Forces 103 (December 11, 1965): 12.

4. Heiser, Logistics Support, p. 213.

5. Strategic Studies: National Security Policy Considerations (Fort Leavenworth, Kansas: U.S. Army Command and General Staff College, 1986), p. 159.

6. Ibid.

7. Ibid.

8. President Jimmy Carter, A Report on the State of the

Union 96th Congress House Document No. 96-257 (Washington, D.C.: U.S. Government Printing Office, January 22, 1980), p. 4.

9. Strategic Studies, p. 160.

10. Ibid.

11. COL James B. Motley, "Washington's Big Tug of War Over Special Operations Forces," Army 36 (October 1986): 18.

12. COL Harry G. Summers, "Yomping to Port Stanley," Military Review 64 (March 1984): 3.

13. Congressman Richard B. Cheney and MAJ Thomas N. Harvey, "Strategic Underpinnings of a Future Force," Military Review 66 (October 1986): 10.

CHAPTER II

REVIEW OF LITERATURE AND METHODOLOGY

Purpose

This chapter provides a review of the literature on medical support of combat operations relevant to this thesis. It serves as a point of departure for the research presented in the subsequent chapters and shows the foundation upon which the research analysis is based. The chapter is organized into three main sections.

The first section deals with publications on current medical doctrine, but not the doctrine itself. The actual doctrine of both armies is discussed in detail in Chapter Three. This section presents information on the doctrinal publications of both the American Army and the British Army. Combat service support doctri ·d medical support doctrine are addressed by these publications and they are the source

of the doctrine upon which the actual conduct of medical support operations is based. A brief assessment of the adequacy of the doctrine provided by these manuals is made. Also a brief comparison of the doctrinal publications of the U.S. and British Armies is conducted. Chapter Three presents a more detailed comparison.

The second section of this chapter discusses the sources available on the actual conduct of both of the operations under study. Source documents on the Grenada Expedition and the Falklands Campaign are reviewed and information on the techniques of searching for research material is presented. A review of the availability and use of unclassified publications on the medical support of Grenada and the Falklands is addressed. Additionally, the availability of classified sources is discussed.

The third section, entitled Methodology, delineates the method for conducting the comparative analysis of the medical support doctrines. It also specifies how the comparative analysis of the actual medical support operations in the Grenada Expedition and the Falklands Campaign is conducted.

Current Doctrine Publications

The current doctrinal information on medical support of combat operations is extensive in the U.S. Army and is found

in Army field manuals (FMs) and field circulars (FCs). General concepts of medical support are addressed in Army publications on combat service support (CSS) operations. Detailed doctrinal information on medical support is contained in the 8 - series of Army field manuals and circulars. CSS doctrine publications are reviewed first because this researcher believes that medical support must be examined in the context of combat service support operations.

FM 100-10 "Combat Service Support" is the U.S. Army's keystone manual on the principles of combat service support of forces committed to battle. It is the lead volume of the Army's series of "how-to-support" field manuals and presents general concepts developed in greater detail in the how-to-support FMs.[1] The other field manuals in the series are:

FM 63-1 "CSS Operations - Separate Brigade"

FM 63-2 "CSS Operations - Division"

FM 63-3J "CSS Operations - Corps"

FM 63- 'SS Operations - Theatre Army Area Command"

FM 63-5 "CSS Operations - Theatre Army"

These manuals provide detailed doctrinal information on the conduct of CSS operations at the echelons designated above. For this thesis, FMs 63-2, 63-3J, and 100-10 are the most relevant. These are adequate publications which are concise and clearly written.

An additional doctrinal publication which has proved valuable in researching CSS principles has been the U.S. Army Command and General Staff College's summarization o" the

principles contained in FM 100-10 and the FM 63-series. This summarization is found in Introduction to Combat Service Support used in the college's curriculum. Introduction to Combat Service Support synthesizes eight broad principles of CSS highly relevant to this research.[2]

Like FM 100-10, "Administration in War" (British Army Code Number 71342) is the British Army's keystone combat service support manual. The term administration is defined by this British Army manual as "the management and execution of all military matters not included in tactics and strategy; primarily in the fields of logistics and personnel management."[3] "Administration in War" is similar to FM 100-10, but it is a much more detailed manual. It not only presents basic principles like 100-10 but also provides details about different echelons much as the U.S. Army's 63-series of how-to-support manuals. This British Army manual and several others were obtained from the U.S. Army Command and General Staff College's British Liaison Officer, COL R.J.B. Heard.

The British Army supplements their primary doctrinal manuals such as "Administration in War" with precis, or brief summaries covering new developments or elaborations of information on a particular subject. For example, one of the precis used in this thesis was "Logistics 2" which outlines administration and logistics in the division in war and is used in the British Army Staff College.[4]

As mentioned in the beginning of this section, U.S. Army

8-series field manuals and circulars deal with medical support of combat operations. These manuals and circulars are essentially "how-to-medically-support" publications. Although they are not as consistent in dealing with progressive echelons of support like the 63-series they do provide detailed information in a highly readable and useful format. FM 8-10 "Health Service Support in a Theater of Operations" clearly specifies essential medical support principles while FM 8-55 "Planning for Health Service Support" comprehensively addresses all aspects of planning medical support of combat operations. Also significant is FM 8-8 which deals with "Medical Support in Joint Operations." Currently under revision, it provides guidance about Army, Navy, and Air Force medical support in an area of operations as well as joint medical planning factors and procedures.

Recently the Army has published several highly relevant and excellent medical support field circulars. These are FC 8-15-1 "Health Service Support Operations-Light Infantry Division," FC 8-15-2 "Health Service Support Operations-Airborne and Air Assault Divisions," and FC 8-43 "Medical Evacuation in the Combat Zone." All three address support of combat operations and represent the most current conceptual publications of the Army Medical Department related to this study. Also highly relevant is TRADOC Pamphlet 525-50 "Health Service Support AirLand Battle."

Essentially the same medical support concepts outlined in the U.S. Army doctrinal publications are contained in the

British Army's "Administration in War." The specific similarities and differences between U.S. and British Army doctrines will be discussed in the next chapter. "Administration in War" clearly presents the role and organization of British Army medical support systems. Medical support is further addressed in the "Medical Interoperability Handbock" (British Army Code Number 71376) and in a medical precis entitled "Medical Support in the Field"--both provided by Colonel Ian Creamer, Royal Army Medical Corps liaison.

Few publications in either military or medical journals deal with changing current military medical doctrine. A search of both American and British journals reveals a scarcity of supplemental publications either debating the validity of current doctrine or setting forth recommendations for change. This researcher believes this is due in part because few journals attract articles on medical doctrine and because there are relatively few proponents for change willing to prepare such articles. The primary reason that few supplemental publications on medical doctrine are found is because current doctrine has developed from time-tested principles and concepts. These principles and concepts have been derived through the experience of both American and British medics in the wars each country has experienced in the 19th and 20th Centuries. The doctrine is sound. Any debate grows out of how closely the doctrine is followed in support of actual combat operations. Generally speaking,

both U.S. and British Army medical support doctrines are clearly written and conform to the tactical doctrines they support.

Sources and Source Documents on the Falklands Campaign and the Grenada Expedition

Since the focus of this thesis is a comparative analysis of the medical support of two operations by rapidly deployed land forces, the literature review next concentrated on the availability of material on the Falklands and Grenada. Several computer searches were conducted via both military and medical channels to obtain source material. This material was examined on three levels: (1) general information on each operation; (2) information on the combat service support of each operation; and (3) specific information on the actual medical support of the combat operations in the Falklands and Grenada.

Information on the first level was extensive for the Falklands Campaign both through official British Army sources and unofficial sources. Many books have been written about the Falklands Campaign. This researcher confined himself to the general references which concentrated on ground combat operations. A number are cited in the bibliography but the best are Hastings and Jenkins' The Battle for the Falklands and Frost's 2 PARA Falklands: The Battalion at War. The

former is the most readable and historically accurate of the books dealing with the campaign as a whole while the account of the 2nd Parachute Battalion, by the Arnhem veteran John Frost, captures the ferocity of the Falklands battles.

With respect to Grenada, the only extensive sources available are official U.S. Army after action reports and assessments. These include: (1) Bishop and O'Brien's FORSCOM/ARLANT Participation in Operation Urgent Fury -- Grenada, 1983; (2) the Grenada Work Group's Operation Urgent Fury Assessment; (3) the Department of the Army's Lessons Learned Grenada: U.S.Army Lessons Learned From 1983 Operation Urgent Fury; and (4) Pirnie's Operation Urgent Fury: The United States Army in Joint Operations. Books on the Grenada intervention are scarce and much of the Army's material is classified. However, enough material in a number of unofficial sources is available to clearly reconstruct the essential events in the Grenada Expedition for this thesis.

With respect to sources on combat service support, the material on the Falklands also significantly exceeds that available on Grenada. CSS for the Falklands Campaign is fully addressed in a number of official after action reports as well as unofficial articles noted in the bibliography. A superb distillation of these articles and others was recently made by an officer in the U.S. Army Command and General Staff College's School of Advanced Military Studies. Major Kenneth L. Privratsky has written British Combat Service Support on East Falkland: Considerations for

Sustaining Tactical Operations in Remote Areas which was published in November 1985. This work has served as an extremely useful guide to overall CSS operations for the British campaign.

Although unofficial sources on Grenada combat service support were extremely limited, the four official after action documents previously mentioned did cover CSS in sufficient detail to effectively conduct this research.

Finally, with respect to the specific information on the actual medical support of the combat operations in Grenada and the Falklands, the same trend continued. Extensive official and unofficial sources are available on the Falklands Campaign. The USACGSC's British Liaison Officer, COL R.J.B. Heard, put this researcher in contact with the Royal Army Medical Corps' Liaison Officer who provided a wealth of official source material. In addition, more than a dozen articles in British military and medical journals were obtained which were written on the Falklands medical experiences. These articles covered the full range of medical support activities.

Information on medical support in Grenada was limited to two types of sources. These were the official after action reports and interviews with medical officers who participated in the Grenada Expedition medical support. The combination of the information derived from both sources gave the researcher a detailed picture of the medical support provided.

Compared to Grenada, little material on the Falklands is classified. Although the principal sources about the Grenada Expedition are classified there is abundant unclassified material contained within the reports which has been used in this thesis. There was no need to use classified material to research the Falklands Campaign and the obstacle of classified documents on Grenada was overcome because of the availability of unclassified sections within the classified reports.

Finally, a number of sources (both books and periodicals) on combat service support and medical support were consulted for historical perspective. The best of these was Major General Spurgeon Neel's Medical Support of the U.S. Army in Vietnam 1965-1970, a thorough recounting of the Army Medical Department's support in the Vietnamese conflict. The other prominent historical analysis was Rapid Deployment Logistics: Lebanon 1958 by Lieutenant Colonel Gary H. Wade. As Major General Dave L. Palmer states in the foreward to that work, "a good number of the logistical problems encountered in Lebanon in 1958 recurred in the U.S. intervention in Grenada twenty-five years later."[8]

Methodology

This investigation is founded upon a thorough understanding and a concise explanation of the principles of

medical support of combat operations. These principles are discussed in Chapter Three and have been examined from the viewpoints of both the American and British Armies. They have also been placed in the context of the principles for overall combat service support of each army. This has been essential to clearly delineate the role of medical support in relation to other components of combat operations service support.

Planning and execution of the actual CSS operations and medical support operations are reviewed as well as the aspect of command and control. As in all military operations, planning will be shown to be vital to effective execution of combat service support in the Falklands and Grenada. The planning processes of both armies have been examined per their doctrine and in the actual situations in the two operations. Execution of support operations has been analyzed to determine how closely the actual support followed plans and how effective the actual support was judged to be by participants and expert observers.

To reiterate, the focus of this thesis is a comparative analysis of the medical support of the combat operations in the Grenada Expedition and the Falklands Campaign. Doctrine of both armies is compared. Evidence collected is analyzed with respect to the established medical support principles as derived from U.S. Army and British Army field manuals. From this analysis conclusions are derived and presented.

ENDNOTES

CHAPTER II

1. U.S. Department of the Army Field Manual 100-10 "Combat Service Support." : ii.

2. LTC John R. Raffle, Combat Service Support: Introduction to Combat Service Support S480/6. U.S. Army Command and Staff College, Fort Leavenworth, Kansas, 13 May 1985: 19-21.

3. "Administration in War." British Army Manual on Administration and Logistics. Army Code Number 71342. Ministry of Defence, 1984: 1-1.

4. "Logistics 2." Precis from the United Kingdom Army Staff College in files of British Liaison Officer, U.S. Army Command and Staff College.

5. LTC Gary H. Wade, Rapid Deployment Logistics: Lebanon 1958. Combat Studies Institute, U.S. Army Command and Staff College, Fort Leavenworth, Kansas, October 1984: foreword.

CHAPTER III

MEDICAL SUPPORT PRINCIPLES AND CONCEPTS

To understand and analyze the medical support of combat operations of the American and British Armies, one must first examine the essential principles and operational concepts upon which that medical support is based. These concepts and principles are stated clearly in the medical support doctrinal publications of both the U.S. Army Medical Department (USAMEDD) and the Royal Army Medical Corps (RAMC). They grew out of and are grounded in the principles and concepts of combat service support of both armies and special medical considerations. Consequently, a brief review of combat service support tenets for both armies is presented first. Then medical support principles and concepts will be examined in depth.

Combat Service Support Principles

The American Army defines combat service support (CSS) as "the assistance provided to sustain combat forces, primarily in the fields of administration and logistics."[1] Administration refers to personnel service support (including medical support) and civil affairs administration. Logistics includes maintenance, transportation, facilities, and supply (excluding medical supply).

The British Army uses the word "administration" instead of combat service support and candidly points out in "Administration in War" that the terms "administration" and "logistics" are frequently used loosely.[2] Except for this point, definitions of "combat service support" in the American Army and "administration" in the British Army are essentially identical. In fact, since both nations are members of the North Atlantic Treaty Organization (NATO), both define "logistics" as planning and carrying out the movement and maintenance of forces - the standard NATO definition.[3]

The British Army identifies five principles of administration: foresight, economy, flexibility, simplicity, and cooperation.[4] These principles are augmented by the principle that "forward planning will be essential to the success of an operation since resupply may be complex and the maximum use must be made of local resources in cooperation

with a host nation or ally."[5] The British also emphasize, in a more general sense, that "no plan can be formulated without an accurate appreciation of the logistic intelligence available and of all other relevant factors."[6]

Similarly the American Army incorporates "the principles of *responsiveness*, *flexibility*, and *initiative*" in their combat service support doctrine.[7] These are expanded to form the following eight principles which are identified as the basis of U.S. Army CSS doctrine:

(1) Support Forward

(2) Continuous Planning

(3) Practice Economy

(4) Maximum Use of Standing Operating Procedures

(5) Tailored Support

(6) Centralized Control/Decentralized Operations

(7) Maximum Use of Throughput Distribution

(8) Maximum Use of Local Resources [8]

From this brief discussion one can clearly see that both armies base their service support of combat operations on highly similar principles. Differences are minor and are ones of language rather than substance. The eight principles listed above not only form the basis of American Army CSS doctrine but can also be used to examine British Army administration in war. They form a common context within which medical support principles are established and can be

examined for comparing American and British medical support operations.

Medical Support Principles

Unlike the combat service support principles which were briefly reviewed, the following medical support principles and concepts of the American and British Armies will be more fully examined and discussed. Certainly medical support principles and operational concepts are central to the comparative analysis which is the focus of this thesis.

To provide effective and efficient medical support of combat operations, the USAMEDD and the RAMC have established a number of general principles. The American Army specifies these in FM 8-10 and enumerates six principles.[9] These are:

(1) Conformity
(2) Proximity
(3) Flexibility
(4) Mobility
(5) Continuity
(6) Control

Conformity points out that medical support must conform to the tactical plan of operation so that medical support is

provided at the right place and time. Proximity stresses that medical support must be provided as close to combat operations as possible to minimize morbidity and mortality. Flexibility emphasizes that units providing medical support must be prepared to shift medical support resources to meet changes in tactical operations.

Mobility is an essential principle because medical support units must maintain close contact with maneuvering tactical units. Continuity provides for moving the patient through a progressive and phased medical support system in an uninterrupted manner that decreases morbidity and mortality. Finally control stresses the need for centralized management of medical resources to maximize the treatment medical support units can offer to soldiers in combat operations.

Similarly, the British Army identifies basic principles for the collection, evacuation and treatment of their wounded soldiers in "Administration in War."[10] The British emphasize tactical congruency, close support, adaptability, and the collection of casualties as quickly as possible (conformity, proximity, flexibility, and mobility). They also stress the importance of continuity of care and control of medical resources. As in the CSS principles, minor differences in language exist between British and American medical support principles. Nevertheless, the general principles for medical support are shared in common.

Medical Operational Concepts

Medical operational concepts of the USAMEDD and the RAMC are also highly similar. A comparison of operational concepts, however, points out the first significant differences between American and British medical support. The medical operational concepts of the USAMEDD and RAMC encompass the following: (1) triage; (2) echelons of medical support; (3) elements of combat medicine; (4) patient evacuation; and (5) command and control.

Triage

Both the British and American Armies use the concept of triage (or patient sorting). Triage, which in French means "the division into three," began as a concept to separate patients into three groups. One group needed immediate attention, one group could wait, and one group had wounds so severe that life could not be saved due to insufficient time, medical personnel or resources.

Triage is an essential concept for handling large numbers of casualties (called mass casualty situations). This concept applies to all medical support of combat operations because of the ever-present likelihood of mass casualty situations arising.

Both the American and British Armies use the NATO definition of a mass casualty situation and the four (not three) NATO treatment group categories. NATO defines a mass casualty situation as one in which an overwhelming number of seriously injured are placed upon medical facilities unable to supply medical care for all. "Under these conditions," the definition states, "the aim must be to assure care to the greatest benefit of the largest number."[11] The USAMEDD and the RAMC use the four general treatment categories below:

(1) Immediate - for patients requiring immediate treatment to save life or limb;

(2) Delayed - for patients who, after emergency treatment, can have major definitive procedures delayed;

(3) Minimal - for patients who need simple treatment and can be returned to duty immediately;

(4) Expectant - for patients with massive injuries and little chance of survival even if all medical resources are concentrated upon them.[12]

The use of NATO terminology with respect to the operational concept of triage thus eliminates any significant difference between the USAMEDD and the RAMC.

Echelons of Medical Support

Both the American Army and the British Army recognize the necessity for establishing CSS concurrently with the employment of tactical units. FM 100-10 states that "some combat service support elements should be employed into a hostile environment as soon as the first forces land."[13] This objective is achieved by both armies by echeloning medical support.

The first echelon of medical support in the U.S. Army is unit level medical support. This is provided by medical aidmen and aid stations organic to tactical units. In the British Army, unit level medical support is called first line medical support and is essentially the same as for the American Army.[14] An important supplement to this level is buddy-aid. Both armies train their soldiers in basic life-saving measures and first-aid treatment. This enables a soldier to administer to himself or to a fellow soldier if the unit medic cannot immediately attend to him.

The second echelon of USAMEDD support is division level medical support. Division level medical support "includes evacuation of patients from unit level aid stations and initial resuscitative treatment."[15] This support is provided by medical companies and sections of the division medical battalion or forward support battalions. The equivalent of division level medical support in the British Army is called

second line medical support. The major second line unit is the field ambulance whose tasks are: (1) collection of casualties from unit (usually regimental) aid posts; (2) centralization of casualties at dressing stations (like American medical companies); (3) casualty treatment "to enable them to survive evacuation to hospitals or return to duty;" and (4) control of patient evacuation.[16]

Hospitals are first found in the third echelon of each army and their role at this echelon is the same for both armies. "This level of support includes the evacuation of patients from supported divisional and non-divisional units, resuscitative surgery and emergency/resuscitation care on an area basis...."[17] This is also the first level where surgery is normally performed. USAMEDD field medical units in the third echelon include 60-bed mobile army surgical hospitals (MASHs), 200-bed combat support hospitals (CSHs), and 400-bed evacuation hospitals (EVACs).[18]

Third echelon RAMC units include 400-bed field hospitals (Forward Support Complexes) and 800-bed general hospitals (Rear Surgical Complexes).[19] Both RAMC and USAMEDD hospitals at this echelon may detach small surgical teams down to second echelon medical units or position the teams as lead or advance elements of the third echelon medical support. This practice is found in both armies for medical support in remote areas with slow means of patient evacuation. By doctrine, third echelon hospitals are the highest echelon established by both armies in the combat zone.

The highest echelon of medical care for both armies is the fourth echelon. In addition to having the capability of providing all medical treatment available at the other echelons, fourth echelon hospitals can provide definitive care for all patients.[20] These hospitals are usually found in the communications zone behind or out of the area of combat operations. They may be permanent facilities or they may occupy semi-mobile, tent-sheltered facilities. They include fixed medical centers operated by both the USAMEDD and the RAMC. USAMEDD hospitals at this echelon also include field hospitals and general hospitals while the RAMC hospitals are 400-bed evacuation hospitals and 800-bed general hospitals.[21]

Due to their size and the wide range of medical care which they provide, third and fourth echelon hospitals are augmented by large evacuation units (evacuation battalions or ambulance regiments) for evacuating patients from the echelons of medical support immediately below them. In both the American and British armies, first and second echelon medical units have organic evacuation assets. (A subsequent section of this chapter discusses patient evacuation.)

Elements of Combat Medicine

The type of treatment available for patients at the third and fourth echelons of military medical care is

essentially like that found in any civilian hospital or medical center. The type of treatment found at the first two echelons of medical support in both the American and British Armies requires more specific explanation, however, because the type of medical care given is directly related to the fact that the care is given in a tactical environment.

The USAMEDD structures medical care at the unit-level and the division-level around the elements of advanced trauma life support (ATLS) care. These elements are:

(1) assessment of patients with multiple injuries;
(2) insertion of breathing tubes;
(3) prevention and treatment of shock;
(4) replacement of lost body fluids;
(5) emergency treatment of trauma injuries; and
(6) initial treatment of burns.

The USAMEDD's goal is to provide soldiers ATLS care within thirty minutes of injury and to stabilize patients requiring third and fourth echelon care so that surgical intervention can be provided within four to six hours. As can be seen, ATLS care is relatively basic medical care. Given the environment of combat operations and the inherent difficulties of providing medical support in that environment, ATLS care is the right level of care which the first and second echelons of medical support should provide.

The RAMC uses basically the same framework at their

first two echelons of medical support. Like the USAMEDD, the RAMC fully recognizes the criticality of providing soldiers lifesaving care as soon as possible. The timeframes they recognize for effectively providing that care are the same as the ones used in the American Army. In specifying the equipment which their personnel need in order to provide ATLS care, the British specify those medical items needed to encompass the six elements of combat medicine identified by the USAMEDD.[22]

Patient Evacuation

A key concept of medical support is patient evacuation. The U.S. Army defines patient evacuation as the timely, efficient movement of wounded from the battlefield which begins where the injury occurs and continues until the patient receives the definitive care he needs.[23] The U.S. operational concept is that the gaining medical unit is responsible for patient evacuation - higher evacuates lower. The British Army operates its patient evacuation system in the same manner except for one significant difference.[24]

The significant difference concerns aeromedical evacuation. Although the USAMEDD relies heavily on ground ambulances, the USAMEDD specifies that the preferred means of patient evacuation is by air. "Aeromedical evacuation, to the maximum extent feasible, will be used in the combat zone

for evacuation."[25] The RAMC uses aeromedical evacuation also but unlike the USAMEDD the RAMC has no aeromedical evacuation units of its own. The RAMC must rely on CSS helicopters to perform aeromedevac (without in-flight medical care) in addition to their primary mission of moving equipment, supplies, and troops in airmobile operations.

Evacuation is a major element in the medical support of combat operations. The speed of evacuation and the continuous enroute medical care from the battlefield to the treatment facility are just as important as the emergency medical treatment at the site of injury and the comprehensiveness of medical care available at hospitals. As Major General Spurgeon Neel, U.S. Military Assistance Command Vietnam surgeon, observed about medical support in Vietnam, "Getting the casualty and the physician together as soon as possible is the keystone of the practice of combat medicine. The helicopter achieved this goal as never before."[26]

The Korean and Vietnam experiences proved to the American Army that the USAMEDD should have its own helicopters for aeromedevac. According to the U.S. Army, air ambulances are as essential as ground ambulances. They provide a new dimension for patient evacuation and their control by medical commanders rather than general CSS commanders is as appropriate as is the control of ground ambulances. To date, the RAMC has not persuaded the British Army to a similar point of view.

Command and Control

A final operational concept which is central to any comparison of medical support of combat operations is command and control. A basic understanding of command and control is key to an understanding of any military operation.

Paraphrasing FM 101-5-1, command and control in the medical support arena is the process of directing, coordinating and controlling medical units to accomplish the medical support mission. "The process encompasses the personnel, equipment, communications,...and procedures necessary to gather and analyze information...," plan medical support operations and supervise their execution.[27] Unity of command is recognized as essential for the USAMEDD as it is for the other elements of the American Army. The role of the medical commander - at each echelon of medical support - is crucial to effective medical support of combat operations.

In the same way as in the American Army, medical command and control is recognized as absolutely vital in the British Army. At each of the levels of medical support which the RAMC provides, medical officers control the provision of patient treatment, the order of evacuation, and the network for medical communications.[28] The RAMC's "Medical Support in the Field" clearly describes command and control imperatives for every echelon. It carefully addresses the medical commander's responsibilities for resource allocation, medical

planning, information gathering, and casualty evacuation (casevac) coordination.[29]

The medical support of rapidly deployed land force operations requires the superior command and control described in the U.S. Army's keystone warfighting manual, FM 100-5 "Operations." Essential for this is the thorough understanding by all elements of a force of the overall commander's intent and concept of operations.[30] Both the USAMEDD and the RAMC fully recognize the significance of this understanding and emphasize its importance throughout their medical support doctrinal publications.

Summary

The principles and operational concepts discussed in this chapter provide an excellent framework for comparing the planning and execution of medical support operations. The following examination of the medical support in the Falklands and in Grenada uses this framework to analyze the planning, execution, command and control of those medical support operations.

ENDNOTES

CHAPTER III

1. U.S. Department of the Army Field Manual 101-5-1 "Operational Terms and Symbols." : 1-16.

2. "Administration in War." British Army Manual on Administration and Logistics. Army Code Number 71342. Ministry of Defence, 1984: 1-1.

3. FM 101-5-1, p.1-43 and "Administration in War," p. 1-1.

4. "Administration in War," p. 1-2.

5. Ibid., p. 1-7.

6. Ibid., p. 1-8.

7. U.S. Department of the Army Field Manual 63-2 "Combat Service Support Operations - Division." : 1-2.

8. LTC John R. Raffle, Combat Service Support: Introduction to Combat Service Support S480/6. U.S. Army Command and Staff College, Fort Leavenworth, Kansas, 13 May 1985: 19-21.

9. U.S. Department of the Army Field Manual 8-10 "Health Service Support in a Theater of Operations." : 2-12 and 2-13.

10. "Administration in War," pp. 2-54 and 2-60.

11. "Medical Support in the Field." Precis from the Royal Army Medical Corps Training Centre in files of British Liaison Officer, U.S. Army Surgeon General's Office: 1A-1.

12. FM 8-10, p. 6-3 and "Medical Support in the Field," p. 1A-1.

13. FM 100-10, p. 2-24.

14. "Medical Interoperability Handbook." British Army Manual Code Number 71376. Ministry of Defence, February 1986: 1-2.

15. FM 8-10, p. 2-4.

16. "Medical Interoperability Handbook," p. 1-3.

17. Ibid.

18. FM 8-20, pp. 4-1 thru 4-5.

19. "Medical Interoperability Handbook," p. 1-4.

20. U.S. Department of the Army Field Manual 100-16 "Support Operations: Echelons Above Corps." : 8-2.

21. "Medical Interoperability Handbook," p. 1-4.

22. "Medical Support in the Field," pp. 1-3 and 2C-5.

23. U.S. Department of the Army Field Manual 8-35 "Evacuation of the Sick and Wounded." : 1-1.

24. "Medical Interoperability Handbook," p. 4-10.

25. U.S. Department of the Army Field Manual 63-3J "Combat Service Support Operations - Corps." : 10-8.

26. MG Spurgeon Neel, Vietnam Studies: Medical Support of the U.S. Army in Vietnam 1965-1970. Washington, D.C.: Department of the Army, 1973: 59.

27. FM 101-5-1, pp. 1-16 and 1-17.

28. "Administration in War," p. 4-11.

29. "Medical Support in the Field," pp. 3-8 thru 3-11.

30. U.S. Department of the Army Field Manual 100-5 "Operations." : 3-4 and 21-21.

CHAPTER IV

MEDICAL SUPPORT IN THE FALKLANDS CAMPAIGN

The Falklands Campaign: Background

On the second of April, 1982, Argentina invaded the British-owned Falkland Islands. The Falklands, located 450 miles from Argentina and 8,000 miles from Britain, had long been claimed by Argentina. Prior to the invasion, Argentina was negotiating with Britain for sovereignty over the small islands. To the Argentinians, the long negotiations did not appear useful in altering British control of the islands. Furthermore, to Britain, the negotiations reaffirmed its control primarily because the 1,800 English-speaking inhabitants "were opposed to being ruled by a Spanish-speaking country whose government was an arbitrary military dictatorship."[1]

Three days after the Argentine invasion, on the fifth of

April, Britain dispatched the first naval elements of a task force it would assemble to retake the Falklands. This task force stopped briefly at Ascension Island, halfway between Britain and the Falklands, to await the outcome of further negotiations to persuade Argentina to withdraw its troops. When these negotiations failed, the stage for the land war in the Falklands was set. (See Figure 1, page 53.)

On 25 April, a party of Royal Marines and Special Forces landed on South Georgia and after a short fight received the surrender of the Argentinian garrison. This successful attack gave the British task force an additional land base, albeit still some 800 miles from the Falklands.[2]

The eighth of May saw 3 Commando Brigade, Royal Marines, reinforced by two attached battalions of the British Army's Parachute Regiment leave Ascension with the mission of retaking the Falklands.[3] (The British refer to the 2nd and 3rd battalions of the Parachute Regiment as 2 Para and 3 Para respectively.) On 12 May, the British Army's 5th Infantry Brigade sailed from Britain to join the task force in the South Atlantic. On 21 May, 3 Commando Brigade and the attached parachute battalions landed at San Carlos on East Falkland. (See Figure 2, page 54.)

Although raids were conducted on Pebble Island, located just north of West Falkland, the focus of British attention during the campaign was on East Falkland. There the overwhelming preponderance of Argentinian strength, nearly 10,000 soldiers, was located. The British assumed that the

decisive battles in the Falklands Campaign would be on East Falkland and they were proven correct.

The breakout from the San Carlos beachhead started on 27 May. In the north 45 Commando headed for Douglas Settlement and 3 Para thrusted towards Teal Inlet.[4] 2 Para attacked towards Darwin and Goose Green. In fierce battles at Darwin and Goose Green on 28 and 29 May, 2 Para overcame strong Argentinian defensive positions, killing some 250 Argentinians and capturing over 1600 prisoners. This defeat deeply affected the morale of the remaining Argentinians garrisoned in the Falklands.[5] At the same time, 45 Commando took Douglas and clashed with Argentinian troops in the Mt. Kent area. Men and weapons were airlifted on to Mt. Kent which was then captured. Mt. Kent dominated the western and northern approaches to Port Stanley, the capital of the Falklands.[6]

On 30 May, advance elements of 5 Infantry Brigade arrived at San Carlos. By 2 June, the complete brigade had been deployed ashore in preparation for the final advance against Port Stanley. On 14 June, after a series of engagements preliminary to a final assault on the capital, the Argentine forces collapsed. A truce was arranged and the Argentinian commander, General Menendez, agreed to surrender all Argentinian forces in the Falklands Islands. The war in the Falklands was over.

A Brief Review of the Combat Service Support of the Falklands Campaign

The challenge of providing combat service support to the British land forces in the Falklands Campaign was clearly a formidable one. The sheer distance from the United Kingdom made it so. There were no contingency plans for logistic support of combat operations in the Falklands and, at the time of the task force's departure, it was unclear what form combat operations would take.[7] Moreover, the British had only one intermediate staging base, Ascension Island, which is located midway between Britain and the Falklands and, therefore, lay 4,000 miles from the battlefields.

Combat service support (CSS) operations on East Falkland were the responsibility of the Commando Logistic Regiment, Royal Marines, later augmented by army CSS units. These CSS operations started with the landing of 3 Commando and continued throughout the campaign.[8] The Logistic Regiment began its CSS planning using a basic logistic concept of operations which had been exercised the previous year.[9]

Although the land force fought throughout the campaign on what Hastings and Jenkins aptly described as "shoestring resources," CSS planners and tacticians adjusted and synchronized plans to insure successful sustainment of combat operations.[10,11] All in all, the British Secretary for Defense correctly described CSS in the Falklands when he said it was "a major success" of the campaign.[12]

Since the focus of this research is the medical support provided in the campaign, overall CSS in the Falklands will be examined further only briefly and with respect to the eight CSS principles identified in the previous chapter.

First, with respect to the principle of *Support Forward*, it is clear that the British followed this principle despite great difficulties in doing so. Since this was an island campaign 8,000 miles from Britain, the British had to rely significantly on seaborne support. Due to the lack of air superiority, the time supply ships could be off-loaded was limited to only a few hours each night because the ships had to make for the open sea before daybreak.[13] Nevertheless, forward support was maintained on the beaches initially and further inland as the ground forces advanced. The lack of sufficient numbers of helicopters was the only serious deficiency in the forward support of the ground forces.

Continuous Planning was maintained once the British government decided to commit a task force to retake the islands. Planning was not perfect but adjustments were continuously made in anticipation of the requirements of tactical contingencies. *Practice Economy* was essential due to the limited number of support vessels available and the long transit time. Additionally, the British made *Maximum Use of Standing Operating Procedures* by using the time sailing to the Falklands to review and practice the procedures later to be used in the actual CSS operations.

There are many examples of *Tailored Support* for the land

forces in the Falklands Campaign. For instance, it was recognized that the islands' terrain was essentially either mountainous or boggy and would, therefore, necessitate a reliance on footborne or heliborne movement. For this reason, the forces committed were tailored to leave useless vehicles behind in Britain.

The British CSS planners, as well as the tacticians, practiced *Centralized Control/Decentralized Operations*. Despite the oversupervision which can often be found in a campaign like this one with the availability of advanced communications technology, the chain of command in the Falklands Campaign concentrated on providing resources to the soldiers on the ground and allowed the leaders on site to execute tactical and combat service support operations.

The British also followed the last two of the basic CSS principles identified in the previous chapter. They made *Maximum Use of Throughput Distribution* and *Maximum Use of Local Resources*. Ammunition, food, and other supplies were flown as far forward as helicopter assets allowed while local fuel supplies and transportation assets were used whenever available and warranted by tactical necessities.

The British soldiers who provided the vital combat service support in the Falklands Campaign did an extraordinary job. Despite limited time to plan and limited resources with which to execute support operations, the CSS provided to the land force was vigorously rendered and did not violate any of the cardinal principles of CSS doctrine.


UNITED KINGDOM
9225 mi
ASCENSION IS.
ARGENTINA
FALKLAND IS
SOUTH GEORGIA
SOUTH SANDWICH IS.

FIGURE 1

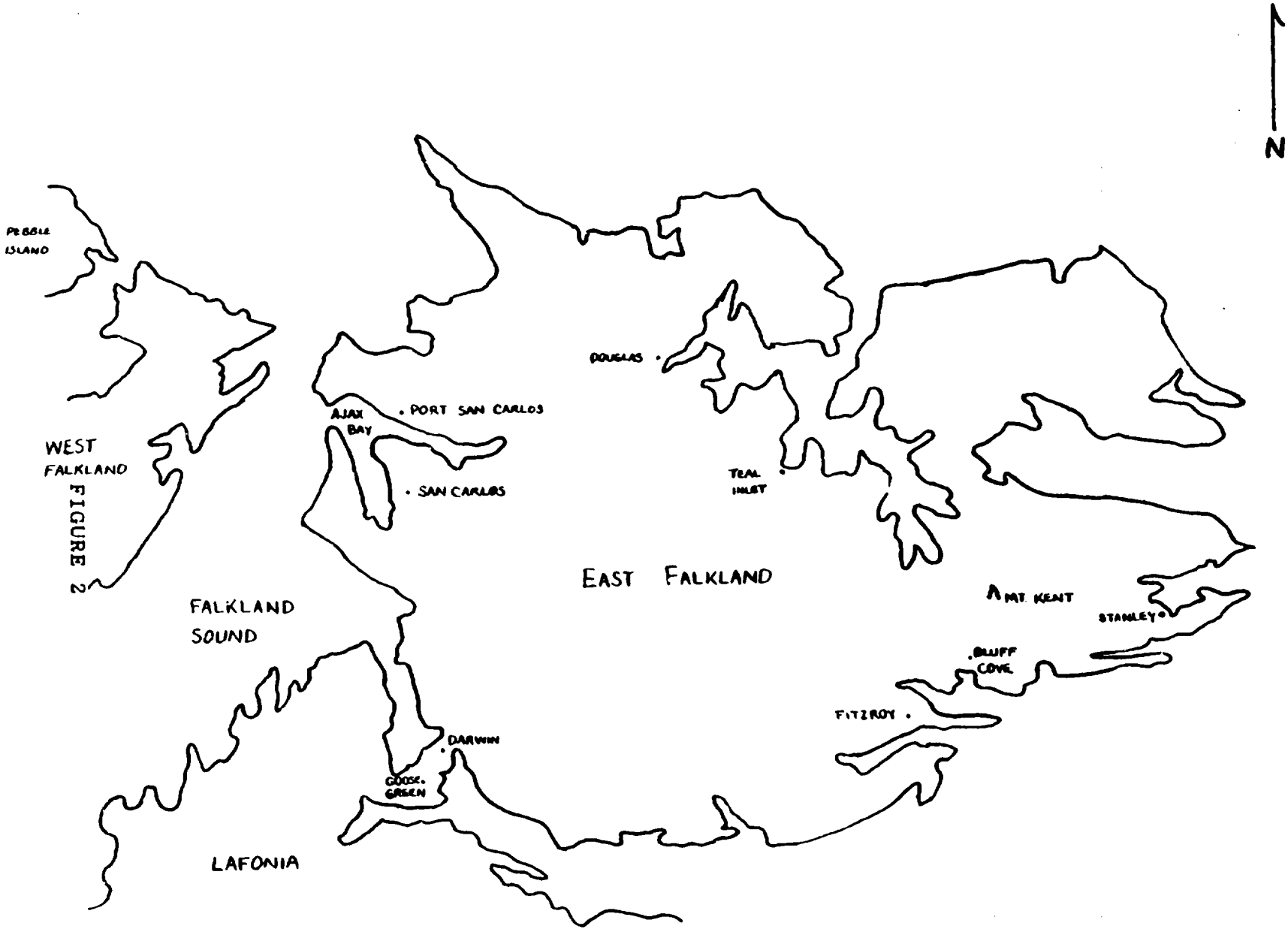
N
PEBBLE ISLAND
WEST FALKLAND
AJAX BAY
PORT SAN CARLOS
SAN CARLOS
DOUGLAS
TEAL INLET
EAST FALKLAND
MT. KENT
STANLEY
BLUFF COVE
FITZROY
FALKLAND SOUND
DARWIN
GOOSE GREEN
LAFONIA

FIGURE 2

Medical Support in the Falklands Campaign

The remainder of this chapter concerns the actual medical support of the British Army during the Falklands Campaign. The planning, execution, command and control of the medical support of the British Army units on East Falkland is described below. The chapter ends with a review of medical lessons learned and other conclusions about the Falklands Campaign medical support.

The Planning of the Medical Support

The medical planning for the Falklands Campaign began immediately following the Argentine invasion. Although the Royal Navy had overall control of the conduct of the campaign, the Royal Navy Medical Department quickly established liaison with the medical services of both the British Army and the Royal Air Force.[14] The medical planning and the organization for medical support "evolved during the first few weeks until it became a fully 'corporate' effort involving all three services."[15]

The time required to move land forces to the Falklands allowed adequate organization of personnel, units, and supplies. The planned medical support from the Army included the following units and personnel:

(1) The 16 Field Ambulance RAMC to provide second line medical support for the land force;

(2) Surgical teams drawn from 16 Field Ambulance (Parachute Clearing Troop) and 2 Field Hospital RAMC; and

(3) Regimental medical officers assigned to each major unit (at later stages in the campaign a second medical officer was assigned to some units).[16]

Additionally, the British appreciated early "the difficulties of resupply for an operation of unknown duration, in which casualty figures could only be estimated,..." and made arrangements for airlift of medical supplies to Ascension Island and sealift to the Falklands.[17] Medical planners also used the time to refine their planning as operational plans changed. They covered as many contingencies as possible and yet realized that adjusting to changes, or "hot planning" as they called it, would inevitably be required.[18]

The nearly three-week voyage to the Falklands was also put to good use in medical training and physical fitness training. Refresher training for RAMC personnel was conducted and extensive first-aid training for infantry soldiers was provided.[19] Medical training for infantrymen stressed immediate resuscitation, essential treatment for shock, control of hemorrhage, application of first-aid dressings, and the administration of morphine. Physical fitness received great emphasis and vigorous physical training continued aboard ship in accordance with the high

standards of the British Army as well as the rigorous requirements established for the soldiers of the Parachute Regiment.[20]

The British also recognized that the fighting in the Falklands would be different from that in Northern Ireland where medical treatment of the highest order was readily available. The British stressed buddy-aid in combat but also emphasized that mission accomplishment - not casualty treatment - was the first duty of an infantryman. Treatment and evacuation resources were expected to be scarce especially compared to the immediate treatment capability available in Northern Ireland.

According to British medical operational concepts, highly trained field medics were to accompany each combat unit to provide treatment beyond the average soldier's capability.[21] Regimental aid posts were to be positioned just behind the maneuvering infantry units. Medical planners realized that the poor terrain and the wet weather meant that casualty evacuation by road was impossible so they anticipated that the modes of evacuation would be by stretcher or by helicopter. Also, field surgical teams (consisting of a surgeon, anaesthetist, resuscitation officer, four operating theatre technicians, a blood transfusion technician and a clerk) were to be placed as far forward as possible, moving successively forward with the casualty collecting sections from the field ambulance as the combat units and the aid posts advanced.

16 Field Ambulance was to establish a dressing station and casualty collecting sections ashore. Augmented by the field surgical teams, it was to serve as an intermediate link between the surgical teams and the hospital ship in the initial phase of the campaign. Due to the lack of air superiority, operational-level planners did not want 2 Field Hospital ashore but retained aboard ship with the plan for casualties to be evacuated by helicopter from the dressing and collecting stations to the hospital afloat (a cruise ship, the *SS Uganda*, which had been converted into a hospital ship).[22] Plans were made for 2 Field Hospital to deploy should the operational situation permit it.[23] Some surgical elements of 2 Field Hospital were deployed ashore with 16 Field Ambulance to bolster the field ambulance's efforts. The British even planned a holding element to look after the anticipated large number of enemy prisoners of war.[24]

In addition to these preparations, the British emphasized the importance of triage as well as the use of whole blood. Sorting casualties into priorities for specialty care as soon as possible was their goal. The British aim was to "provide definitive forward surgery and resuscitation within six hours...."[25] To insure an adequate supply of blood, "donations" taken from the soldiers during the voyage to the Falklands were augmented by blood supplied by the Army Blood Supply Depot in Britain. "Altogether, from all sources, a total of 3262 units were provided."[26]

This discussion demonstrates that the planning of the

medical support of the Falklands clearly followed the six principles of medical support identified in Chapter Three. From the outset the British medical planners sought to insure that the medical support plans conformed to the operational and tactical plans. Similarly, they planned medical support in the closest possible proximity to combat operations using significant medical resources at every echelon to insure rapid resuscitation and treatment. The flexibility which the planners displayed has been shown in their ability to quickly adjust and "hot plan" as the campaign evolved. The mobility of the medical units was expected to be severely hampered due to the nature of the terrain, but the medical planners hoped to mitigate this by situating their medical units well forward with the maneuver units. Continuity of care was also emphasized from the beginning of planning but the British also recognized their complete reliance on stretchers and helicopters for casualty evacuation (casevac). Finally, in their medical support doctrine, they recognized the importance of control of medical units to insure effective, efficient support. Their primary weakness in the area of control in the planning of the medical support of the campaign, however, appears to be their lack of centralized control over helicopter evacuation assets. Although the medical commanders realized the importance of helicopter evacuation, the paucity of helicopters in the British Army precluded their having dedicated helicopters with trained medical crews for casevac support.[27]

The Execution of the Medical Support

As the infantry went ashore at San Carlos on 21 May, organic medical personnel accompanied them. The RAMC executed the medical support in the Falklands Campaign essentially the way it was planned except that initial planning to have only an evacuation facility at Ajax Bay had to be changed.

Although the landing was unopposed by Argentinian ground forces, intensive Argentinian air strikes at the beachhead made casualty evacuation to the *Uganda* uncertain.[28] For this reason, the medical commander vigorously insisted that hospital elements be established ashore shortly after the landing - a move which the operational-level planners were reluctant to approve at first.[29] In spite of the fact that he risked court-martial in his confrontations with the tacticians, the medical commander's decisive action undoubtedly helped save many lives in this phase of the campaign and later.[30]

As the British infantrymen advanced southward toward Darwin and Goose Green, Argentinian resistance mounted. With each combat battalion went a Regimental Medical Officer (RMO), six medical assistants, a field ambulance collecting section with eight medical assistants, and regimental soldiers (bandsmen, cooks, and HQs personnel) designated as stretcher bearers.[31] As the ground fighting began, the medical difficulties of casualty care became apparent.

> Even with the relatively light casualties, the system of treating them in the initial stages produced difficulties. The problems of casualty evacuation to regimental aid posts and beyond were immense, depending as they did upon helicopters or stretcher parties. Most engagements took place at night on remote hillsides in adverse weather conditions Many casualties, including some who had lost limbs, lay virtually untreated for up to 5 and, in some cases, 7 hours.[32]

Due to the conditions under which combat in the Falklands had to be fought, soldiers had to rely on self aid or buddy aid immediately after sustaining a wound. All soldiers carried individual first aid kits while officers and noncommissioned officers (NCOs) carried two 15 mg morphine syrettes.[33]

RMOs had to be highly selective about essential medical supplies and equipment because all Regimental Aid Post (RAP) equipment had to manpacked by the personnel manning the RAP.[34] Following the medical plan, casualties were evacuated down from the craggy hillsides by stretcher to the RAP for further treatment and then subsequently evacuated by helicopter if medical care from a higher echelon was required. (Lack of lightweight stetchers was a problem.)

The self aid and buddy aid rendered was important in saving lives plus the cold conditions promoted hemostasis even when some field dressings were poorly applied.[35] After initial medical treatment by a combat soldier or medic, the casualty then began the evacuation process to ultimately get him to the level of medical care needed to provide definitive treatment.

In addition to the difficulty of evacuating patients on stretchers down hillsides over rocky crags, other conditions in the Falklands increased casualties. Although the vigorous physical training conducted before and en route to the Falklands contributed to the campaign's success, no exercise schedules could have prepared the soldiers for the three weeks they spent in the harsh climate.[36] The cold, damp weather coupled with a lack of heat and water for personal hygiene produced a number of cold injury casualties and severely drained the fitness of all soldiers.[37] Some of the soldiers who participated in the campaign had also recently been involved in exercises in Germany and had already sustained "... minor degrees of non-freezing cold injury to the feet, which undoubtedly ..." predisposed them to cold injuries.[38] Additionally, "because of the cold climate with everything frozen at night and snow falling several times, the soldiers failed to drink adequate fluids and thus when wounded blood volume was intensified by the dehydration."[39]

Furthermore, British medical officers discovered another factor impacting on the initial survivability of patients. "Current teaching in the RAMC is that a tourniquet should only be used as a last resort and the reality is that this means never."[40] Whereas this is probably appropriate in a country with skilled medical attention readily available, the British medical officers believed that some casualties in the Falklands simply bled to death because of the accepted practice of prohibiting the use of tourniquets.[41]

Medical officers also discovered that the extremely cold temperatures in the Falklands negated the benefit offered by intramuscular morphine injections for battlefield casualties. The cold severely retarded drug absorption and thus prevented any measure of morphine pain relief. Later, however, after a casualty had been evacuated and had received surgery (and the patient's body had rewarmed), the morphine induced profound respiratory depression which often required massive doses of Naloxone to reverse.[42]

The vast majority of patients who had to be evacuated to 2 Field Hospital or to forward field surgical teams were transported by helicopter.[43] Available wheeled vehicles were used whenever possible also but the terrain rarely permitted this. The Army's Air Corps and the Naval and Royal Marine pilots did a fantastic job of casualty evacuation despite the difficult weather and inadequate night vision equipment.

The helicopters, since they were not solely for casevac use, usually carried ammunition in and casualties out. Of the 783 British soldiers wounded, an estimated 400 casualties were extracted by helicopters from forward positions.[44] Helicopters were frequent targets of both small arms fire and Argentinian aircraft. Perhaps due to the lack of medical markings, at least one helicopter engaged in a casualty evacuation mission was shot down by an Argentinian close support aircraft. Army and Royal Marine helicopter pilots performed casevac for every engagement and were decorated for their determination and skill in this role.

But there were definite problems with the aeromedevac in the Falklands. Since helicopters were also performing logistical missions, they were not always readily available for casevac. When they were available, weather and night vision difficulties as well as the lack of air superiority often made them slow in arriving. John Frost, reporting on the casevac problems of 2 Para, points out that the soldiers had difficulty getting the patients to helicopter pick-up points. They were also short of stretchers and had to improvise with ponchos and other field expedients.[45]

Because of all these difficulties, the British were often unable to achieve their goal of getting their casualties to surgical care within six hours of wounding. It was not unusual for evacuation to take eight hours to days.[46] Consequently, soldiers with major injuries often died before they could be evacuated to a hospital on land or at sea.

Once the casualties got to the hospital at Ajax Bay they were almost certain to be saved. Of all the wounded who reached hospital facilities alive, only three subsequently died. 2 Field Hospital performed admirably despite the following problems: (1) insufficient light for major surgery, especially abdominal; (2) insufficient heat for drying out damp items and properly treating hypothermia patients; (3) insufficient potable water for routine washing, insufficient sterile water for intravenous fluids or operating room irrigation, and lack of water for washing hospital linens;

(4) inadequate communications - no warning of new casualties en route; first knowledge was upon arrival at the hospital; and (5) insufficient paper and writing material to maintain patient records.[47]

Having been established ashore at San Carlos earlier than planned, the Ajax Bay hospital was set up in a refrigerator plant.[48] Since the refrigerator plant was also being used to store ammunition and since it had not been marked with red crosses, the Argentinians bombed the plant within 24 hours of the landing. Even though two unexploded bombs were found in the plant after the Argentinian air raid, the medical unit continued to operate while the bombs were being defused. In one 48-hour period, the hospital performed 100 operations.[49]

The British were fortunate in being able to rely on the experience of the hospital's senior surgeon and anesthetist who had set up field equipment and had operated in adverse circumstances before.[50] The Ajax Bay hospital was operational from 21 May to 9 June and treated 450 of the 783 casualties in the campaign. After casualties had received treatment at the hospital, they were evacuated to the *Uganda* if required. As mentioned above, the lighting for surgery at the Ajax Bay hospital was very poor. Consequently, the British found that about half of the abdominal wounds explored there had to be reexplored aboard the hospital ship because holes in bowels had been missed or other problems had been overlooked.[51]

> Insuring adequate rest for the hospital personnel was a problem since everyone came on duty when patients arrived, rather than those off-shift continuing their rest. It was also noted that hospital personnel needed to be the highest caliber. It was found that a written, understood policy was a must. The examination of patients required the removal of all clothes, otherwise small wounds of entry into the back or into a thigh with significant abdominal damage could be missed because the wound of entry was never noted. The British found it very practical and appropriate to also designate individuals as resuscitation officers and triage officers and to use these same individuals in those positions throughout.[32]

When the intermediate objectives of the campaign were seized (Darwin and Goose Green), forces shifted eastward toward Port Stanley. Not only was Stanley the capital of the Falkland Islands, it was also where the bulk of the Argentinian forces were located. Similarly, while the second half of the campaign prepared to begin, medical resources also displaced to keep up with the advancing infantry. Like the British infantry, who "yomped" or foot marched with packs weighing up to 140 pounds, the RAP personnel yomped their equipment and supplies forward. Field surgical teams also moved forward to support the eastward engagements and to do so they established themselves at Fitzroy and Teal Inlet.

As other infantrymen sailed in the *Sir Galahad* to Bluff Cove to be positioned for the assault on Stanley and the surrounding Argentinian positions, elements of 16 Field Ambulance accompanied them. As the troops were disembarking, the weather cleared unexpectedly and the ship was attacked by Argentinian aircraft. Among the fifty soldiers killed

in the raid were three members of the 16th, including the second in command.[53]

The *Sir Galahad* bombing produced 179 casualties alone.[54] This incident, the only one in which the available medical facilities were almost overwhelmed, was the closest the British came to a mass casualty situation. Triage had been applied at every point in the casualty evacuation chain throughout the campaign and the dental officers who filled the role as triage team leaders did a fine job. Now, with this enormous number of casualties, the experienced triage officers faced their most difficult test. Casualties from the bombing were taken to the field hospital if they required surgery or to the Uganda if they were suffering from exposure.[55] Due to the large numbers of untreated casualties which arrived at the advanced dressing station, patient transfer to the *Uganda* was expedited and every medic available worked continuously until all patients had been treated, released or evacuated.[56]

The final assaults on the Argentinian positions surrounding Stanley were fierce, small unit engagements. Although casualties occured from gunshot wounds and artillery fire, treatment facilities were in place and evacuation, though still constrained by limited helicopter assets, proceeded relatively smoothly. Hospital personnel, having become proficient at battle surgery, focused on the definitive care needed to fight possible infections in the gunshot wounds and burns of the British casualties.

Once patients were stabilized aboard the *Uganda*, they were transferred to one of three ambulance ships. The three ambulance ships - the *Hecla*, the *Herald*, and the *Hydra* - carried the casualties to Montevideo in Uruguay where they were transferred to Royal Air Force aircraft for the final leg of their return trip to the United Kingdom.

Command and Control of the Medical Support

During the Falklands Campaign effective command and control of the medical support was maintained with the exceptions of control over and communications with the casevac helicopters. The medical officers in command showed that the British medical support doctrine was sound and that their medical support system could support tactical operations thoroughly and vigorously. The medical commanders knew their personnel, equipment, procedures, and communications.

The British task force consisted of elements from all three services and the tri-service medical cooperation, like the tactical cooperation, was excellent. Initial planning was the responsibility of the Royal Navy, but the Royal Navy Medical Department understood how essential it was for the medical officers of all three services to actively control the vital parts they each must play in the Falklands

Campaign. Furthermore, each medical service realized the necessity of fully understanding the responsibilities and capabilities of the other two.[57]

With respect to command and control, the British stressed in their after action report the importance of the medical commander on the ground being able to deploy his resources to best advantage to provide the clinical links between forward medical support units and rear-area hospitals.[58] This was clearly demonstrated at the beginning of the land campaign when the first soldier landed and the medical commander insisted upon establishing surgical capability ashore.

The only instance of a lack of command or adequate control in the medical support arena concerned helicopter evacuation. The RAMC commanders recognize that rapid evacuation from point of wounding to surgery "is the most important factor in the saving of lives."[59] Yet their lack of dedicated casevac helicopters resulted in no direct control in this area. Procedures for requesting aeromedevac were cumbersome in that they had to be forwarded all the way to Commander Amphibious Warfare Headquarters for approval.[60] The lack of control over casevac helicopters and the scarcity of helicopters meant there were insufficient helicopters to evacuate all casualties and lives were lost because of the delay.[61]

Summary and Lessons Learned

The medical support of the Falklands Campaign in many ways serves as a textbook example for medical support of a rapidly deployed land force. The cooperation between the medical departments of all three British military services also serves as a fine example of joint military support operations. The operational concepts of triage, support in echelons, combat medicine, evacuation, and command and control espoused by the Royal Army Medical Corps were effectively planned and efficiently implemented. British medical support was provided in accordance with the RAMC-indorsed operational concepts and it resulted in more than 99 percent of those receiving injuries which were not immediately fatal surviving to return home.[62]

The RAMC also closely followed the six principles of medical support: (1) conformity; (2) proximity; (3) flexibility; (4) mobility; (5) continuity; and (6) control. These principles, integral to British medical support doctrine, were used in the planning and execution of the Falklands Campaign medical support. They were applied in the context of the RAMC operational concepts already reviewed. And, they were applied effectively in all respects except for control and in only one important aspect - the control of evacuation assets.

The British field medical support system includes organic evacuation assets at every echelon of medical support

and in the Falklands it even included a hospital ship with three supporting ambulance ships. But, by doctrine and in actual practice in the Falklands, British medical commanders did not control helicopter evacuation assets. The lack of control over the evacuation helicopters was identified by the British as the main lesson for the RAMC in the Falklands. They concluded that the medical services must have dedicated helicopters under their control at all times to transport the wounded.[63]

There were a number of other important lessons learned about medical support in the Falklands. These included the importance of physical fitness; the value of self aid, buddy aid, tourniquets and far forward resuscitation; and the need for greater emphasis on fluid intake by soldiers. The value of simple surgical procedures and simple clinical policies which are understood by all was reaffirmed.[64] Additionally, the British Army surgeons recognized the need for broader training for physicians which would include greater familiarity with field medical equipment and battlefield casualty management.[65] The problems at the hospital at Ajax Bay (insufficent lighting, heating, and supply levels) were also noted. Further, it was reaffirmed that injuries of the head and trunk (20 percent of the casualties) are the most taxing surgical problems and that, to handle these and the other injuries in war, the military surgeon must be a truly general surgeon.[66]

A final point to consider, and perhaps the most

important one of all, is the element of time. The Falklands Campaign was conducted rapidly and the medical support, like the rest of the combat service support, had to be quickly but carefully assembled. With no existing plan for a contingency operation in the Falklands, the British used the limited time they had to prepare a plan that proved much more than just adequate to meet the medical support needs of the campaign. They used all the time available to increase their chances for success and to insure the actions of one service complemented those of the other two.

The Falklands Campaign, truly a joint operation, was conducted with all three medical departments working closely together. It clearly illustrates the significance which the British place on cooperation and the thoroughly professional manner in which they plan and execute medical support of combat operations.

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CHAPTER V

MEDICAL SUPPORT IN THE GRENADA EXPEDITION

The Grenada Expedition: Background

On 13 October 1983, violence erupted on the small island nation of Grenada. The charismatic Maurice Bishop, who had seized control of the island four years earlier, was deposed by hard-liners in his own government. Bishop and those who overthrew him were Marxists who had steadily been increasing Grenada's ties with Cuba and the Soviet Union.[1]

The other nations in the eastern Caribbean and the United States had long been uneasy about the military and political developments on the island.[2] The presence of advisers from the Soviet Union, Cuba, and other communist regimes, and the invitation of Cubans to construct a large airport raised many concerns.

Observers noted that, as well as the promise of

increased tourism for the island, the new airport held the potential for being a base for long-range military aircraft. Furthermore, in view of the Grenada government's close association with communist regimes, the United States and the eastern Caribbean nations worried about a communist threat to regional stability.

Additionally, the presence of six hundred American citizens attending the St. George's University School of Medicine in Grenada increased concern that another American hostage crisis such as in Iran might occur. Consequently, on 17 October, President Reagan ordered the Joint Chiefs to begin noncombatant evacuation planning.[3]

After Prime Minister Bishop and three of his cabinet members were executed on October 19, the resulting breakdown of law and order, the imposed shoot-on-sight curfew, and the unpredictable power struggle placed the safety of Americans in Grenada in great jeopardy.[4] Due to the disorganization of the new, but highly tenuous, Grenada government, repeated diplomatic attempts to coordinate an orderly evacuation of U.S. citizens failed.[5] Then, on October 21, the Organization of Eastern Caribbean States (OECS), plus Jamaica and Barbados, requested that the U.S. join them in intervening in Grenada by force for the protection of the entire region.[6]

For these reasons, on October 21, President Reagan expanded the original mission and ordered American military forces to plan for a complete seizure of Grenada as part of a combined U.S.-Caribbean security force operation on Grenada.

Although a U.S. contingency plan for the region in which Grenada was located did exist, there was no fully developed contingency plan for occupying the entire island.[7] Nevertheless, Operation Urgent Fury - the codename for the American intervention in Grenada - began four days later in the early morning hours of October 25, 1983.

The 1st Ranger Battalion, 75th Infantry, airdropped onto the 10,000-foot Port Salines airfield at the southern tip of Grenada at 0536 and secured it by 0715 along with the 2nd Battalion.[8] The Rangers then secured the True Blue Campus of the St. George's University School of Medicine and rescued about 130 American students.[9] About the same time as the Rangers' assault, 400 Marines aboard troop helicopters attacked the Pearls airport on the island's east coast.[10] Later, elements of the 2nd Brigade, 82nd Airborne Division, landed at Point Salines.

Shortly before noon on 26 October, Army troops advanced northward to the Grand Anse Campus of the medical school while Marines moved south from the northern tip of Grenada. The Rangers and the Marines joined together and assaulted the Grand Anse Campus and, at 1600, rescued the remaining American students.[11]

On the evening of 27 October, paratroopers assaulted the Cuban headquarters locate[illegible] Calvigny Barracks and secured that objective.[12] Except fc neutralizing small pockets of resistance later on the 27th and early on the 28th, the combat operations on Grenada were over. Within four days,

land forces consisting of two Army Ranger battalions, some Special Forces, two 82nd Airborne Division brigades, and a Marine Amphibious Unit had secured all significant military objectives and successfully rescued all U.S. citizens.[13]

A Brief Review of the Combat Service Support of the Grenada Expedition

Providing combat service support to the American land forces in Grenada was a challenge primarily because of the compressed timeframe in which the Grenada Expedition occurred. Although the Joint Chiefs had discussed logistical requirements for the evacuation operation as early as 20 October, the quickly changing mission for the land forces (evacuation of noncombatants vs. seizure of the entire island) and the strict requirements for operational security severely restricted time for CSS preparation.[14]

The distance of Grenada from the continental United States is over 1300 miles and this posed a significant problem also. The possession of a secure base on Barbados, only 160 miles away, and the ready availability of cargo aircraft to support the expedition, however, mitigated some of the difficulties in conducting CSS operations over such a distance. (See Figure 3, page 88.)

Combat service support on Grenada was provided by the

division support command (DISCOM) of the 82nd Airborne Division.[15] The CSS provided began with the landing of the paratroopers on the first day of the expedition and continued after combat operations had ceased. The 82nd DISCOM advance elements deployed in phases based on established contingency plans for rapid deployments.[16]

The sheer rapidity with which the expedition began and proceeded made the provision of combat service support difficult. CSS soldiers reacted quickly, like their combat arms counterparts, and adjusted plans to sustain the combat operations which ended just 96 hours after they had begun.

Since the subject of this research is the medical support provided to the Army expeditionary forces, overall combat service support in Grenada will be discussed further only briefly. Combat service support will be examined with respect to the eight CSS principles identified in Chapter Three.

The 82nd DISCOM and the organic CSS elements of the Ranger and airborne battalions certainly adhered to the principle of *Support Forward*. The Americans established combat service support on the island as the Port Salines airfield was being secured. They took advantage of the support which the naval forces stationed just off the island could provide and enjoyed the air superiority which the Navy maintained. (See Figure 4, page 89.)

Continuous Planning simply was not conducted with respect to combat service support, however. Concerns about

secrecy severely restricted the number of personnel included in the planning process and for this reason there were no CSS representatives for planning.[17] The Americans did *Practice Economy* both in their use of light forces and because of their dependence on aerial movement and aerial resupply. *Maximum Use of Standing Operating Procedures* was essential also because units, especially CSS units, had little time to prepare for the specific requirements for the Grenada Expedition.

There are a number of examples of *Tailored Support* for the Grenada Expedition. Since, as mentioned above, the mission called for light infantry forces, support planning was tailored to provide for the CSS needs of those forces. The restriction on the information available, however, prevented a great deal of support tailoring and forced reliance on standard, general support packages.

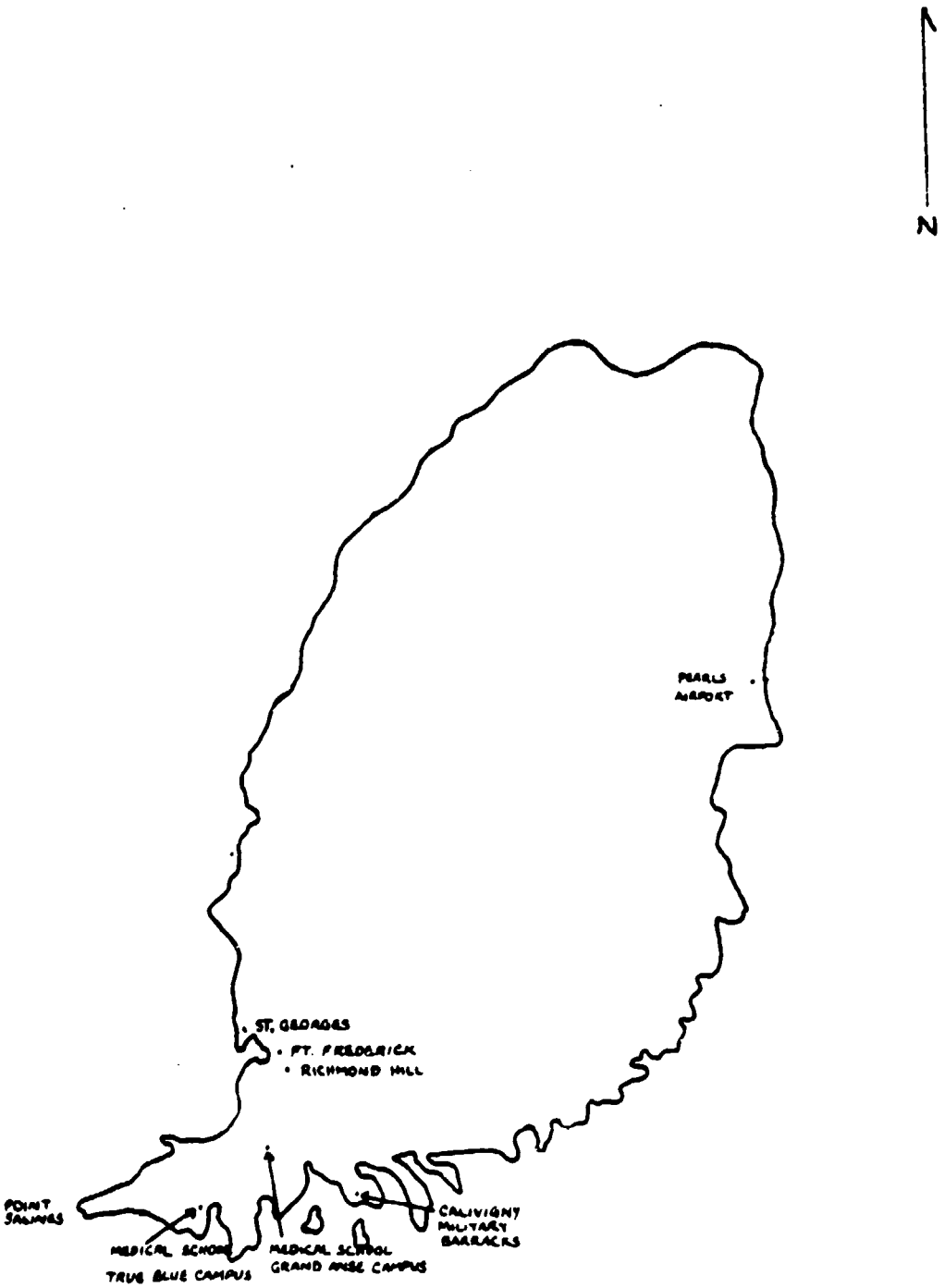
Although American CSS commanders usually rely on *Centralized Control/Decentralized Operations*, Grenada posed a real problem in this area. This was due again to the operational planners not including the CSS planners in the planning process. Inaccurate intelligence and lack of understanding about the capabilities of different services in this joint operation degraded the amount of control CSS commanders had in employing their support packages. This problem was not confined to CSS operations only. Indeed, the command structure of the Grenada Expedition was judged to have hampered every facet of the operation.[18]

Due to the short duration of the combat operations in Grenada, *Maximum Use of Throughput Distribution* was only tested to a limited degree. Even though American CSS officers could rely on Barbados and Roosevelt Roads, Puerto Rico as intermediate support bases, the relative proximity by air of Fort Bragg, North Carolina (1750 miles) did facilitate throughput distribution.[19] The 82nd DISCOM and the 1st Corps Support Command, both based at Fort Bragg, were linked by existing contingency plans and, consequently, were well-suited to provide throughput CSS to the U.S. forces on Grenada.[20]

The Americans made the *Maximum Use of Local Resources* as was feasible. Rangers used trucks and bulldozers parked by the Cubans on the Point Salines runway to remove enemy barricades and local facilities were used for CSS operations. The rapidity of the combat operations severely restricted any significant demand on local resources, however.

The American soldiers from the 82nd DISCOM and the 1st Support Command used established combat service support procedures to successfully support the Grenada Expedition. In view of the rapidly changing situation, the CSS soldiers displayed great initiative. Even with significant problems in the operational command structure, they reacted quickly and adjusted effectively. The violations of the principles of *Continuous Planning* and *Centralized Control* were caused by the significant deficiencies in the joint command structure rather than any CSS procedural or organizational problems.

FIGURE 3



GRENADA

FIGURE 4

Medical Support in the Grenada Expedition

The rest of this chapter deals with the medical support of the American Army during the Grenada Expedition. The planning, execution, command and control of the medical support of the American Army units in Grenada is described below. The chapter ends with a review of medical lessons learned and other conclusions about the Grenada Expedition medical support.

The Planning of the Medical Support

As mentioned earlier, combat service support planning was essentially not conducted for the Grenada Expedition. Indeed, "critical details of the support plan, combat support and combat service support were not available during the planning phase."[21] Consequently, medical support planning had to be conducted with little information. The restrictions of operational security imposed at every echelon of command prevented medical planners (both the 82nd Airborne Division surgeon and the 307th Medical Battalion commander) from being informed of the expedition's destination until after combat operations had begun.[22]

Although the Commander-in-Chief Atlantic (CINCLANT), Admiral McDonald, had overall command of the operation, there was never an overall medical command or control element

established for the operation by the Navy or any other service. The quick formation of Joint Task Force (JTF) 120 (commanded by Vice Admiral Metcalf) and the wide range of land forces it involved (Marines, Rangers, paratroopers, and Special Forces) is still an object of controversy.[23] The rapidly formed coalition of forces was not synchronized and the medical support, like most aspects of the expedition, lacked centralized control.

Since the Army forces committed to the Grenada Expedition were moved by air, time was scarce to specifically organize medical personnel, units, and supplies. Standard rapid deployment packages had to suffice.[24] The units normally designated for supporting the Army forces were alerted and included the following:

(1) The 307th Medical Battalion, 82nd Airborne Division, to provide division level medical support for the Army elements; and

(2) Medical platoons organic to the Ranger and airborne battalions.

In addition, the Commander of the 82nd Airborne Division was told by CINCLANT that the U.S.S. *Guam* and the U.S.S. *Saipan* had significant medical support capabilities (equivalent to a 100-bed or larger hospital). For that reason, the division commander believed that medical support units from the division could be kept to a minimum.[25]

The pre-planned medical support packages which the medical planners would use were well-suited to the medical support mission. They consisted of two echelons from each company in the 307th Medical Battalion. These two echelons were designated Alpha and Bravo echelons respectively. The Alpha echelon was a light, air-droppable package designed to go in with the initial assault. The Bravo echelon was a heavy package to be airlanded with follow-on elements.[26]

There was no time available for special medical training even if the medics had been fully briefed on what to expect. The medics were already at a high state of readiness, however. Many of them had completed emergency medical technician training through on-going medical proficiency training programs.[27] The physicians assigned for the operation were fully qualified Medical Corps officers but none had attended the AMEDD's Combat Casualty Care Course, called C4.[28,29] C4 is designed to prepare AMEDD officers to function successfully at forward points in the battlefield casualty care system.[30]

In accordance with American medical operational concepts, a physician, a physician assistant, and medics were to accompany each Ranger and airborne battalion committed to combat. Battalion aid stations were to be established as close as possible to where infantrymen were in contact with opposing forces.

Since information on what to expect with regard to the intensity of the conflict was so sketchy, medical planners

once again had to rely on existing, general medical support plans. These called for a number of ground and air ambulances to be deployed as soon as aircraft to transport them to Grenada were available. The ground ambulances were organic to the airborne battalions and the medical companies of the 307th Medical Battalion. The air ambulances were to be provided by the 57th Medical Detachment (Air Ambulance), a corps level medical unit.

The medical companies in the 307th Medical Battalion had a small, organic field surgical capability in the Alpha echelon so priority for movement was planned for the men and equipment providing that capability. If required to support the American combat operations, additional medical company personnel and equipment in the rest of the Alpha echelon and the Bravo echelon would be flown to Grenada.

Division level medical care for the Rangers' initial assault would not be immediately available from the Army. That level of care would be provided by the Navy until Company C of the 307th arrived with the 82nd Airborne Division soldiers who were to be airlanded at the Port Salines airfield. Ostensibly the Navy could provide division level care on an interim basis. However, "no Army reference could be located that provided for planning data for Navy shipboard medical facilities."[31]

In preparing for the Grenada Expedition, medical planners attempted to follow the six principles of medical support. They were frustrated in their attempt, however,

because of the secrecy surrounding the operation. Unable to find out specific information about operational and tactical plans, they had to assume their standard medical support packages would conform to the medical needs of the combat units employed. They also had to assume that medical support elements would be allowed to deploy with the combat elements they supported thus permitting close proximity to the soldiers in contact with opposing forces.

Lack of operational information prevented flexibility in planning yet flexibility was intrinsic to the standard rapid deployment packages. The mobility of the medical support units was insured by the configuration of the medical support packages also. But the medical planners could only assume they would get the deployment airlift they would need at the time they needed it.

Maintaining continuity of care was covered in existing medical contingency support plans but the 82nd medical planners did not know when the Rangers would go in or how soon afterwards the 82nd would land. Consequently, continuity of care in that instance would depend on the Navy. Also, how great the need for medical care would be and how the system for evacuation of casualties would work during the combat operations could not be forecasted by the planners.

Finally, control of the medical units to be used was relatively clear for each service, but the interrelationships between medical elements of each service were not. The lack of a unified medical plan prevented medical participants in

the Grenada Expedition from knowing what medical elements were to be involved and what capabilities each had. In short, if synchronization of medical support would occur, it would happen only if existing contingency plans and standing operating procedures made it happen. Joint planning of medical support and casualty evacuation did not occur. And the Army medical planners did not have the time or the access to the information to resolve this serious deficiency.

The Execution of the Medical Support

As mentioned earlier, the Rangers began the attack on Grenada at 0536 on 25 October 1983. Due to an "umbrella of flak" over the Port Salines airfield, the C-130 aircraft carrying the Rangers were forced to dive low and the Rangers had to jump from only 500 feet, "a height not employed in combat since World War II."[3] (Oddly enough, despite the strict operational security maintained with the Army, the Cuban government was given two hours advanced warning of the attack by the State Department. This was apparently done to give the Cubans on Grenada time to withdraw if they wished, but instead Premier Castro exhorted his soldiers to fight to their deaths.[33])

Shortly after the initial assault on the airfield, the Rangers' organic medical personnel parachuted in and provided immediate treatment to a small number of casualties. The Ranger medics received some medical support from the Navy but essentially treated the casualties themselves until the advanced element of Company C, 307th Medical Battalion (consisting of one orthopedic surgeon, one enlisted practical nurse, and four medical aidmen) arrived approximately twelve hours later.[34] Once the Rangers had secured the airfield, paratroopers from the 82nd airlanded.

As the first airborne battalions from the 82nd arrived at the Port Salines airfield and the division commander, Major General Trobaugh, judged the Cubans to be giving much greater resistance than expected, "the decision was made to send more combat and combat support forces to Grenada instead of continuing the deployment of the combat service support elements."[35] The commanding general's decision was undoubtedly influenced by his belief that the Navy could provide any medical care needed.

Company C's advanced element arrived as early as it did because the surgeon and his medics deployed with one of the lead airborne battalions. Due to severe limitations on aircraft space availability, the surgeon had only been able to bring basic life saving equipment for stabilizing patients. He and his five personnel had to use "shelters of opportunity" to establish their limited field surgical section on the evening of the 25th.[36]

Although the night of the 25th saw no significant combat action, the Rangers and the paratroopers did receive sporadic small arms fire around the airfield. Except for the evening attack that would occur on the 27th, the Grenada Expedition's combat operations would involve no attacks at night. Enemy sniping continued each night until combat operations concluded, however.

By the morning of the 26th, it was clear to the Army medical personnel at the division level of care that the Navy's actual medical capabilities did not match the information transmitted to the 82nd Division headquarters. Indeed, neither of the ships identified as being able to provide medical support had a full medical staff and the *U.S.S. Guam* was the only one of the two ships with a surgeon. Fortunately, another element of Company C's Alpha echelon was expected to arrive soon.

The Alpha echelon had been broken down into three parts because of the changes in chalks, or loads, for the Grenada-bound aircraft. The first part had arrived as already described. To insure the deployment from Fort Bragg of the remaining two parts of the Alpha echelon was not postponed, the 307th Medical Battalion commander had to personally intervene.[37] Unfortunately, the second part, consisting of two additional physicians and a nurse anesthetist, was diverted from Port Salines due to small arms fire around the airfield. Those personnel and their equipment had to land on Barbados and were unable to get to Grenada until the evening

of the 27th. The third part, with another physician and fourteen more medical personnel, ended up preceding them and arrived around 1200 on the 26th even though they had to circle the airfield for several hours before landing.

Shortly before that part of the Alpha echelon arrived on the 26th, the Rangers and paratroopers began their northward advance to the Grand Anse Campus of the St. George's University School of Medicine. Small numbers of casualties were received at the Company C clearing station that afternoon from that action. Since few ambulances had been deployed early, other tactical vehicles had to be used to move casualties from aid stations to the clearing station. The Company C ambulances had not yet arrived either, so the medical platoons had to evacuate their casualties to the medical company instead of being able to rely on the medical company to evacuate their patients from them.[39]

In addition to personnel, the first part of Company C's Alpha echelon was now augmented with additional equipment, supplies, and tentage which arrived with the third part of the Alpha echelon. Although the first part of Company C's Alpha echelon was initially co-located with the lead elements of the Forward Area Support Team (FAST) headquarters, the two elements of the medical company now relocated to the other side of the airfield to allow for room to set up more equipment and lay out landing areas for air ambulances.

As the set up progressed, the Company C medics saw that the disruption of the Alpha echelon and the diversion of the

second part of the echelon to Barbados had adversely affected the medical company's ability to establish itself. Company C's Alpha and Bravo echelons were configured using a standard 307th Medical Battalion cross-loading concept.[39] Cross-loading prescribed that no entire functional area (such as a ward, a treatment section, or the admissions and dispositions element) be loaded on any one vehicle. This was to preclude the entire loss of a functional area should an aircraft go down. But due to the break-up of the Alpha echelon during deployment, the Company C medics found that they only had parts of each functional area once on Grenada. Luckily, through the exertion of initiative and the relatively light number of casualties, Company C was able to continue care despite these problems.[40]

Aware of their own equipment shortcomings as well as the Navy's, the Army medical personnel were growing increasingly concerned about their ability to support combat operations. The rest of the 26th and the 27th were thus "consumed in trying to determine what was actually required in the forward area and coordinating a priority for deployment of the elements prepared for deployment."[41]

After the rescue of the students at the Grand Anse Campus late in the afternoon on the 26th, Army combat operations halted while reconnaissance elements gathered additional information on enemy positions. This lull in the fighting gave the Army medical personnel at division level additional time to establish themselves.

Early on the 27th, just in time to support the Army's attacks planned to bring the Grenada Expedition's combat operations to a close, additional medical units began to arrive. The 57th Medical Detachment (Air Ambulance) landed with three helicopters and was operational by 0700.[42] Prior to this time, tactical helicopters had to be used to transport casualties in the same way tactical vehicles had been used in lieu of ambulances.

As units prepared for the final assault on the Cuban headquarters at the well-fortified Calivigny Barracks, an accident occurred which was to result in the beginning of a mass casualty situation for Charlie Company. A Navy Corsair, called in to attack the Cuban position, strafed a group of U.S. paratroopers by mistake and wounded twelve of them.[43] The air ambulances, which had arrived early in the day, braved enemy fire to pick up and rapidly transport these casualties to Company C's clearing station at Port Salines.

Then, in what was certainly propitious timing, the other two physicians and the nurse anesthetist from Charlie's Alpha echelon arrived in the evening of the 27th after having been diverted and stranded on Barbados the day before. This was also important because additional casualties would be generated as the assault on Calivigny Barracks began around 1800.[44]

Although enemy forces were estimated to be as high as 400 around the Cuban headquarters, the actual number was much smaller. Rangers and paratroopers, transported in 82nd

Airborne Division Blackhawk helicopters, attacked and secured the entire area by 2100.[45] In the assault, however, two helicopters collided and the resulting casualties, in addition to the casualties from the fighting, threatened to overwhelm Company C's capabilities.[46]

In the space of two hours the Alpha echelon received thirty casualties. Using all the medical resources at hand, to include some medics from the Ranger battalions, the medical company handled the crisis. In addition to quickly treating and stabilizing a number of patients, the senior surgeon coordinated with the Air Force to fly four patients to the hospital at Roosevelt Roads, Puerto Rico. Since the Air Force's 1st Aeromedical Evacuation Squadron had not yet been ordered to deploy, he had to send a physician and nurse with the patients, however.[47]

Shortly thereafter coordination was made to have the Air Force evacuate casualties to the Roosevelt Roads Naval Hospital in Puerto Rico. There patients were temporarily hospitalized and prepared for evacuation to Brooke Army Medical Center or Walter Reed Army Medical Center. Patients with severe injuries who required more immediate emergency care were flown to the *Guam* or to Barbados.[48]

Although combat operations continued through the 28th to neutralize small pockets of resistance, the number of casualties dropped significantly after the mass casualty on the evening of the 27th. During the four days of the combat, nineteen soldiers were killed and 152 were wounded.[49]

Command and Control of the Medical Support

Effective joint command and control of the medical support in the Grenada Expedition was never established. Although the American armed forces had a commonly shared manual for the conduct of medical support in joint operations, neither it nor the procedures prescribed in it were used.[50] The officers in the medical departments of each service knew their own medical support doctrine well. But no unified medical plan brought these elements together either for planning or executing the medical support mission.

The Grenada task force consisted of units from all three services. As the Grenada Expedition rapidly evolved and was executed, the soldiers, sailors and airmen cooperated well. But they had to overcome the lack of joint coordination which should have been provided by the joint commander and his staff.

The lack of initial planning to coordinate the medical support effort was a critical deficiency. Medical officers did not know what other services were involved in the expedition so, consequently, they had nc opportunity to understand the capabilities of the other two medical departments. They relied on standing operating procedures and established medical packages to match requirements. Luckily, the relatively low level of casualties prevented the meager Army medical resources from being overwhelmed.

Problems in communication between elements of the 82nd

DISCOM's Forward Area Support Team (FAST) and the supported ground units initially hampered effective control.[51] Similarly, there was difficulty in establishing communication with the Army medical units on Grenada and the supporting Navy ships.[52] This lack of communications exacerbated the already deficient command and control structure of the expedition.

Medical officers had difficulty communicating with supported units as well as other medical units both in their own service and in other services. They could not ascertain if there was a plan dealing with the regulation of the flow of patients and they had no idea what the situation was with respect to patient evacuation within or outside of the combat zone. Furthermore, during nearly all of the time combat operations were being conducted, the Army medical officers had difficulty determining what was available to treat their patients other than those supplies and medical equipment items which they had brought to Grenada themselves.

Tactical commanders also failed to appreciate the need to have preventive medicine personnel accompany them on the deployment to Grenada as well as the need to follow basic measures to prevent disease. As a result, sanitation standards and water treatment procedures were largely ignored and could have jeopardized a longer operation.[53]

The crucial importance of command and control in the area of medical support is clear. Rapidly deployed land forces like those used in the combat operations of the

Grenada Expedition require decisive action to insure medical support is available when and where needed. The medical support of the Grenada Expedition was nearly a disaster because of excessive operational security, a lack of relevant information for planning and execution, and a failure of the joint command structure to exert its responsibilities for coordinating the medical support efforts.

The initiative of the medical soldiers in Grenada and at Fort Bragg saved the medical support effort for the Army. The impact of breaking the sequence of the deployment of the medical support packages could have been catastrophic had it not been for the resourcefulness and initiative of the medics. The flexibility which they demonstrated undoubtedly saved the lives of soldiers who otherwise might have died because of the lack of planning and the miscommunication at the joint command level.

Decisive action by medical commanders was critical to the overall success of Army medical support in Grenada. This is illustrated by two examples. The first was the intervention of the 307th Medical Battalion commander in defending the priority of the deployment of Company C's Alpha echelon. The second was the coordination of airlift for patients by the Alpha echelon senior surgeon with the Air Force on the evening of the 27th. Both examples point out the importance of active command and control in insuring the timely provision of effective medical support.

Summary and Lessons Learned

The medical support of the Grenada Expedition was poorly planned and was just barely executed successfully. For these reasons, the Grenada Expedition medical support serves as a good case study for Army medical planners to review when examining problems in medically supporting rapidly deployed land forces.

The poor planning was the result of excessive operational security. Clearly, security is essential in an operation like Grenada, but there can be no excuse for operational commanders excluding combat service support commanders from planning any operation. The effects of the poor planning were exacerbated by the fact that it occurred at the joint level and thus disrupted established military medical support systems which rely on interservice cooperation. The misinformation about Navy medical capabilities and the failure to activate a vitally needed Air Force aeromedical evacuation squadron nearly contributed to the death of American soldiers wounded in Grenada.

The Army medical officers relied on established medical support packages which were designed to be flexible enough to allow for the provision of minimal medical support. The disruption in the division level medical company's standard deployment configuration, however, almost prevented that level of medical support from arriving on time.

Tactical commanders, in the turmoil of the rapid

deployment and confused battle situation, lost sight of the need for far forward medical support and preventive medicine measures. They also forgot basics like insuring that their soldiers drank enough fluids or that the soldiers did not overload themselves. Consequently, they filled their battalion aid stations with heat stress casualties.[54]

The medics relearned some old lessons as well. First, they relearned the value of simple emergency measures like tourniquets which undoubtedly saved a number of lives in Grenada.[55] Second, they learned that medics have to keep their equipment as light as possible to keep up with maneuvering infantry units.[56] Third, they saw the importance of prior coordination with medical support levels below and above their own. Fourth, they demonstrated the tremendous value of air ambulances, especially when under the direct control of AMEDD officers, and the remarkable performance of the UH-60 helicopter as an air ambulance platform. Finally, they learned to functionally load their deployment packages to insure functional integrity was maintained whenever possible and to emphasize to tactical commanders the importance of maintaining the sequence of medical support package deployments.[57]

The Army medical officers were nearly prevented from following the six principles of medical support by their exclusion, along with the other CSS planners, from the planning of the Grenada Expedition. Conformity, proximity, flexibility, mobility, continuity, and control were difficult

to achieve in view of the lack of information available to them. Although the medics did achieve the first five to a limited degree, control was missing from a joint standpoint and severely debilitated within the context of the Army because of faulty decisions by tactical commanders.

Grenada pointed out significant but common problems in conducting joint operations. The Army medical support difficulties were simply a microcosm of these problems, especially in such an information vacuum.

Perhaps most important of all is the lesson Grenada teaches about the need for completeness in a medical system to support soldiers in combat. Effective medical support requires availability of care across the spectrum. Whether a soldier needs the simplest or the most comprehensive care, all echelons of care must be in place in the combat zone or all levels of care must at least be accessible from the combat zone. In Grenada medical care across the spectrum of comprehensiveness was not provided and the means to access care outside the combat zone was not carefully planned. The lack of sufficient medical treatment capability on Grenada and the initial lack of an Air Force aeromedical evacuation squadron, for instance, resulted in Army medics being forced to prematurely evacuate patients on poorly equipped cargo aircraft.[59]

The Grenada Expedition was an overall success but it cannot serve as a model for joint operations. Likewise, the medical support cannot serve as a model for joint medical

support. However, the lessons Grenada teaches are invaluable to future operational and medical planners. Failure to learn those lessons could cause the medical support of future rapidly deployed land forces to end in disaster.

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CHAPTER V

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CHAPTER VI

COMPARATIVE ANALYSIS

The comparative analysis of the medical support of the Falklands Campaign and the Grenada Expedition will first focus on a discussion about how well the medical support operations followed the established principles. Then, the medical support operations in the two expeditions will be compared with respect to the use of operational concepts. Finally, a comparison of the lessons learned in each operation will be presented.

Adherence to Principles

The principle of conformity was strictly observed by the Royal Army Medical Corps in the planning and execution of the medical support in the Falklands. The British medical officers were thoroughly briefed on the basic plans for the

campaign and notified of changes as the campaign evolved. Consequently, they were not only able to react and insure that medical support conformed to tactical developments, but they were able to be proactive and anticipate how to tailor medical support to fit battlefield developments.

Although fully subscribing to the principle of conformity, the American medical officers supporting the Grenada Expedition found it difficult to execute the principle because they, along with all combat service support officers, were excluded from the operational planning. Grenada Expedition medical support, therefore, conformed only to a limited degree due to the reliance on standard deployment packages and having to overcome the disruption in standard airflow caused by tactical decisionmakers.

The principle of proximity was maintained by the British in the Falklands despite the difficult terrain. Forward medical support elements man-packed their equipment to remain close to the combat units. Hospital elements were established ashore to provide vitally needed, proximally-located, medical support. The medical commander emphasized this point to the operational planners so they would allow him to do this in the initial stage of the campaign.

Due to the disjointed manner in which medical support elements at division level were deployed, American medical officers in Grenada found it difficult to position themselves near units in contact. Their attention had to focus on simply establishing adequate medical support initially.

Luckily, due to the short distances involved in the Grenada combat operations, proximity was less important than in the Falklands. Additionally, the availability of helicopters, albeit initially not medevacs, minimized the need for closer proximity of the division level medical support.

Although the British medics were somewhat constrained due to the lack of British air superiority in the Falklands Campaign, the forward positioning of medical resources at every echelon gave them flexibility in shifting medical resources where most vitally needed. The time available to them during the deployment to the Falklands also enabled them to insure that they had ample medical resources to give them flexibility in supporting combat operations.

In Grenada, however, the scarcity of medical resources at division level and the lack of information about the capabilities of the Navy resulted in there being essentially no flexibility in medical support. What flexibility there was came about as a result of the personal initiative of the medical officers involved and the limited flexibility already built into the standard medical deployment packages.

Mobility was carefully considered by the British for medical support in the Falklands as well as for tactical operations. Understanding their mission and the Falklands terrain, the British prepared their units to deal with the peculiar features of that area of operations. They realized going into the campaign that they must rely either on heliborne or footborne transport.

Due to the limited time of the combat operations of the Grenada Expedition, mobility of the medical units once in Grenada was not significant. But the mobility, or lack thereof, in getting to Grenada was a severe problem. Additionally, lack of ground ambulances, both for unit and division level medical units, hampered efficient medical support. The relatively late arrival of air ambulances (two days after combat operations began) also degraded the medical units' ability to move patients, medical personnel, equipment, and supplies when needed.

Continuity of care, on the whole, was maintained by the British in the Falklands but the use of non-medical helicopters actually resulted in an interruption in continuity. British casevac helicopters, unlike American medevac helicopters, do not carry highly-trained medical aidmen and are not piloted by medically-trained evacuation aviators. For these reasons, patient care in aeromedical evacuation in the Falklands was not truly continuous. Falklands casualties, in addition to having to face the hazards of being transported in non-medically marked helicopters (remember that at least one was shot down), also ran the risk of not having anyone to deal with in-flight medical emergencies should they develop during evacuation.

Maintaining continuity, indeed, even establishing it, was a problem for American Army medical personnel in Grenada. This was due, of course, to the lack of time to plan, the disjointed deployment sequences, and the lack of any overall

medical plan for this joint medical support operation. Continuity of care was difficult to establish on Grenada and continuity during the evacuation of patients to Barbados, Puerto Rico, or elsewhere was inadequate due to limited personnel, equipment, and supplies.

As far as control, the British did a superb job achieving this principle with the highly notable exceptions of not being in control of or in communication with the casevac helicopters. Overall, their command of medical resources functioned efficiently in the joint arena and their coordination with medical elements within each service, as well as between different services, was consistently effective. Their failure to directly control aerial evacuation assets, however, remains their principal operational weakness and their primary problem in the medical support of the Falklands Campaign.

Control of medical support for the Grenada Expedition was essentially taken out of the hands of medical officers by operational planners and tactical decisionmakers. The result was a near medical disaster. The 307th Medical Battalion commander and the orthopedic surgeon who was the first division level medical officer to arrive in Grenada both had to push hard to maintain and exert the limited control left to them. The nearly disastrous consequences in Grenada point out the significance of violating this principle and the necessity for medical control of medical support operations.

Use of Operational Concepts

As previously stated, the operational concepts of the USAMEDD and the RAMC encompass the following : (1) triage; (2) echelons of medical support; (3) elements of combat medicine; (4) patient evacuation; and (5) command and control.

Both the British in the Falklands and the Americans in Grenada were each faced with a mass casualty situation. Although the situations they faced severely taxed the available medical resources for a short period of time, the level of casualties never overwhelmed the medical support units, however. Consequently, while triage was used to prioritize patients for treatment, the use of the expectant category was never required. Medical resources were adequate, although just barely so in Grenada, to permit treatment of patients with massive injuries and little chance of survival. The importance of using the concept of triage was reaffirmed by both the British and the Americans in the two operations.

The appropriateness and importance of establishing echelons of medical support was also reaffirmed in both the Falklands Campaign and the Grenada Expedition. The British used every echelon of care effectively and were very careful to coordinate close ties and working relationships between

medical units. The American operational planners, however, initially excluded corps or third level units from the Grenada Expedition. Miscommunication at the operational level incorrectly led the 82nd Airborne Division commander to expect division and corps level medical support to be provided by the U.S. Navy. Although the Navy did eventually provide some medical support equivalent to these levels, the initial lack of planning for the third level of medical care left a serious gap in the medical support system.

The elements of combat medicine, as stated in Chapter Three, provide a common framework used by both the British and the Americans in providing medical support. This operational concept is grounded in two facts: first, that first and second echelon medical care is usually given in a tactical environment and must, therefore, be relatively austere; and second, that most soldiers who will die from wounds will do so within four to six hours if they are not treated.

The British knew these facts full well and planned their medical support with them in mind. Although the terrain in the Falklands and the resulting emphasis on night fighting caused a number of violations of this concept, the British, however, were basically successful in this area except for their failure to use tourniquets. Similarly, the Americans knew those facts and, even though they had hardly any time to plan, were also basically successful in providing advanced trauma life support within the acceptable timeframe.

Patient evacuation, however, was a weakness of both operations. It was a weakness in only one aspect for the British and that was with respect to helicopter evacuation. Once again, the lack of dedicated medical helicopters left casevac susceptible to the shifting priorities for helicopters in British combat operations. So, patient evacuation was deficient in this aspect of the Falklands medical support.

Patient evacuation was also a weakness for the Americans in Grenada and in several aspects even though the American Army advocates medical control of aerial evacuation and stresses aeromedical evacuation to the maximum extent feasible. First, as mentioned earlier, medical helicopters were not available until the combat operations in Grenada were half over. This resulted in non-medical helicopters being used like the British used them in the Falklands. Second, along with the rest of the disruption in the deployment of medical units, the number of ground ambulances deployed was less than needed to support unit and division level medical evacuation needs. This was the case even though the terrain in Grenada did allow use of ground ambulances. Third, unlike the British in the Falklands who had ambulance ships waiting for patients and an established plan for patient airlift back to Britain, the Americans failed to activate an available Air Force aeromedical evacuation squadron until combat operations were nearly over. Consequently, cargo aircraft had to be commandeered initially

and patients were flown not necessarily to the best place for their treatment but to wherever the planes were going.

Finally, even though the operational concept of command and control has essentially already been addressed in the discussion of the medical support principle of control, it is important to note the significance of command and control specifically in the medical support of a rapid deployment force operation. The extremely limited amount of time available to medical officers in preparing for medical support of a rapidly deployed land force argues for even greater than normal reliance by tactical planners on medical command and control of medical resources. Operational planners and tactical decisionmakers have to realize that medical officers are experts in the medical field and should be allowed to plan medical support and execute medical support operations without interference.

The British medical officers did have to overcome some problems with operational planners and tactical decisionmakers in the Falklands Campaign. Yet, on the whole, command and control of medical resources was left to medical officers. The only aspect of control not available in the Falklands - control of casevac helicopters - has already been discussed and is an aspect of a British medical support operational concept. Except for that, medical command and control worked well within the British Army and between the Army and the other British military services.

As previously stated, the American Army medical

commanders found themselves excluded from the planning process. They were even denied normal participation in the deployment and execution phases because of the confusion about available medical support and the perceived enemy threat on the island. Although it can be argued that this situation developed from the concern for operational security for the Grenada Expedition, this researcher believes that such operational considerations actually argue for greater, not less, participation for medical commanders because medical command and control is even more important than usual in a short-fused, joint operation like Grenada.

Lessons Learned

Key lessons from the medical support in the Falklands Campaign and the Grenada Expedition have been discussed in the two previous chapters. What will be discussed here are the lessons from those two medical support operations which are particularly relevant for the planning, execution, command and control of future medical support operations of rapidly deployed land forces.

The importance of planning is one of the most vital lessons to be learned from these examples of medical support of combat operations of rapidly deployed land forces. The

British example in the Falklands clearly illustrates effective planning in two dimensions. First, it illustrates the involvement of medical planners by operational planners in the operational planning process. Second, it points out the effectiveness of the planning by medical commanders both within their own service and between services. The British medical officers, like their counterparts in other military branches, efficiently used the limited time available to them and developed a superb plan for the Falklands Campaign medical support. Considering the relatively austere condition of the British Army prior to the Falklands, British planners at every level insured the best operation possible would be conducted.

The importance of planning is also illustrated by the Grenada Expedition. The operational problems there point out that operations planned in such haste must be simple or else run the severe risk of being so complicated they jeopardize success. Certainly the Americans had much less time to plan the Grenada Expedition than the British had to plan their campaign in the Falklands. But even in view of the severe time restrictions, the Americans should have done a better job of involving CSS planners and in devising joint, unified plans for tactical operations and medical support.

Another lesson important for planning future medical support of rapidly deployed land forces concerns operational security. Operational security, though vital to quick strike operations, cannot be allowed to prevent effective, necessary

planning. The operational security for the Grenada Expedition was essentially discarded when the Cubans were warned two hours in advance of the Ranger's landing. Yet, that security, which had kept units with a real need to know out of the picture for days, ultimately served little purpose except to jeopardize the operation it was designed to protect. This lesson is especially worthy to note because the problem with operational security and medical support is a recurring one for rapidly deployed land force operations. For example, the same situation as in the Grenada Expedition occurred in the Lebanon Operation of 1958.[1]

The lack of planning for Grenada medical support and the limited time for planning British medical support in the Falklands also serve to point out the need for standard medical support packages. These packages, when designed with a high degree of intrinsic flexibility, can greatly decrease the time needed to plan medical support of rapid combat deployments. The effectiveness of the 307th Medical Battalion's deployment packages proves this point.

Finally, with respect to planning, the two medical support operations examined in this thesis depict the limits of the tailored medical support spectrum. The Falklands medical support represents a medical support package expressly designed for a specific land force campaign. The Grenada Expedition medical support, on the other hand, represents a medical support package that was essentially an off-the-shelf package designed for general contingency

missions without specific tailoring for the combat operations in Grenada.

There are a number of important medical lessons from Grenada and the Falklands with regard to the execution of medical support of rapid deployment forces. The Falklands Campaign illustrated the significance of physical fitness, self aid, buddy aid, tourniquets, far forward resuscitation, simple surgical procedures, and simple clinical policies. The Falklands also pointed out the need for greater emphasis on fluid intake by soldiers and broader training for military physicians. Grenada also revealed these last two lessons.

Grenada, in a negative sense, revealed the need for joint medical understanding and cooperation in the execution of medical support. It revealed that initiative of medical soldiers can accomplish much, but that joint execution of medical support must not be lacking if soldiers' lives are to be saved.

Grenada also demonstrated the need for a comprehensive medical system to either be in place in the combat zone or readily accessible from it. Proper execution of medical support, especially in a rapid deployment force operation when time is so critical, requires completeness in the medical support system. Without that completeness, patients may die because the time for effective medical intervention has been lost.

Lastly, the lessons about command and control stand out. Even though a few internal problems were revealed in the

medical units of both the British and the Americans in the operations studied, the significant problems encountered would have been eliminated had more medical command and control been allowed. Where medical commanders were allowed to control their support operations as they should, as in the Falklands, medical support was highly effective and efficient. Where medical commanders were circumvented or excluded, as in Grenada, medical support was placed in great jeopardy. Further, the significant role medical commanders played in making timely medical support decisions in the Falklands Campaign and in the Grenada Expedition demonstrates the absolute necessity for active medical leadership, clear medical command, and direct medical control.

These lessons provide answers to the questions about how to effectively meet the medical needs of rapidly deployed land forces. Due to the increasing likelihood of more rapid deployment force operations in the future, these answers are vital. They will enable operational decisionmakers and medical commanders to plan and execute rapid medical support operations with precision so that another vital element for the success of the land force can be assured.

ENDNOTES

CHAPTER VI

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CHAPTER VII

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The preceding comparative analysis of medical support in the Falklands Campaign and the Grenada Expedition serves to illustrate how medical support of rapidly deployed land forces has been conducted. It also reveals key points for medical commanders to consider in conducting medical support of future rapidly deployed land forces. The medical support operations in the Falklands and Grenada are not the only examples available of medical support of rapidly deployed land forces but, in the researcher's opinion, they are the best and the most recent.

The Falklands and Grenada medical support operations have been compared using the principles of conformity, proximity, flexibility, mobility, continuity, and control. These principles, in addition to significant and commonly shared operational concepts, have enabled an examination of the medical support of the two operations.

The commonly shared principles and operational concepts

have served as excellent tools for comparing the two medical support operations studied. They are also excellent tools for planning and executing future medical support operations of rapidly deployed land forces. The lessons derived from the comparison also provide answers to vital questions about how to medically support future combat operations.

Recommendations

The six principles which form the basis of both American and British medical support doctrine have been useful in examining the medical support of the combat operations in two rapid deployment force operations - the Falklands Campaign and the Grenada Expedition. The principles' real value, however, is in their use to plan and execute medical support of future rapid deployment force operations.

Medical support planned using the principles of conformity, proximity, flexibility, mobility, continuity, and control will provide the foundation for subsequent successful execution. Execution following the principles will enable medical support of combat operations to be completed effectively and efficiently.

Medical support of rapidly deployed land forces is a key issue for the AMEDD because the likelihood of combat operations by such forces is increasing significantly. The United States, in its role as one of the two world

superpowers, may increasingly be called upon for rapid military intervention to secure areas vital to this nation and its allies. If the AMEDD is to meet its obligation of providing timely medical support to the soldiers conducting these quick operations, medical commanders must enable their organizations to react rapidly and be proactive in preparing their medical support capabilities.

Tactical and operational commanders and their staffs must also recognize the role the AMEDD has to play in achieving the success of their rapid deployment operations. They can be confident that they can rely on their medics to give them the best support available if they ensure that medical planners and medical commanders are involved throughout the planning and execution process of a rapid deployment force operation.

The medical triumphs, as well as the medical failings, of the medical support in the Falklands and Grenada are evident when these rapid deployment operations are analyzed using the established and time-tested medical support principles. Violating any of the principles opens the door to a potential medical disaster and jeopardizes overall operational success.

In addition to the points already discussed, this analysis has revealed the following key recommendations:

(1) soldiers must be highly physically fit for rapid deployment operations and must be encouraged to increase their fluid intake during the operation;

(2) soldiers must be trained in both self aid and buddy aid to augment unit medics especially in the event of a mass casualty situation;

(3) medical soldiers must provide resuscitation of casualties, especially in the control of hemorrhage, as far forward and as quickly as possible;

(4) medical soldiers, especially physicians, must be familiar with the special requirements of battlefield medicine and know their medical equipment and organizational structure;

(5) medical equipment packages must be designed to be lightweight and meet a wide range of medical support contingencies through intrinsic flexibility and functional integrity;

(6) medical support relationships must be clearly defined and understood by supported units and between medical units of the same as well as other services;

(7) the patient evacuation system must be clearly defined and established concurrently with the deployment of combat forces to expedite patient movement within a service's medical echelons and between services in joint operations;

(8) patient evacuation must be by air whenever feasible and in dedicated medical aircraft to ensure continuity of care while the patient is enroute to the next echelon of care;

(9) the accessibility of medical care outside of a combat zone must be maintained using a thoroughly coordinated

patient evacuation system or the full spectrum of medical support capabilities must be maintained in the combat zone;

(10) medical units, like all military units, should be deployed with their habitually associated support units whenever possible to insure the fastest medical support of rapid deployment forces;

(11) simplicity must be stressed throughout the battlefield medical support spectrum from simple first aid techniques (like tourniquets) to simple surgical procedures and clinical policies; and

(12) medical commanders must expect unforeseen problems to arise so they should stay flexible and document steps taken to overcome problems so information will be available for future training and planning.[1]

Recommendations for Further Study

Now that a comparison of the medical support of two recent rapidly deployed land force operations by two different countries has been made, further studies of other medical support operations of rapid deployment forces should be made to determine if different lessons may be learned. Also, studies should be conducted to determine if the principles used by the American and British Armies are shared by other armies and whether any other principles have

been demonstrated to be of significant value in the planning and execution of rapid deployment force medical support. Similarly, medical support operational concepts of other armies should be examined and analyzed in the light of comparisons to actual rapid deployment force operations.

Several other questions surfaced during the research for this study which merit additional study. First, the two operations studied used traditional medical battalion-like organizations to command and control second echelon medical support. Under the U.S. Army's current structure, most divisions have forward support battalions (each with one medical company) and no medical battalion like the 82nd Airborne Division. This study has shown the key role played by the 307th Medical Battalion commander in insuring medical support was deployed on time to prevent a medical disaster. A study should be conducted to determine if forward support battalion commanders or DISCOM level medical staff officers can be expected to intervene at such a critical time and have their medical concerns accepted by tactical commanders.

A second question concerns the fourth category of triage. That category - expectant, which is used for patients with massive injuries and little chance of survival even if all medical resources are concentrated on them - was never used in the Falklands or Grenada. Fortunately, neither of those operations resulted in casualty levels which exceeded available medical resources. Nevertheless, the question which must be asked is would loss of life in a rapid

deployment force operation be accepted simply because medical capabilities and resources were insufficient? Certainly in a major campaign large numbers of casualties can be expected and therefore, occasionally, medical officers may have to declare certain patients in that fourth priority. But in a small scale action such as most rapid deployment operations have been, can a medical department afford not to provide sufficient resources to preclude the need for using the expectant category of triage?

Another key question concerns preventive medicine measures. The focus of this thesis has been on the acute care provided to casualties in two combat operations. And, although some attention was given to preventive medicine considerations in the narrative, the full importance of preventive medicine measures for rapid deployment forces has not been addressed. There are significant preventive medicine implications in both the Falklands and Grenada even though they were for relatively short periods of time. Even the Grenada Expedition, whose combat operations lasted only 96 hours, had significant preventive medicine problems which received attention by tactical commanders much later than appropriate.

Fourthly, the role of the Navy's new hospital ships should be analyzed to determine their availability and capability to support rapidly deployed land forces. This new medical support resource should be studied in the light of American historical information (use of hospital ships in

World War II) and in comparison to the British experience with their hospital ship in the Falklands. The medical support implications of the U.S.N.S. *Mercy* and the U.S.N.S. *Comfort* are important both for rapid deployment forces and other operational forces.[2]

Finally, a study of a number of medical support operations of rapidly deployed land forces of several different nations would be useful in constructing a matrix. This matrix could be used to compare different military medical departments and their performance with respect to the six medical support principles used in this study. This would be an effective means to compare the actual performance of medical support operations of other nations, especially our allies. Such a study would be useful in assessing the future ability of our allies to medically support American soldiers in campaigns requiring coalition warfare.

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