A First Aid Teaching Unit for the Missionary System of The Church of Jesus Christ of Latter-Day Saints

Glenn R. Schiraldi
Brigham Young University - Provo
A FIRST AID TEACHING UNIT FOR
THE MISSIONARY SYSTEM OF THE
CHURCH OF JESUS CHRIST OF
LATTER-DAY SAINTS
PART I - TEACHING UNIT DEVELOPMENT

A Thesis
Presented to the
Department of Health Science
Brigham Young University

In Partial Fulfillment
of the Requirements for the Degree
Master of Science

by
Glenn R. Schiraldi
August 1976
This thesis, by Glenn R. Schiraldi is accepted in its present form by the Department of Health Science of Brigham Young University as satisfying the thesis requirement for the degree of Master of Science.

Ray Walters, Committee Chairman

Ronald Rhodes, Committee Member

July 31, 1976

Ray Walters, Department Chairman
ACKNOWLEDGEMENTS

It is reassuring to note how people contribute so generously of their time and talents toward a cause that will help others. This project was made possible by the joint efforts of many.

The author is extremely grateful to the jury of experts who so freely contributed their time and professional expertise in improving the instruction. The jury members include:

Dr. Cloyd C. Hofeins—Director, Brigham Young University Health Center
Dr. Keith Hooker—Emergency Room, Utah Valley Hospital
Dr. Brent Q. Hafen and Dr. Keith Karren—Advanced First Aid Instructors, Brigham Young University
Dr. C. Dixon Anderson and Dr. Eran A. Call—Former Mission Presidents

In addition, Dr. Rulon S. Francis and Marv Roberson of Brigham Young University provided extremely valuable information.

Gratitude is expressed to Craig Schow, Daryl Tichy and those of General Services of Brigham Young University for photographical assistance, the use of equipment, and expert advice.
Dr. Isaac Ferguson, manager of the Health Services unit of the L.D.S. Church is thanked for his support and guidance.

The continued guidance and encouragement provided by Dr. Ray Watters, the Committee Chairman and Health Department Chairman, and Dr. Donald D. Shaw, the Assistant Dean of the College of Physical Education, are warmly appreciated.

Finally, the writer wishes to especially thank the co-author, Robert L. Bunnell, for his persistence, sense of humor and inspiration.
TABLE OF CONTENTS

Page

ACKNOWLEDGEMENTS ........................................ iii

LIST OF TABLES ........................................ vii

Chapter

1. INTRODUCTION ........................................ 1
   STATEMENT OF THE PROBLEM .......................... 4
   HYPOTHESIS ............................................. 4
   DELIMITATIONS ......................................... 5
   DEFINITIONS ........................................... 6
   JUSTIFICATION ......................................... 7

2. REVIEW OF LITERATURE ................................. 14
   HISTORY OF FIRST AID INSTRUCTION ................. 14
   RELATED LITERATURE .................................. 22
   SPECIFIC LITERATURE ................................ 46

3. PROCEDURES ............................................ 53
   POPULATION IDENTIFICATION .......................... 53
   DETERMINING THE CONTENT OF
   THE TEACHING UNIT .................................. 53
   METHOD OF PRESENTING THE
   FIRST AID TEACHING UNIT ............................ 54
3. PROCEDURES (Con't)

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEVELOPING THE FIRST AID TEACHING UNIT</td>
<td>55</td>
</tr>
<tr>
<td>4. PRESENTATION AND ANALYSIS OF THE FIRST AID TEACHING UNIT</td>
<td>59</td>
</tr>
<tr>
<td>5. SUMMARY, FINDINGS, CONCLUSIONS AND RECOMMENDATIONS</td>
<td>70</td>
</tr>
<tr>
<td>SUMMARY</td>
<td>70</td>
</tr>
<tr>
<td>FINDINGS</td>
<td>72</td>
</tr>
<tr>
<td>CONCLUSIONS</td>
<td>73</td>
</tr>
<tr>
<td>RECOMMENDATIONS</td>
<td>73</td>
</tr>
<tr>
<td>RECOMMENDATIONS FOR FURTHER STUDY</td>
<td>74</td>
</tr>
</tbody>
</table>

APPENDIXES

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. FORMER MISSION PRESIDENTS' MISSIONARY HEALTH SURVEY</td>
<td>76</td>
</tr>
<tr>
<td>B. FIRST AID TEACHING UNIT SCRIPT</td>
<td>82</td>
</tr>
<tr>
<td>C. THE MEMBERS OF THE JURY OF EXPERTS AND THEIR QUALIFICATIONS</td>
<td>101</td>
</tr>
<tr>
<td>D. JURY RATING FORM FOR DETERMINING HOW EFFECTIVELY THE FIRST AID TEACHING UNIT COVERS THE FIRST AID TOPIC AREAS</td>
<td>103</td>
</tr>
<tr>
<td>BIBLIOGRAPHY</td>
<td>106</td>
</tr>
</tbody>
</table>
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Experts Consulted in Writing the First Aid Teaching Unit Script</td>
<td>56</td>
</tr>
<tr>
<td>2.</td>
<td>The Topic Areas Required by the L.D.S. Church Health Services to be Included in the First Aid Teaching Unit</td>
<td>60</td>
</tr>
<tr>
<td>3.</td>
<td>Modified List of Topic Areas Required by the L.D.S. Church Health Services to be Included in the First Aid Teaching Unit</td>
<td>61</td>
</tr>
<tr>
<td>4.</td>
<td>Combined Jury Ratings of the Effectiveness of the Topic Areas of the Script</td>
<td>64</td>
</tr>
<tr>
<td>5.</td>
<td>Combined Jury Ratings of the Effectiveness of the Topic Areas of the Slide Presentation</td>
<td>65</td>
</tr>
<tr>
<td>6.</td>
<td>Comments and Suggestions of Jury Members Regarding the First Aid Slide Presentation</td>
<td>67</td>
</tr>
</tbody>
</table>
Chapter 1

INTRODUCTION

Approximately 23,000 missionaries throughout the world presently represent the Church of Jesus Christ of Latter-day Saints on a full-time, voluntary basis. This is the largest missionary force of any church in the world. The missionaries consist predominantly of young men nineteen to twenty-five years of age who are assigned to geographic regions, or missions, throughout the world.

Throughout the years it has been observed that the effectiveness of many missionaries has been hindered because of health problems, particularly in foreign countries. Serious problems annually cause missionaries to return home prior to the completion of their missions, while other missions are interrupted due to forced leaves of absence or transfer because of health related problems. It is thought that common health problems do not result in such relocations, but do create unnecessary lost time. In 1974, total lost time in the mission field amounted to approximately 80,000 days (1).
"In order to determine the most appropriate and effective measures to be adopted," officials of the Church of Jesus Christ of Latter-day Saints (hereafter designated L. D. S. Church) decided to analyze in depth the nature and scope of missionary health problems (2:1).

As a result of this analysis, various measures have been taken in the last three years to reduce health related problems. These include:

1. Pre-mission screening. This includes medical and dental examinations and thorough medical screening of missionary applications. Mission presidents are also informed of noted missionary health problems.

2. Immunization programs. These include stringent regulations and immunizations given at the initial mission home.

3. Post-mission screening for specific diseases among missionaries from high-risk areas, i.e., tuberculosis.

4. Quarterly gamma globulin injections in high risk missions for protection against infectious hepatitis.

5. Education. A pilot health training program was conducted in 1975 at the Language Training Mission in Provo, Utah, and evaluated. Based on this evaluation, it has been proposed that six hours of mediated health education be taught
to foreign speaking missionaries at the Language Training Mission. The proposed instruction will be aimed at a practical approach to help missionaries living in primitive areas, as well as needed common health knowledge and skills (1). The overall proposed instruction will address the following six areas:

1. Nutrition.

2. Dealing with common medical problems, and obtaining needed health services.

3. First Aid principles.

4. Food contamination prevention and personal hygiene.

5. Improving interpersonal relationships.

6. Dealing with coughs, colds, and sore throats (3:1).

Each of the above areas requires the development of teaching units to meet the specific needs of the missionaries. Developed materials will be intended for use also as inservice material in other missions of the Church (3:1). Because first aid principles is one of the above areas, there exists a definite need for an efficient teaching unit in first aid for the missionaries at the Language Training Mission. It is with these basic considerations in mind that the following problem was proposed.
STATEMENT OF THE PROBLEM

The intent of this study was to develop a sixty minute, mediated practical first aid teaching unit for the missionary system of the Church of Jesus Christ of Latter-day Saints.

Subproblems

In addition to the general problem specified, the following subproblems were considered:

1. What first aid skills and knowledge are needed by the missionaries?

2. How may relevant first aid skills and knowledge be most effectively presented? The question considered the existing instructional limitations as well as the time restrictions of the missionaries.

3. How effective will the teaching unit be using knowledge as a criterion?

HYPOTHESIS

Null

There will be no significant difference in first aid knowledge between those missionaries presented the teaching unit in first aid ($\mu_1$) and those not receiving the unit ($\mu_0$).

$H: \mu_1 = \mu_0$
Alternate

The first aid knowledge of the missionaries who have had the teaching unit in first aid ($M_1$) will be significantly higher than those who have not had the unit ($M_0$).

$A: M_1 > M_0$

DELIMITATIONS

The study includes only first aid instruction for the missionaries of the L.D.S. Church, who are taught at the Language Training Mission, Provo, Utah. The instruction was based on the recommendations of the L.D.S. Church Health Services, which defined the subject areas to be covered in the first aid teaching unit.

Because of the scope of this study it was divided into two parts. Part I is included in this thesis, which describes the first aid teaching unit development. This includes subproblem 1 (determining which skills and knowledge are needed by the missionaries) and subproblem 2 (determining how to most effectively present the relevant first aid skills and knowledge). Part II describes the process of measuring the effectiveness of the teaching unit, including subproblem 3 (measuring the effectiveness of the teaching unit using knowledge as a criterion).
DEFINITIONS

Language Training Mission

The preparatory school for foreign speaking missionaries for the L.D.S. Church. The main objective of the school is to teach the missionaries the language of their assigned countries.

First Aid

The immediate care given to a person who has been injured or suddenly taken ill (4:17).

Mission President

Appointed L.D.S. official responsible for directing the missionary activities in designated geographical areas or missions.

Missionary System

That system which includes selected members of the L.D.S. Church whose objective is disseminating information about the Church on a full-time voluntary basis for a period of approximately two years.
Gospel Principles

Those ideals which are believed by the L.D.S. Church to be the teachings of Jesus Christ.

Instructional Limitations

Training restrictions at the Language Training Mission due to shortages of qualified first aid instructors, lack of first aid expertise in the available language instructors, and the absence of standardized first aid audio-visual aids.

Developing Welfare Services Department

The unit of the L.D.S. Church which is responsible for all health related matters. It is organizationally under the direction of the Presiding Bishopric of the Church, and manages the L.D.S. Church Health Services.

JUSTIFICATION

The Developing Welfare Services Department of the L.D.S. Church has suggested organizing a task committee of Latter-day Saint volunteers which will be instrumental in developing a series of mediated (audio-visual) health education instructions for missionary health education (3:2).

Concerning the first aid portion of the program it has been observed by Dr. Isaac Ferguson, manager, L.D.S. Church
Health Services, that "while many materials exist on this topic, we have found none that" completely meet the specific needs of the missionaries (3:1).

A review of available data stimulates an appreciation of the need for first aid instruction for the missionaries. Accidents are the leading cause of death among Americans one to thirty-eight years old (4:17 and 5:9). The time lost due to injury is staggering. In the 1974 edition of "Accident Facts" it is reported:

For youth aged 15-24 years, accidents claim more lives than all other causes combined, and about six times more than the next leading cause of death. Four out of five accident victims in this group are males (5:9).

It is interesting to note that most of the missionary force falls under the grouping to which the above data applies. In 1973, among the principle classes of accidents in the United States, the three leading causes in disabling injuries were home accidents (4.1 million), public accidents (3 million) and work accidents (2.5 million), while the principle cause of deaths was motor vehicle accidents (5:3). The nature of missionary work exposes the missionaries to all of these threats.

While the accident facts relating to missionaries do not appear severe, injuries and time lost as a result of accidents do pose considerable health problems for missionaries.
From a preliminary analysis of an unpublished study done by the L.D.S. Church Health Services in 1971, accidental injury was rated the fourth leading type of illness among a sample of 120 missionaries. The sample showed about ten percent of all illnesses to be of an accidental nature (6).

A pilot health training program was conducted at the Language Training Mission in the summer of 1975 (1). Despite previous background first aid training for the majority of missionaries (Boy Scout First Aid Merit Badge, Red Cross or other first aid courses) many incorrect answers were given to pre-class and post-class first aid questions (1 and 5).

It is obvious that missionaries feel the need for additional first aid skills (6). It appears that there is a legitimate need for first aid training since cardio-vascular, skeletal and other emergency related problems have proven to be causes of lost time among missionaries, as indicated in a 1971 worldwide study involving 12,000 missionaries (6).

It is recognized that first aid training is extremely valuable "in both preventing and treating sudden illness or accidental injury" (4:18). To know the nature of accidents is of great value in preventing insults to the body (7:192), while studying the body damage that results from accidents promotes safety awareness and a more acute safety attitude. It is such
a philosophy that prompted the American Red Cross to state:

The (first aid) program offered by the First Aid and Life Saving Service is distinctly one of education, with two primary objectives—first, to prevent accidents; second, to provide for immediate proper care for victims of accidents (8:3).

The American Red Cross has also recently stated that doctors are often not available, since the number of doctors has not kept pace with the rising population. "Calling the doctor may not be enough—a doctor may not be available to come to the scene of the emergency" (4:18). The situation relating to nurses and health workers is similar. In the United States, for example, in 1969 there were only 324,942 medical doctors and 14,000 with the degree of Doctor of Osteopathy. Of these only 313,000 were in private practice, for a ratio of one physician for every 640 people. This would be enough were it not for the facts that in the United States, as well as foreign countries:

1. There is an uneven distribution of physicians, with the majority congregating around metropolitan areas.

2. Most physicians become specialists, exceeding seventy percent (7:300-301).

The U.S. Department of Commerce statistics are even more pessimistic, citing that in 1973 there were only 124,000 practicing physicians, of which only 42,000 were in general
practice. There is therefore a physician/patient ratio of 1/1700, compared to the general practitioner/patient ratio of less than 1/5000. There is little relief in sight since medical school graduates are barely matching retiring doctors, while the population increases (9:70). It should be noted, however, that the shortage of doctors is merely a shortage of general practitioners (7:301).

The shortage of adequate medical facilities is another factor which necessitates first aid training. For instance, the recognized standard of 4.5 hospital beds per 1000 inhabitants is obtained in many U.S. metropolitan areas, but there are many communities that have but half this number (7:303).

Thus, the shortages of trained medical personnel and hospital facilities, as well as the nature of accidents, are effectively summarized by Dr. Preston A. Wade:

The increasing number of accident victims has created a serious problem for hospitals and the medical profession throughout the country. Many other types of serious medical problems can be handled in specific centers when the delay caused by transportation is of no importance. In the treatment of the accident victim, however, every case is an emergency and needs treatment at or near the site of the accident (10:15).

Thus, there is much support, from the practical standpoint, for initiating first aid training for the missionaries. There are, however, substantial reasons for
promoting first aid instruction from the Gospel standpoint.

The relationship between Jesus, the Church and health is expressed in an interesting memorandum from the L.D.S. Church Health Services.

The mission of the Church of Jesus Christ of Latter-day Saints is the same as that of the Savior: 'To bring to pass the immortality and eternal life of man.' Since obstacles such as illness, hunger, poverty, unemployment and emotional difficulties can and do impede man's progress toward eternal life, the mission of Welfare Services is to bring to pass the independence and well-being of the individual and family, especially in temporal matters. Such independence is acquired through: (1) true conversion to the Gospel of Jesus Christ, (2) self-respect, (3) economic stability, and (4) good physical and emotional health (11:1).

It should be apparent, then, that the L.D.S. Church is also vitally concerned with the growth and progression of each individual missionary. In other church health instruction, the topic of first aid has been included with service to others and home nursing under the Gospel concept that, "When we bear one another's burdens we fulfill the law of Christ" (12). The philosophy expressed by the American Red Cross is consistent with the above concepts:

If you, as a first-aider, are prepared to help others, you are better able to care for yourself, or direct others in carrying out correct procedures to follow in your behalf. . . Knowing what to do in an emergency helps to avoid the panic and disorganized behavior that are characteristic of unprepared persons. . . (4:18).
Finally, first aid training can assist the missionaries toward gaining economic stability. When it is considered that in 1969 the average expense per patient per day in short-term general and special hospitals was $70.03 in America (7:303), a figure that is rising, and when it is considered that the average mission expenses exceed $3,500 per missionary, the economic value of first aid training is readily apparent. Therefore, first aid training is important from the Gospel standpoint in promoting independence and service to others.
Chapter 2

REVIEW OF LITERATURE

HISTORY OF FIRST AID INSTRUCTION

During the Crusades, Christian Pilgrims in Jerusalem were offered medical aid and relief by a body of men calling themselves "The Poor Brethren of the Hospital of Saint John." This eleventh century group was probably the first organized to administer immediate care to those suddenly taken ill or injured (13:2). Following the example set by the "Poor Brethren," The Saint John's Ambulance Association was formed in 1877 in England. This association, whose chief aim was rendering aid to persons involved in road, railway or civil accidents is believed to have provided the earliest form of formal first aid instruction (14:1).

The earliest instance of first aid instruction in the United States took place in New York City in 1880. This "Society for First Aid Instruction to the Injured" provided instruction by doctors of medicine for a nominal fee (14:1).

14
In 1889 Dr. Matthew J. Shields, physician for the Jermyn Coal Company of Pennsylvania, taught a First Aid class with twenty-four coal miners enrolled as students (14:1).

Also in the 1880's, Clara Barton trained the first disaster workers for relief action following floods along the Ohio and Mississippi Rivers (15:6). Miss Barton, "The Angel of the Battlefield" of the American Civil War, played a major role in the forming of the American Association of the Red Cross.

The organization was reincorporated as the American National Red Cross in the year 1893 (16:1). This organization had tremendous influence over first aid instruction in the United States since the year of its conception. In 1903 first aid was established as a department of the American Red Cross. Mr. Howe, a superintendent, was appointed and a Red Cross first aid manual was prepared and issued. Due to organizational changes, interest was lost and not regained until 1908 when Major Charles Lynch, an Army Medical Officer assigned to head up the first aid service by the War Department, prepared a first aid textbook (14:1).

Dr. Matthew J. Shields, pioneer of first aid instruction among the coal miners in Pennsylvania, was appointed Staff Physician in 1910 and the first aid instruction program
was solidly under way (14:1). Since this time, programs in advanced and standard first aid have been offered to state and local police, firemen, ambulance drivers, rescue squad personnel, YMCA, scouts and other professional, educational and industrial groups.

The Pullman Company donated a railroad car fitted out as a classroom to the Red Cross. Later two more cars were added. Staffed by physicians, these cars toured nearly every state, giving lectures on first aid to railroad employees, miners, and the general public (14:1).

In 1912 the first film on first aid was produced by the Edison Company. A Teacher's Handbook of First Aid Instruction was prepared for use in conducting first aid classes in schools in 1922. At the request of the Secretary of War, first aid training was given to ROTC beginning in 1923. In the same year, agreements were signed with eight different companies to award joint ARC and Telephone Certificates (14:2). Prior to 1927, training in first aid was conducted by staff physicians only. However, this policy was changed and in 1937 provisions were made allowing lay members to teach instructor training courses (14:3).

The present philosophy of the American National Red Cross was keynoted in the 1932 annual report as follows:
The program offered by the First Aid and Life Saving Service is distinctly one of education, with two primary objectives—first, to prevent accidents; second, to provide for immediate proper care for victims of accidents. (14:3)

In 1933 the first general copyrighted Red Cross textbook was published superseding the previous specific editions for police teachers, firemen and other individual groups. (14:3)

1941 marked the beginning of the Civil Defense program in first aid training. This same year a general directive was issued by the Army regarding first aid instruction and training for the armed forces (14:3).

The following year a very unique organization of British men, women and youngsters was formed. This peculiar volunteer group made a serious hobby of being accident victims. A civil engineer and 120 Civil Defense volunteers met in a bombed out shell of a convent and established the Casualties Union, an organization still in force today. Make-up artists and physicians show volunteers how to look and behave like genuine casualties with the purpose in mind of training air raid rescue teams in emergency medical care (17:37).

In 1945 the British Civil Defense system was disbanded, but the Union decided to remain intact. Today more than 1,000 fully trained members are active in Great Britain,
South Africa, Australia, New Zealand and Holland. The members pay $1.80 each year and subject themselves to nine months of training. They are mostly dedicated first aid workers who firmly believe that first aid training is futile due to the lack of realistic situations. They strongly feel that first aid cannot be learned from books. In order for training to be effective, the student must be directly confronted with the real situation. Is their technique effective? Doctors have reported that nurses having previously performed tracheotomies in practice sessions are more confident when called upon in a real situation (17:35).

In the United States, the schools were using Red Cross first aid training as part of the regular curriculum by 1948. In 1951 the Office of Education, Federal Security Agency, issued a statement to education authorities urging inclusion of first aid in the curriculae of colleges and junior and senior high schools, both as a long term program directed toward safety and as part of Civil Defense. By this time, also, a majority of police, fire departments and highway patrol units throughout the United States were participating in the Red Cross program (14:5).

Mary Settle, the first national training director for Red Cross first aid, began formalized internal training. Area
training offices were established and the first operational
skills training was established in 1956-57 (14:5).

The Medical Self-Help Training Program was estab-
lished in 1963 by the Office of Civil Defense. This excellent
program has proven beneficial in many instances.

Howard Woodward was down by his barn cutting logs
with a chain saw when a loose sheath threw the saw into
his throat. Beverly, just home from school, heard his
hoarse cry for help. Rushing to him, she found a wide,
deep gash in his throat bleeding profusely and saw that
his jugular vein had been cut. She pushed her hand into
the gash and held the ends of the severed vein. Her father
stooped so she could hold on while they walked to the
house to wait for the ambulance. In the emergency room
forty-five minutes after the accident, the doctor said
that Beverly's knowledge and quick action had saved her
father's life (18:399).

Beverly Woodward of Carthage, Tennessee was sixteen
years old and able to save her father's life because she had
received Medical Self-Help Training at her high school. Many
states have incorporated this training in all their high school
and junior high school curriculae, and individual schools in
every state as well as private schools and colleges now offer
the course.

The medical Self-Help program was developed by the
Public Health Service in connection with the Office of Civil
Defense in order to "help people meet their own health needs
in disaster or emergency situation when no doctor is
available" (18:400). The goal of the course is to train at least one member in each family in Medical Self-Help. It was offered in all fifty states by some colleges and public schools, fire and police departments, fraternal and civic organizations and armed forces installations. All of the instructors were volunteers (19:73). The program received the endorsement of the American Medical Association and many other professional organizations (18:401). It proved so valuable in coping with everyday accidents that many schools gave the course to their teachers, bus drivers, playground staff and supervisors (18:401). Since 1963 over twelve million people completed this sixteen hour, eleven lesson course (19:73). Unfortunately, due to administrative changes the Medical Self-Help program was discontinued. It was replaced by "Your Chance to Live," a national program presented by the department of Health, Education and Welfare. This program focuses on disaster preparation and is directed toward the Junior High school level. While nuclear attack, forest fires and other modern disasters are discussed, first aid is not as thoroughly presented as it was in the Medical Self-Help program (20).

Presently, there exists many programs aimed at training people in first aid procedures and principles. The
field has emerged from a smattering of uncoordinated, individualized classes to an enormous collection of well integrated, well organized programs in less than 100 years. Since the organization of the Saint John's Ambulance Association in 1877 many millions of people have advanced in first aid training. It is impossible to estimate the great service this has provided mankind in the preservation of lives and limbs and enriched daily living. The importance of training for emergency medical personnel in specific occupations is part of this trend and therefore:

For years the Commission on Trauma of the American College of Surgeons has advised that every ambulance driver and attendant should take an American Red Cross Advanced First Aid course or its equivalent. We now know from ambulance attendants themselves that this is not enough. The management of emergency childbirth, cardio-vascular accidents, and sudden mental disturbances, as well as emergency care beyond first aid, needs to be taught by physicians to all personnel concerned in any way with the immediate care and transportation of the sick and injured. This includes law-enforcement officers (state police, sheriff's staff, and local police), firefighters, volunteer rescue squads, ambulance drivers and attendants employed by any of the above or by private owners, funeral directors, hospitals, or industry; dispatchers, nurses, army medical corpsmen, and navy stewards.

During the past five years immediate care courses for the aforementioned have been instituted all over the nation (13:4).

From professional, to para-professional, to the general public, the opportunities for first aid training are available
and have become efficient and informative means of prolonging and improving lives.

RELATED LITERATURE

The American National Red Cross' handbook, Advanced First Aid and Emergency Care (4), will be used as the basic reference for this survey and proposed instruction. This section, however, surveys the literature concerning selected first aid topics about which it is felt additional background information is needed. There are several reasons for this objective. First, it is anticipated that an emergency reference of some type will be developed for the missionaries. This reference will provide essential first aid knowledge needed by the missionaries. It is hoped that this survey will provide a consensus of the best thinking about pertinent first aid topics. Second, this review will allow the reader to review some of the recent trends in first aid theory and practice. Third, this survey will address those areas about which there are discrepancies among the experts, examining the factors involved when this will aid in arriving at the preferred methods. This survey will also provide interesting insight to some areas which are treated but briefly in the Red Cross manual. It is with these factors in mind that the following is presented.
General

Perhaps the best general rules for any medical emergency are found in the Defense Civil Preparedness Agency's handbook on disasters for citizens. They are:

1. Do no harm. Get competent assistance if possible from doctors, nurses or trained first aid personnel. If these are not available, then take charge (21:32).

2. Look for stoppage of breathing and serious bleeding. These need immediate attention (21:32). It is interesting to note that The Red Cross and Wade give first priority to reestablishing breathing (4:21 and 22:16) while the Office of Civil Defense gives stopping of bleeding as the first step (22:32). Either severe hemorrhaging or severe bleeding can result in death within minutes. Ideally, having two first aiders, enabling one to remedy each problem simultaneously, is most efficacious. In other cases judgment will suggest the proper order or the proper combination of the two.

3. Prevent shock or treat it (21:32). Since different sources place splinting and treating for shock in different orders, it is simply noted here that fractures must be splinted before limbs are raised in the treatment of shock.

4. Do not move the patient immediately unless there is life threatening danger. Wait until breathing is
restored, bleeding is stopped and broken bones are splinted (21:32).

5. Keep calm, reassure the victim and keep him comfortably warm (21:32).

In regards to rule number four above, Carper has observed that victims should not be moved unless greater danger is risked by allowing the victim to remain where he is. Fire and drowning are two examples of such dangers. The proper procedure is to give first aid where the victim lies and call an ambulance. In most accidents, with the exception of poisoning, time is not crucial (24:23). There has been no discrepancy noted on this concept. In a four year study of diving injuries in New Jersey, Dr. Richard Rado noted that 750 divers yearly suffer broken necks in the United States. Five hundred of them become paralyzed, often because bystanders have the impulse to "get them out." Paralysis as noted in several case studies, has been avoided by not yanking or twisting the neck (24:23).

Burns

There seems to be general consensus that cold water is the best first aid for lesser burns. In some of the initial research Dr. John Boswick, director of hand and burn surgery,
Chicago Cook City Hospital, recommended immediate immersion in comfortably cold water (less than seventy degrees) until the pain stops (24:23). Other writings suggest the use of ice water until the pain is relieved, usually from fifteen minutes to five hours (25:141, 26:70, 27:11, 28:176). Covering the burn with plastic wrap and applying cold compresses, or simple cold, moist towels, is recommended for areas which cannot be immersed (29:10-14, 26:69, 27:11). The only disagreement exists as to the nature of lesser burns.

The Navy and Erven recommend ice water for burns covering less than twenty percent of the body (28:175, 26:70). Other research suggests this for burns covering less than ten percent of the body (27:11). Cunningham and Harris cite cases where ice water immersion significantly and dramatically was used in third degree burns of the face, neck and ear (25:141) while the Army recommends only dry covering for second or third degree burns (30:46). It is generally felt that ice water decreases pain and scarring, while promoting healing (24:23, 29:10-4, 26:69). Grease or greasy ointments must never be used, since they do not promote healing, must be scraped off in treatment, which is painful and delays treatment, and can contribute to infection (24:23, 29:10-4, 30:46). The Army teaches that the only acceptable material for application to
the burned surface, besides the dry sterile dressing is Salfamyalon burn creme (30:46), which is not available to the average first aider.

In more severe burns the following is noted. In injuries involving burns, most deaths occur immediately from suffocation. This is followed by deaths from shock, which occur within a few hours. Deaths from infection occur from three to ten days (30:44). This suggests the order in which first aid should be administered. Swelling of the lips and mouth can indicate swollen airway tissue. If normal resuscitation methods fail, the Army recommends making a simple emergency surgical airway to overcome suffocation, an unauthorized step for most first aiders (30:44).

To treat for shock, if medical help is more than an hour away (4:141), allow the victim to sip a half glass of salt and soda solution over a period of fifteen minutes. The proper proportion is one teaspoon of salt plus one half teaspoon of soda to a quart of lukewarm water (21:40, 23:36, 4:140). The burned areas should be covered with clean, dry and sterile airtight dressings if available. A clean sheet, plastic bag or towel makes a good substitute (4:140, 29:10-4, 26:70, 30:46). If dry sterile dressings are not available, it is best to leave the burned material covering the wound. A blanket should
not be used to cover the victim unless it is very cold (23:36, 30:46), since this can increase the loss of body fluids. In extensive burns it is best to spend available time in getting the victim to the hospital (27:11). Enroute to the hospital or if medical attention is delayed, aspirin may be given to relieve pain, and the area around the burn may be washed (21:40, 23:36). Ice water should not be applied over extensive areas, since this may increase shock reactions. However, cold packs may be applied to the face or the hands and feet (4:141).

Pieces of cloth which stick to the burn should not be removed. Nor should the burn itself be cleaned, or blisters broken (23:36).

Bleeding

Direct pressure with a gauze dressing is the method most generally prescribed. The gauze facilitates clotting. Additional pressure with the hand over the dressing should be employed if the bleeding does not stop (29:5-8). Almost any bleeding, especially venous bleeding, can be controlled by direct pressure (31:3-6, 30:12). Even the bare hand can be used if dressing is not available, although the cleanest dressing available will minimize slipping caused by blood (23:22). Bleeding of the leg often requires extreme pressure. The
clenched fist should be covered with cloth if available and thrust directly into the wound. One should continue to apply this pressure until the bleeding is controlled, or while a tourniquet is applied, if one is necessary (26:7). Although elevation is generally noted as an additional measure, the Army notes that it may slow blood flow only if the wound involves venous or capillary bleeding. However, there is no value from elevation in the control of arterial bleeding. The Army also states that the use of pressure points to control bleeding is not recommended if pressure must be maintained for a long period of time. However, it may be useful temporarily until a pressure dressing can be applied (30:12).

The Army states that acute severe hemorrhage, or bleeding involving the loss of at least two pints of blood, constitutes an emergency, and the patient will die if the bleeding is not stopped (30:11). The Red Cross agrees (4:28). It is generally agreed that a tourniquet is dangerous to apply, leave on and remove because of the damage it causes to nerves, blood vessels and other tissue (29:5-9, 23:23). Although it is agreed that it should only be used in an emergency, opinions differ slightly concerning when it will be needed. Wade states that even in a completely severed limb, spasm will close the blood vessels, preventing fatal hemorrhage (22:17). The Army
states that a tourniquet should be applied at once for traumatic amputations. Even if bleeding is slight, the initially con- tracted muscles will relax and bleeding will increase (30:43). The Defense Civil Preparedness Agency maintains a similar position (21:36). Tourniquets are often necessary in the case of a partially torn vessel (22:17), or about two inches above an incomplete or complete amputation (30:43). The Navy states that one will usually be necessary if a large artery in the leg is cut, although direct pressure should first be tried (26:7).

The Navy adds what is generally felt, that insufficient tourniquet pressure may actually increase the amount of venous bleeding. Removing a tourniquet once it has been applied can also increase bleeding. Either may easily cause death since the victim has already lost much blood, the reason for applying the tourniquet in the first place. It then adds that recent experience has shown that a correctly applied tourniquet may be left on for a considerable length of time with very little risk to the limb (26:7). According to Erven, medical authorities indicate that a tourniquet may be left in place for three to four hours with practically no risk (28:94).

Neck wounds are a particular interest. Unlike most bleeding, it is recommended that direct pressure be applied
both above and below the wound to prevent air from entering the circulatory system, which could be fatal. Cloth under the fingers is useful since the neck gets slippery from blood (26:7, 29:5-9, 32:122).

It is now generally agreed that plain soap and water is superior to antiseptics for cleansing small wounds. Antiseptics can have adverse side effects. Experiments with animals at the New York State Health Department Laboratories demonstrated how effective flushing with soap and water is. In cases where rabies infected wounds were untreated there was a ten percent survival rate, as compared to a ninety percent survival rate for animals whose wounds were scrubbed and flushed with soap and water (24:22). In deeper wounds the surrounding areas only should be gently cleaned if evacuation is delayed (30:28).

Nosebleed is a special case of bleeding. In the Medical Self-Help Course, first aid is similar to the Red Cross method. The head is tilted back, the nostrils are pinched and cold cloths are placed over the nose, face or back of the neck (23:64, 32:82). A role of gauze placed between the lip and upper teeth will often control bleeding (32:121).
Shock is often good evidence of internal bleeding. Treatment involves keeping the victim still, and giving nothing by mouth (30:13).

**Shock**

In simple terms, shock is a disturbance of the circulation, caused by injury (26:27). Although the clinical signs and symptoms are well acknowledged, restlessness and anxiety may precede all others (29:5-4). The Army recommends that a victim be treated for shock even before the clinical signs appear for the following wounds:

1. Penetrating belly, chest, neck, and pelvis wounds, or other wounds where internal bleeding is suspected.

2. Arm and leg wounds with tissue damage as big as a fist.

3. Fractures of the large bones (30:14).

The treatment procedures are generally standardized. There is general agreement that the fluid administered is the same solution as is administered for burns, and that it should be administered only if medical help is not close (21:37, 26:24, 23:38), and contraindications are not present. The Navy explains that in shock, fluid is not immediately necessary and little is absorbed. It is needed only to meet the body's needs
of two to three quarts of liquid daily (25:24). Fluid should not be administered to one with an internal injury. Rather, the mouth may be moistened with a small quantity of water that must not be swallowed (26:49). Fluid should also not be given when there is an open chest wound, as the victim might choke or get the fluid into his lung (26:47).

Artificial heat can increase sweating and draw blood toward the heat, thereby defeating the shock response. This is why the victim should be comfortably warm, but not overheated (26:49).

The Navy cautions that feet should not be elevated if there is an internal wound (26:49).

**Artificial Respiration**

After from four to six minutes without oxygen, there will be permanent damage and death to brain cells and cells of the nervous system (30:13, 29:3-3, 4:69). After this time, life is possible but the victim will be like a vegetable (29:3-3). The Navy states that artificial respiration should be continued for at least four hours, since some people have been saved by up to eight hours of artificial respiration (26:13).

The mouth-to-mouth or mouth-to-nose are the unequivocally preferred methods, providing the best ventilation, since exhaled air contains fifteen to eighteen percent
oxygen as compared to normal air which has twenty percent oxygen (29:3-8).

The Defense Civil Preparedness Agency suggests that the following steps be taken if the flow of air is restricted:

1. Check the head and jaw position (21:35). In the case of a suspected broken neck or injured cervical spinal cord maneuvers to lift the chin and jaw are appropriate. This includes lifting the chin forward with the thumbs inside the corners of the mouth, or lifting the jaw by placing the fingers under the angles of the patient's jaw (32:51).

2. Clear the mouth with the fingers (21:35). Most agencies recommend that the finger be wrapped with a clean cloth or a handkerchief, if available (4:70, 29:3-8). AMA suggests that the victim be rolled over before attempting to clear the airway (33:844). At a minimum, the head should be turned to one side (32:52). The Army notes that if there is a wound to the face or neck the airway be cleared of blood clots and wound tissue by the fingers wrapped in gauze. The patient should then be placed in the best position for drainage (30:16).

3. Turn the victim on his side and strike him several times between the shoulder blades to dislodge foreign objects (21:35, 23:30, 4:75). Smaller victims may be turned upside down over one arm and struck in the same manner (4:76,
The Navy also states that quickly compressing the abdomen for a minute may force air out of the lungs and dislodge the object, however, the Red Cross notes that this may cause regurgitation (4:75, 29:3-8).

4. If the above do not work, close the mouth and blow through the nose (21:35).

The National Highway Traffic Safety Administration lesson plans state that mouth-to-nose is used if:

1. There is severe injury to the mouth.

2. The rescuer cannot make a tight seal over the victim's mouth. This may occur if the victim has a big mouth, has no teeth, etc.

3. The patient's tongue is swollen (29:38).

An important comment on the above method is that if it is used the mouth should be open as the victim exhales, since one third of the victims will have airway obstruction due to the action of the soft palate at the back of the throat (29:3-8).

Most agree that the frequency of breaths should be twelve times per minute, or twenty times per minute for a small child or infant (4:74, 30:16, 23:30, 21:35). The Traffic Safety Administration notes that the rhythm is not as important as the air volume, adding that the rhythm may be as high as
fifteen times per minute for adults and thirty times per minute for infants (29:38).

A point that should be obvious but is not always emphasized is that assistance should be requested in controlling the bleeding until breathing is restored (30:16).

There is disagreement concerning the next preferred method. The back-pressure, arm-lift method is preferred if there is vomiting or extensive bleeding around the face and lips by the Health Services and Mental Health Administration, the Office of Civil Defense, and the Navy (23:30, 26:30). Here it is noted that this method fails in the overwhelming majority of cases because the head drops as the arms are raised, shutting off the airway. Therefore, an assistant must hold the head up and back (26:13). The Red Cross' second choice is the modified Silvester chest pressure-arm lift technique, with no explanation (4:70).

To appreciate the superiority of the mouth-to-mouth type methods, the Army's position is included: Positive pressure is the only acceptable method. This includes mouth-to-nose, mouth-to-mouth, mouth-to-oral airway tubing, and mouth-to-emergency surgical airway. Methods using negative pressure (i.e., Silvester method) are of no value. If positive pressure respiration is not possible, or if vomitus can not be
cleared manually or by quick puffs, an artificial opening in the trachea should be created. Artificial respiration should be begun if this does not restore breathing. It is, however, noted that it is not usually necessary to take this action, since the four steps noted above to overcome restricted air flow will overcome all but the most persistent obstructions (30:15-17, 24:844). Although the surgical airway is not used by the average first aider, the following steps are included for professional interest.

1. Restrain the patient.

2. With a sharp instrument, make an incision over the membrane between the thyroid cartilage (Adam's apple) above and the less prominent, in males, cricoid cartilage below.

3. Immobilize the skin and trachea (wind pipe) in one hand, make a horizontal incision through the skin. Then make a second incision into the larynx (voice box) through the membrane about finger size. Enlarge the opening with the fingers to allow the lungs to fill.

4. Respire if the victim does not begin to breathe.

5. Insert and secure a tubelike item into the opening, such as a ballpoint pen (30:17).
Cardiac Arrest and Cardio-Pulmonary Respiration

Since performing this improperly could cause fatal laceration of the lungs, liver and spleen, this is not usually performed by first aiders (29:4-1 through 4-5). This information is included for professional background and information, since somewhat different methods are recommended.

The Army, The National Highway Traffic Safety Administration and others have almost identical methods. After clearing the airway, three to five quick breaths are given. This is followed by fifteen compressions of the sternum. A two breath - fifteen compression cycle is then maintained. If there are two men, a one breath - five compression cycle is maintained (30:18, 29:4-5, 32:67). AMA recommends the same cycle. However, it recommends a chest compression rate of eighty per minute for one man, and sixty per minute for two men (35:846).

The Coast Guard recommends that five to six breaths be given initially, followed by thirty compressions, then five to six breaths, etc. With two men, the cycle is one inflation for every four to five strokes (31:85-87).

For children up to eight to ten years old, only one hand should be used for compression, and for infants only
the tips of two fingers should be used (28:4-5, 32:69). Cardiac arrest is most often caused by respiratory arrest (30:18). Interruption of only five seconds may result in failure of cardio-pulmonary respiration (32:71).

**Poison**

Most recent sources now recommend essentially the same treatment for non-corrosive or non-petroleum poisons:


2. Induce vomiting. These first steps must be done immediately (4:99, 36:96, 30:56). If no vomiting occurs within fifteen to twenty minutes of administering syrup of ipecac, repeat dosage only once (38:51, 39:200).

3. Administer the suitable antidote. If the specific antidote can not be determined, then activated charcoal and water (4:99), milk (30:56), egg whites or vegetable oil retards absorption and protects the digestive lining (36:96, 26:31). Activated charcoal should be given after vomiting occurs if used with syrup of ipecac, since the charcoal inhibits the vomiting action of the syrup. The charcoal is administered orally by mixing one or two tablespoons with eight ounces of water (38:51, 39:201). If activated charcoal is given, vomiting
should be induced after fifteen minutes if medical attention will be delayed (4:99). A substance that will soothe the stomach and delay absorption of the poison, such as milk and egg white should be given periodically after vomiting (26:31).

Research performed at the University of Arizona found that the absorption of plain activated charcoal, which is recommended by some health officials, is one third greater than the universal antidote (24:23, 27:10). Syrup of ipecac is recommended to induce vomiting (24:23, 27:10, 40) if available. Nothing good can be said for burnt toast, tea and milk of magnesia, according to Henry L. Verhulst, head of the United States Public Health Services National Clearing House for Poison Center (27:10). Two tablespoons of salt in a glass of warm water has been recommended to induce vomiting (23:67, 33:17). However, the Intermountain Regional Poison Control Center and Hafen state that salt water is potentially dangerous and should not be used (37, 39:201).

Regarding corrosive poisons, such as acids or alkalis, the Red Cross states the following: First give milk or water. Then give egg whites in water or oil. Finally, neutralize the poison. Other experts recommend that the acid or alkali be first neutralized. Then give a substance that will soothe the stomach and delay absorption of the poison. Water with
vinegar or lemon juice, and grapefruit juice will neutralize alkalis. The Red Cross mentions nothing to neutralize acid, while Hafen recommends limewater. Milk, olive and vegetable oil, or egg whites protect the digestive lining (4:99, 23:67, 26:31, 36:96). The AMA specifies that vomiting should not be induced if any of the following have been swallowed: "Petroleum products (kerosene, gasoline, lighter fluid), toilet bowl cleanser, rust remover, drain cleaner, lye, acids for personal or household use, iodine, styptic pencil, washing soda, ammonia water, household bleach" (33:17).

**Splinting**

The Red Cross discourages the restoration of broken bones to their proper alignment (4:158), as does the AMA (33:27). The American Academy of Orthopaedic Surgeons notes: "with some very important exceptions, a severely angulated fracture should be straightened prior to splinting, for this may lessen the chance of permanent damage to blood vessels and nerves around the fracture site" (32:94). Gentle straightening, preferably with two people, is recommended. Of course, joint or spine fractures, as well as dislocations should not be straightened (23:31, 29:6-8, 30:30).
In general, the steps for treating fractures are:

1. Control the bleeding.
2. Treat doubtful injuries as fractures.
3. Splint without moving the victim unless his life is threatened.
4. Prevent shock, further injury and infection.
5. Check circulation on both sides of the splint (23:25-31).

Heat Stroke

This results from the malfunction of the heat regulating center in the brain (30:61). Treatment involves:

1. Get the victim to bed (23:61).
2. Cool him in any way possible (29:10-5).

The ideal treatment is immersion in an ice bath to cool him to about 101 degrees fahrenheit (30:61, 32:149). The Red Cross does not recommend ice (4:152).

3. Administer one half teaspoon of salt per glass of water every fifteen minutes for three hours (23:61).

Frostbite

The Navy experiments in Alaska are well recognized. Deeply frozen limbs which were thawed in warm water thawed faster and were more often saved than those thawed in snow,
cold water or room temperature (24:22). Only slight disagreement exists as to the recommended temperature of the water. The Red Cross recommends 102 to 105 degrees (4:149), the latter limit agreed upon by the 1964 International Medical Conference on Frostbite (32:146). In the Medical Self-Help Course and the AMA First Aid Manual 108 degrees is recommended (33:31, 23:57). The Army recommends 104 degrees (30:62). The Navy recommends 107 to 109 degrees (26:74). Nicotine further constricts blood vessels (30:62). The victim should receive immediate medical care, even if this involves walking on a frostbitten foot or leg. Recent experience in Korea and Alaska show that the chances for successful treatment are not lessened by walking, unless the limb has already thawed (32:145).

**Sucking Wound of the Chest**

If the sealing of the wound is successful, the victim's breathing will be easier, and the bubbling or hissing sound at the wound will decrease. If the chest cavity floods with blood, this can lead to shock and collapse of the lungs. First aid consists of placing the victim on the wounded side if possible to increase the breathing with the good lung, keeping the victim still, and getting medical treatment as soon as possible (30:40). Give no fluid, as it can get in the lungs or cause
choking (30:24). Two and one half inch strips of adhesive tape over a dressing can be useful in obtaining an airtight seal (26:47).

**Snakebites**

There is little agreement in the area of snakebite treatment. Contrary to the Red Cross, the Army states that incisions should not be made if treatment is less than one half hour away (30:57), while Carper notes that incisions should only be made if help is more than an hour away (24:23). The American Academy of Orthopaedic Surgeons adds that sucking and incisions are of no value after the first minutes and should not be attempted after thirty minutes (32:169).

The Venom Research Laboratory of the Veterans' Administration Hospital counsels against incisions and sucking altogether as a waste of time (40).

Dr. Robert E. Arnold reported that recent experiments with radioactive venom showed that only twenty-two percent of the venom will spread in one hour when the affected limb is splinted. Incisions which may damage a nerve, leading to hyperactivity and increased venom spread, should be done only in a hospital (41).
The Venom Research Laboratory stated:

Do not waste time cutting and sucking the wound. If a suction device is readily available it could be used to retrieve venom from the fang puncture. If the venom is deep in the tissue or after fifteen minutes forget suction (40).

Hafen adds that bulb suction can retrieve up to fifty percent of the venom in the first fifteen minutes, but that it can also cause tissue damage (39:227).

Packing the bite in ice is reported to cause serious tissue damage (39:227, 41:504). The Venom Research Lab states that ice cubes may be applied continuously, wrapped in cloth to make the victim comfortable (40).

Although constricting bands have traditionally been recommended, the Venom Research Lab counsels against tourniquets, since most are applied too tightly and are dangerous to the limb (41:504).

A properly applied constricting band has been thought to allow artery, but not venous flow. The American Academy of Orthopaedic Surgeons is unique in recommending constricting bands, not a tourniquet, applied above and below the bite, at the borders of the swelling (32:168).

Choking

In America food choking is the sixth leading cause of accidental death (42:398). The Heimlich maneuver of
compressing the upper abdomen has proven so successful that it has been officially endorsed by The National Safety Council, the Army and the Navy. It can be performed also with the victim in the prone position, or by the victim himself. Heimlich suggests that the maneuver would probably help to expel water from the throat and lungs before resuscitation for victims of drowning. A physician should examine the victim for intra-abdominal organ damage after the maneuver is performed (42:401).

Miscellaneous

The instructor lesson plans for the Crash Injury Management for Traffic Law Enforcement Officers course is based on the American Academy of Orthopaedic Surgeons' Emergency Care and Transport of the Sick and Injured. It states that the normal pulse rate for adults is sixty to eighty per minute; eighty to one hundred per minute for children. The respiration rate for adults, children and infants are seventeen, twenty to twenty-five, and twenty-five to thirty-five per minute, respectively (29:3-1). Sponge baths or cool compresses are recommended for severe fever, that is, fever above 102 degrees for adults and 103 degrees for children (23:56). An ice water or alcohol bath is prescribed along with
drinking fluids for a fever above 105 degrees. Two aspirins are recommended for high or low fever (30:63). Obviously, medical attention should be sought for any of the above fevers (4:245).

One teaspoon of salt in one pint of hot water, or four aspirin tablets in a pint of hot water can relieve the pain of sore throat (23:49).

Ointments should not be put on cold sores, nor should cold sores be scratched (30:72).

When there is doubt as to whether a victim is suffering from diabetic coma or insulin shock, sugar should be given since sugar can not appreciably hurt a patient in diabetic coma (29:48, 32:183).

SPECIFIC LITERATURE

There exists an enormous storehouse of literature concerning proper immediate care for victims of injury or sudden illness (43). These sources, however, contain information applicable to situations involving sophisticated machinery, drugs, and techniques. They also require up to forty hours of instruction (44:2). These requirements cannot be met in this endeavor. Therefore, the goal of this review is to acquaint the reader with specific findings that support
the objectives outlined earlier in this study. Due to the lack of literature concerning the instruction of first aid principles within a one hour block, pamphlets, films, and instructional methods which have been used for larger programs will be discussed. In researching other programs dealing with first aid instruction for foreign service personnel, it was found that the Peace Corps includes the Standard Red Cross course in First Aid (45).

Pamphlets

In addition to classroom experience, it has been suggested that a small booklet be prepared which can be carried with the people at all times (46). There are excellent booklets available at this time which fit this need. The National Safety Council has prepared a tiny booklet (two and one-half inches by four inches) which contains the following areas: Artificial Respiration, Bleeding, Shock, Poisoning, Wounds, Burns, Fractures and Dislocations, Sprains and Strains, Transporting the Injured, and Ten Tips to Remember (47). Some peculiarities found in this booklet include the distinctions between white, blue and red shock, directions not to breathe on open wounds, suggesting the use of ointments on first degree burns and chemical burns and instructions
to arrange a fractured limb in as natural position as possible (47).

The American Medical Association published a forty-seven page manual which is six inches high and four inches wide (48). This covers the same areas as the National Safety Council Booklet plus: Allergic Reactions, Emergency Childbirth, Epileptic Seizure, First Aid Supplies, Heat and Cold Injuries, Mental Disturbances, Radiation, Unconsciousness, Poisonous Bites and Stings and Head Injuries. A helpful addition in this booklet is specific "don't's" printed in red ink (48:1-46).

In 1972 Johnson and Johnson published a guide to first aid. This pamphlet measures four inches by six inches and consists of twenty-seven pages. It contains all the areas listed in the National Safety Council Booklet plus the following: Choking, Bites and Stings, Electric Shock, Fainting, Foreign Bodies in Eye, Nose and Ear, Heat Exhaustion, Heat Stroke, Nosebleed, Unconsciousness and Abdominal Wounds. This publication also contains several pages of clear illustrations of bandaging, carrying and respiration techniques (49:1-24).

The most recent booklet was published by the Reader's Digest in 1974. This five by seven and one-half inch pamphlet contains all areas mentioned in the other booklets plus:
Appendicitis, Blisters, Boils, Concussion, Convulsions, Diabetic Coma, Drowning, Heart Attack, Hyperventilation, Insulin Reaction, Poisonous Plants, Splinters, Sties and Cardio-Pulmonary Resuscitation (50:3). There are many excellent illustrations and an adequate index. This booklet recommends cutting and sucking for snake bites (50:1-23).

Films

The American Red Cross published two films in 1957 which run for twenty-nine minutes and cover the following areas: Bandages and Dressings, Artificial Respiration, Shock, Burns, Bleeding, Poisoning, Bone and Muscle Injuries, Common Emergencies and Fainting (51). Although some of the methods are outdated, the film manages to cover many areas with good clarity in such a short amount of time. The film utilizes animated pictures and demonstrations on real people. The method of instruction this film employs is that of showing a real life emergency and asking the question: "What would you do?" (51).

The most recent and extensive series of films concerning first aid are those produced by the Office of Civil Defense (52). While these films contain the most modern treatments, they are very specific and only cover one area
of first aid in each thirty minute film. They also use the: "What would you do?" format (52). The use of films in first aid instruction is a successful method of instruction. They serve to bring the situation into the classroom. It is widely accepted that "Things seen on film are usually well remembered" (53).

Instructional Methods

Although the degree of correlation between accident prevention and First Aid education is highly speculative, it is generally agreed that this type of training should have a strong influence on safety practices (54). To carry this statement one step further, it is also agreed that the quality of first aid education is as important and more effective than the quantity of that instruction. The following methods of instruction have been proven successful in the improvement of first aid instruction. Positive, creative classroom atmosphere helps prepare a student to react well in emergencies and motivates a willingness to assume responsibilities, while gruesome exposure spurs boredom and flight from responsibility (44:4). It has been found that the use of colorful displays and the use of bandages and splints aid in the retaining of interest, and attention to "do's" instead of "don't's" aids in the ability of the students to remember what has been taught (44:6).
Two popular methods used in first aid instruction are the show/discuss method and the discuss/demonstrate/practice method. While neither was labeled most effective, it is obvious that practice is one of the paramount steps in first aid preparation (55). The Medical Self-Help Program is also an advocate of practice. Their method of instruction includes the presentation of illustrated lectures followed by practice demonstration (56). The practice of bringing the student into close contact with the referent is sound educational procedure and is a must in the instruction of first aid.

From the above information we can conclude that exposure to first aid experiences or facsimiles thereof is a necessary ingredient in successful first aid instruction. This exposure may be obtained from charts, films, acting out situations, models, make up, etc. This multi-media approach has been shown to be an effective educational device and in more than one instance "there was a measurable improvement in both acceptance and comprehension in the basic first aid material" when a multi-media approach was used (57).

First Aid Test

Casperson has developed a valid and reliable first aid test for college students (58). Although some of the
questions are outdated due to conceptual advancements,
many are still useful.
Chapter 3

PROCEDURES

The purpose of this study was to develop a mediated practical teaching unit in first aid for the missionary system of the Church of Jesus Christ of Latter-day Saints.

This study involved a two-part effort: (1) teaching unit development, and (2) measuring the effectiveness of the teaching unit. This part, Part I, reports the teaching unit development, while Part II reports the process of measuring the effectiveness of the teaching unit.

The following procedures were utilized:

POPULATION IDENTIFICATION

The population (or target group) considered consists of the entire missionary force which is taught at the Language Training Mission, Provo, Utah.

DETERMINING THE CONTENT OF THE TEACHING UNIT

The first subproblem was to determine the first aid knowledge and skills needed by the missionaries.
First aid textbooks, reports, and American Red Cross information were reviewed. From these sources a list of recommended topic areas to be covered in the teaching unit was empirically compiled. This list was reviewed and refined by the L.D.S. Church Health Services, and included as part of the Health Services' Former Mission Presidents' Missionary Health Survey (Appendix A). It was hoped that the completed surveys would indicate the relative importance of each topic area. However, the survey returns were inconclusive since few accidental injuries were reported, and few lost days were known to be caused by accidental injuries. Many of the common first aid problems did not come to the attention of the mission presidents. It was determined by the L.D.S. Church Health Services, then, that the teaching unit would address all of the areas on the survey pertaining to first aid. This list of topic areas was subsequently modified upon re-evaluation by the L.D.S. Church Health Services to that shown in Table 3, page 61.

METHOD OF PRESENTING THE FIRST AID TEACHING UNIT

The second subproblem was to determine how to most effectively present the first aid instruction. The L.D.S.
Church Health Services determined that a filmstrip could most effectively be used by the Language Training Mission instructors. The development of a slide presentation was requested, however. This form of instruction was considered to be a flexible prototype for a filmstrip since it could be easily modified and improved. Once developed the slide presentation could be refined by the L.D.S. Church before its conversion to a filmstrip and utilization.

DEVELOPING THE FIRST AID TEACHING UNIT

Before developing the teaching unit, a script (Appendix B) had to be developed.

Writing and Reviewing the Script

In consultation with the L.D.S. Church Health Services, a list of required topic areas for the first aid instruction was developed (Table 2, page 60). A draft script which complemented the required first aid topic areas was then prepared. In preparing this draft script, specialists and medical doctors, as shown in Table 1, were consulted for additional expertise. For instance, two Ear, Nose and Throat Specialists were consulted for the nosebleed portion. For sprains and strains, a physical therapy instructor and the head athletic
Table 1
Experts Consulted in Writing the First Aid Teaching Unit Script

<table>
<thead>
<tr>
<th>Topic Area</th>
<th>Experts Consulted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor Bleeding</td>
<td>MD</td>
</tr>
<tr>
<td>Major Bleeding</td>
<td>MD</td>
</tr>
<tr>
<td>Nosebleed</td>
<td>MD, ENT</td>
</tr>
<tr>
<td>Fractures</td>
<td>MD</td>
</tr>
<tr>
<td>Dislocation</td>
<td>MD</td>
</tr>
<tr>
<td>Sprains</td>
<td>MD, HAT, PTI</td>
</tr>
<tr>
<td>Strains</td>
<td>MD, HAT, PTI</td>
</tr>
<tr>
<td>Burns</td>
<td>MD</td>
</tr>
<tr>
<td>Sunburns</td>
<td>MD</td>
</tr>
<tr>
<td>Insect Bites and Stings</td>
<td>MD</td>
</tr>
<tr>
<td>Embedded Insects</td>
<td>MD</td>
</tr>
<tr>
<td>Heat Exhaustion and Heat Cramps</td>
<td>MD</td>
</tr>
<tr>
<td>Heat Stroke</td>
<td>MD</td>
</tr>
<tr>
<td>Frostbite</td>
<td>MD</td>
</tr>
<tr>
<td>Cold Exposure</td>
<td>MD</td>
</tr>
<tr>
<td>Choking</td>
<td>MD</td>
</tr>
<tr>
<td>Blisters</td>
<td>MD</td>
</tr>
</tbody>
</table>

ENT -- Ears, nose and throat specialists
MD -- Medical doctors
HAT -- Head athletic trainer, Brigham Young University
PTI -- Physical therapy instructor, Brigham Young University
trainer (an internationally renowned lecturer), both of Brigham Young University, were consulted.

A jury of experts consisting of two medical doctors, two advanced first aid instructors, and two former mission presidents were selected to review the draft script, which had been prepared, for technical accuracy and ease of comprehension. The names of the jury members and their qualifications are listed in Appendix C.

The draft script was modified and improved in accordance with the comments of the jury. The L.D.S. Church Health Services approved a jury recommendation to add the area of blisters to the list of required topic areas and to the draft script.

This modified draft script was reviewed by the L.D.S. Church Health Services. As a result of the review, the format was changed to better maintain interest.

The revised draft script was again reviewed by the jury of experts, and the necessary minor improvements were made. This completed the preparation of a workable script as presented in Appendix B.
Developing and Reviewing the Slide Presentation

Missionaries from the Language Training Mission were used for subjects to illustrate the first aid incidents described in the script. The subjects were made-up to represent the type of injuries which were called for.

Pictures were taken and coordinated with the script, and the audio portion was recorded on a cassette tape. The slide presentation was then reviewed by the L.D.S. Church Health Services, whose recommendation was to delete the areas of heat stroke and cold exposure, since the need was not felt to be sufficient. This opinion was shared by the medical doctors on the jury. Consequently, these areas were deleted.

The revised slide presentation was then reviewed by the jury of experts, who made a final rating of how effectively the script and the slide presentation covered the first aid subject areas (See Appendix D). A five point rating scale was used. The five points were as follows: (1) Very Poor, (2) Poor, (3) Adequate, (4) Very Good, and (5) Excellent. Acceptance for each topic area was based on a minimum average rating of three points. The teaching unit was judged effective, and was presented, along with jury recommendations for prototype improvements, to the L.D.S. Church.
Chapter 4

PRESENTATION AND ANALYSIS OF
THE FIRST AID TEACHING UNIT

The purpose of this study was to develop a mediated practical teaching unit in first aid for the missionary system of the L.D.S. Church. In developing the teaching unit the following procedures were followed:

In consultation with the L.D.S. Church Health Services a list of required topic areas to be covered was developed (Table 2). This list was modified, upon evaluation by the L.D.S. Church Health Services and a jury of experts, to that presented in Table 3. Two areas, heat stroke and cold exposure, were deleted from the original list of required topic areas, since the need for instruction in these areas did not warrant their inclusion in the first aid teaching unit. The area of blisters, felt to be a common problem, was added to the list of required topic areas.

In accordance with this modified list of topic areas, a draft script was developed. This draft script went through a series of reviews by the L.D.S. Health Services and the
Table 2
The Topic Areas Required by the L.D.S. Church Health Services to be Included in the First Aid Teaching Unit

<table>
<thead>
<tr>
<th>Minor Bleeding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Bleeding</td>
</tr>
<tr>
<td>Nosebleed</td>
</tr>
<tr>
<td>Fractures</td>
</tr>
<tr>
<td>Dislocations</td>
</tr>
<tr>
<td>Sprains</td>
</tr>
<tr>
<td>Strains</td>
</tr>
<tr>
<td>Burns</td>
</tr>
<tr>
<td>Sunburn</td>
</tr>
<tr>
<td>Insect Bites and Stings</td>
</tr>
<tr>
<td>Embedded Insects</td>
</tr>
<tr>
<td>Heat Exhaustion and Heat Cramps</td>
</tr>
<tr>
<td>Heat Stroke</td>
</tr>
<tr>
<td>Frostbite</td>
</tr>
<tr>
<td>Cold Exposure</td>
</tr>
<tr>
<td>Choking</td>
</tr>
</tbody>
</table>

The list of topic areas was modified upon evaluation by the L.D.S. Church Health Services and a jury of experts.

The areas of heat stroke and cold exposure were deleted. The area of blisters was added. The modified list is included in Table 3.
Table 3

Modified List of Topic Areas Required by the L.D.S. Church Health Services to be Included in the First Aid Teaching Unit

<table>
<thead>
<tr>
<th>Topic Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor Bleeding</td>
</tr>
<tr>
<td>Major Bleeding</td>
</tr>
<tr>
<td>Nosebleed</td>
</tr>
<tr>
<td>Fractures</td>
</tr>
<tr>
<td>Dislocations</td>
</tr>
<tr>
<td>Sprains</td>
</tr>
<tr>
<td>Strains</td>
</tr>
<tr>
<td>Burns</td>
</tr>
<tr>
<td>Sunburn</td>
</tr>
<tr>
<td>Insect Bites and Stings</td>
</tr>
<tr>
<td>Embedded Insects</td>
</tr>
<tr>
<td>Heat Exhaustion and Heat Cramps</td>
</tr>
<tr>
<td>Frostbite</td>
</tr>
<tr>
<td>Choking</td>
</tr>
<tr>
<td>Blisters</td>
</tr>
</tbody>
</table>
jury of experts. As a result of these reviews, appropriate modifications and improvements were made so that the product was a workable script. Included in these modifications was a revision in the script's format, a step recommended by the L.D.S. Church Health Services to better maintain interest. The revised format presented a mission president's wife relating first aid emergencies that she and the mission president had encountered, and the information that they had learned for preventing and treating them. A slide presentation was prepared to complement the script. The slide presentation was then reviewed and rated by the jury of experts. It is with this background that the following is presented.

Findings of the Jury After Reviewing the First Aid Teaching Unit

Each member of the jury rated the script and the slide presentation as to how effectively each covered the topic areas required by the L.D.S. Church Health Services (Table 3). The rating form used is included as Appendix D. The form used a five-point rating scale, where the five points were: (1) Very Poor, (2) Poor, (3) Adequate, (4) Very Good, and (5) Excellent. A mean score of at least three was required for acceptance of the rated topic area.
Tables 4 and 5 summarize the combined ratings of members of the jury.

Table 4 presents the combined jury ratings of how effectively the script covers the topic areas. All fifteen subject areas received a mean score rating of at least four. Thus, all fifteen areas of the script were judged to be effectively treated and were accepted in accordance with the previously established criterion. There were no individual ratings for any topic area below three. The overall average for the script was 4.3, indicating a mean that was well above the three rating required for individual topic areas. The highest average ratings were provided by the medical doctors. This was assumed to indicate the technical accuracy of the script.

Table 5 presents the combined jury rating of how effectively the slide presentation covers the topic areas. All fifteen subject areas received a mean rating of at least 3.8. Thus, all fifteen topic areas of the slide presentation were judged to be effectively treated, and were accepted in accordance with the previously established criterion. There were no individual ratings for any topic area below three. The overall average of the slide presentation was 4.2. Jury comments indicated that technical imperfections accounted
Table 4

Combined Jury Ratings of the Effectiveness of the Topic Areas of the Script

<table>
<thead>
<tr>
<th>Medical Doctor</th>
<th>Minor Bleeding</th>
<th>Major Bleeding</th>
<th>Nosebleed</th>
<th>Fractures</th>
<th>Dislocations</th>
<th>Sprains</th>
<th>Strains</th>
<th>Burns</th>
<th>Sunburn</th>
<th>Insect Stings</th>
<th>Embedded Insects</th>
<th>Heat Exhaustion/Heat Stroke</th>
<th>Fracture</th>
<th>Blisters</th>
<th>Choking</th>
<th>Member's Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4.5</td>
<td>4.5</td>
<td>4.5</td>
<td>4.5</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4.3</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4.5</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4.1</td>
<td>4.1</td>
<td>4.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4.3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.5</td>
<td>4.5</td>
<td>4.2</td>
<td>4.3</td>
<td>4.2</td>
<td>4.4</td>
<td>4.3</td>
<td>4.6</td>
<td>4.3</td>
<td>4.4</td>
<td>4.2</td>
<td>4.2</td>
<td>4.2</td>
<td>4.3</td>
<td>4.3</td>
<td>4.3</td>
<td>4.3</td>
</tr>
<tr>
<td>Topic Area Average</td>
<td>4.5</td>
<td>4.5</td>
<td>4.2</td>
<td>4.3</td>
<td>4.2</td>
<td>4.4</td>
<td>4.3</td>
<td>4.6</td>
<td>4.3</td>
<td>4.4</td>
<td>4.2</td>
<td>4.2</td>
<td>4.3</td>
<td>4.3</td>
<td>4.3</td>
<td>4.3</td>
</tr>
</tbody>
</table>


Table 5

Combined Jury Ratings of the Effectiveness of the Topic Areas of the Slide Presentation

<table>
<thead>
<tr>
<th>Medical Doctor</th>
<th>Minor Bleeding</th>
<th>Major Bleeding</th>
<th>Nosebleed</th>
<th>Fractures</th>
<th>Dislocations</th>
<th>Sprains</th>
<th>Burns</th>
<th>Sunburn</th>
<th>Insect Stings</th>
<th>Embedded Insects</th>
<th>Heat Exhaustion</th>
<th>Frostbite</th>
<th>Blisters</th>
<th>Choking</th>
<th>Member's Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical Doctor</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>4.5</td>
<td>4.5</td>
<td>4.5</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advanced First Aid Instructor</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advanced First Aid Instructor</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Former Mission Pres.</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Former Mission Pres.</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Topic Area Average</td>
<td>4.5</td>
<td>4.3</td>
<td>4.0</td>
<td>4.0</td>
<td>4.6</td>
<td>4.6</td>
<td>4.0</td>
<td>4.0</td>
<td>4.1</td>
<td>4.2</td>
<td>4.2</td>
<td>4.2</td>
<td>4.2</td>
<td>4.2</td>
<td></td>
</tr>
</tbody>
</table>


for the somewhat lower overall average. Again, the highest average ratings were from the medical doctors, which was assumed to indicate the technical accuracy of the slide presentation.

As a result of this final review of the slide presentation, jury recommendations for prototype alterations (Table 6) were given, along with the slide presentation, to the L.D.S. Church.

First Aid Slide Presentation
Presented to the L.D.S.
Missionaries

The completed slide presentation was used in Part II of the study. The study determined the presentation's effectiveness by means of a pretest and posttest, which measured the gains in first aid knowledge that resulted from the first aid teaching unit.

The script for the slide presentation can be found in Appendix B. The slide presentation can be obtained by permission of the Church of Jesus Christ of Latter-day Saints through the L.D.S. Church Health Services.
Table 6  
Comments and Suggestions of Jury Members  
Regarding the First Aid  
Slide Presentation

<table>
<thead>
<tr>
<th>Area of Concern</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artificial Respiration</td>
<td>Should be added. In Argentina there were two deaths from suffocation in a room where a small heater depleted the oxygen supply. There were other cases of fainting in shower rooms with electrical heaters (MP). There was general agreement with this comment.</td>
</tr>
<tr>
<td>Choking</td>
<td>Stress that a choking person cannot talk. The universal sign of choking (placing the hand at the throat) should be shown. The Heimlich Maneuver should be also shown for a victim who is lying down. The hands in the slide appear to be low (MD). Possibly include a diagram to explain why choking occurs (FAI).</td>
</tr>
<tr>
<td>Shock</td>
<td>The victim with the bleeding wrist should be placed in the shock position. It might be necessary to cover shock (CC).</td>
</tr>
<tr>
<td>Broken Bones</td>
<td>The broken arm in the picture should be against the victim's body. The ties should be removed from the missionaries in order to be consistent with the script (CC).</td>
</tr>
<tr>
<td></td>
<td>Include a slide of a body splint (FAI).</td>
</tr>
<tr>
<td>Area of Concern</td>
<td>Comment</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Technical Improvements</td>
<td>Key Points should be super-imposed over slides of the narrator for emphasis, i.e., in the portions on burns, infection, and broken bones (FAI &amp; MD).</td>
</tr>
<tr>
<td></td>
<td>Improve the quality of the written slides (MP).</td>
</tr>
<tr>
<td></td>
<td>There are too many pictures of the narrator--some are poor (CC).</td>
</tr>
<tr>
<td></td>
<td>The frostbite victim's hands should be those of a younger man (FAI).</td>
</tr>
<tr>
<td>Blister Prevention</td>
<td>Cooling a sensitive area (hot spot) with ice is a preventative measure that might be included (FAI).</td>
</tr>
<tr>
<td>Using the First Aid Knowledge</td>
<td>Some form of first aid reference should be provided for the missionaries. A large card that could be taped to the medicine cabinet, where it could be frequently seen, would be effective. A card for the wallet or missionary book is another possibility.</td>
</tr>
<tr>
<td></td>
<td>Instruct Mission Presidents to check the missionaries knowledge, or reshow the presentation (i.e., in district meetings).</td>
</tr>
</tbody>
</table>
Table 6 (Continued)

<table>
<thead>
<tr>
<th>Area of Concern</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using the First Aid Knowledge (Continued)</td>
<td>Send the script to health missionaries and have them quiz the missionaries (MP).</td>
</tr>
</tbody>
</table>

FAI -- First Aid Instructor  
MD -- Medical Doctor  
MP -- Mission President  
CC -- Committee Chairman
Chapter 5

SUMMARY, FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

SUMMARY

This study was designed to develop a sixty minute, mediated practical first aid teaching unit for the missionary system of the Church of Jesus Christ of Latter-day Saints. The teaching unit was aimed at providing the skills and knowledge which are necessary to prevent and treat the first aid emergencies which are commonly encountered by missionaries.

The mediated teaching unit, in the form of a slide presentation, was designed for presentation at the Language Training Mission, Provo, Utah. It is anticipated that the presentation will be professionally refined and converted to a filmstrip which can be used in other missions of the L.D.S. Church.

In this study the following steps or subproblems were considered in developing the first aid teaching unit: (1) determination of the first aid skills and knowledge which
are needed by the missionaries, and (2) determination of the most effective way to present the relevant first aid skills and knowledge.

A Missionary Health Survey was sent to Former Mission Presidents in an attempt to determine which first aid skills and knowledge are needed by the missionaries. Since the results were inconclusive, the content of the teaching unit was specified by the L.D.S. Church Health Services.

A slide presentation was selected as the most feasible method of presenting the instruction, since it is flexible, relatively inexpensive, and can be professionally refined prior to conversion to a filmstrip. The latter is the preferred method of presentation since filmstrip equipment is readily available throughout the Church.

A slide presentation was then developed: After consulting with experts, a script was prepared. The script went through a series of reviews by the L.D.S. Health Services and a jury of experts consisting of two medical doctors, two advanced first aid instructors, and two former mission presidents. Appropriate modifications were made. A slide presentation, complementing the script, was then developed. It was reviewed by the L.D.S. Church Health Services and refined. Finally, the slide presentation was
reviewed and rated by the jury of experts. It was rated as effectively treating all fifteen topic areas. Comments and suggestions made by the jury for prototype alterations, and the slide presentation, were donated to the L.D.S. Church.

FINDINGS

The following findings are the result of this study:

1. A review of the literature indicated that there were no existing first aid teaching units that met, or could have been easily adapted to meet, the needs of the L.D.S. missionaries, either because the content or the time requirements of the existing teaching units were unsatisfactory.

2. Fifteen required first aid topic areas were defined (Table 3).

3. A body of literature and consultation with specialists made it possible to construct a first aid script (Appendix B) and a slide presentation.

4. An adequate jury of experts rated how effectively the script and slide presentation covered the required topic areas (Tables 4 and 5). A five point scale was used, with a minimum average rating of three required for acceptance.
CONCLUSIONS

1. It was possible to develop and supply the L.D.S. Church with a viable slide presentation on first aid for the L.D.S. missionaries.

2. Certain first aid topic areas were considered more important to the missionaries than others by the L.D.S. Church Health Services.

3. The script and slide presentation, as judged by the jury, effectively covered all fifteen required first aid topic areas in the time period allotted for the instruction.

RECOMMENDATIONS

The following recommendations were formulated from the results of this study:

1. The first aid slide presentation should be shown to all missionaries entering the Language Training Mission.

2. The technical refinements should be professionally completed before the first aid teaching unit is used by the missionary program of the L.D.S. Church.

3. Additional instruction for artificial respiration, shock and choking should be included.
4. The refined slide presentation should be converted to a filmstrip for use at the Language Training Mission and for periodic follow-up instruction to missionaries in the field.

5. The script for the slide presentation should be sent to health missionaries to help them instruct and quiz missionaries on first aid knowledge and skills.

6. A missionary first aid reference, which is consistent with the first aid teaching unit, should be developed and distributed to all missions for use by the missionaries. This reference could be a card that could be fastened to a medicine cabinet, or a card for the wallet or missionary book.

RECOMMENDATIONS FOR FURTHER STUDY

The following recommendations for further study are presented:

1. After a period of time the first aid filmstrip should be reviewed by missionaries and mission presidents in the field to determine if it accomplishes the desired purpose. This could form the basis for further improvements and revision.
2. A similar review could indicate if the developed first aid reference is adequate. Appropriate modifications should then be made.

3. Related health filmstrips should be made in other health areas which are important to missionaries. Subject areas should include exercise, diet and food preparation, personal health (including rest), emotional adjustment, skin infections, food contamination, medical care, colds and sore throats, abdominal pains, vomiting, etc.

4. Mission presidents and missionaries in the field should be surveyed concerning first aid subject areas that have been assumed to occur infrequently to determine if the need for additional first aid instruction exists. The subject areas should include: head injuries (i.e., from auto and bicycle accidents), chest and abdominal injuries, seizures, convulsions and diabetes.

5. The first aid teaching unit should be administered to missionaries at the Language Training Mission, Provo, Utah, to determine its effectiveness.
APPENDIX A

FORMER MISSION PRESIDENTS'
MISSIONARY HEALTH SURVEY

76
THE CHURCH OF JESUS CHRIST OF LATTER-DAY SAINTS
OFFICE OF THE PRESIDING BISHOPRIC
50 EAST NORTH TEMPLE STREET
SALT LAKE CITY, UTAH 84150

January 12, 1976

Dear President and Sister

Inasmuch as many proselyting hours are lost annually due to health problems, the Church is preparing health instruction for presentation to new missionaries. The intent of this instruction is to supply missionaries with the knowledge of proper protective behavior that will enable them to reduce the large proportion of health problems which are preventable.

Because of your intense and recent involvement with missionaries you can be of valuable assistance in the development of this instruction by completing the accompanying two-page questionnaire as completely as possible. The responses we receive will help us to focus emphasis on the areas of most urgent need.

Your cooperation and prompt reply in this matter will be greatly appreciated and will make a valuable contribution to the health and well-being of our missionaries everywhere.

Sincerely,

ISAAC C. FERGUSON
Manager, Health Services

ICF/gh

Attachment
L. D. S. CHURCH HEALTH SERVICES
FORMER MISSION PRESIDENTS'
MISSIONARY HEALTH SURVEY
January 1976

NAME: ____________________________
MISSION: __________________________
DATES OF MISSION ___________________________

AVERAGE NUMBER OF MISSIONARIES: Quota _________ Non-Quota _________

I. Individual Missionary Problems

We are interested in gathering selected information about individual missionaries who experienced health problems during your term as mission president. Please try to recall the specific instances where a missionary sustained illness or injury which resulted in lost time (5 or more days per year), and record them in the spaces provided below. You need not identify the missionary by name. However, please indicate whether it is a sister or an elder you are describing. Three items are requested: (1) a brief description of the problem, (2) the approximate number of days lost, and (3) the events which took place as a result of the illness or injury.

Example:

Missionary Case A: Missionary John Green

1) Description of Problem: Bleeding Ulcer

2) Approximate # days lost: 6 weeks

3) Check below the events which took place as a result of the illness or injury (Check as many as are applicable).

  ___ 1. Missionary continued to work without interruption.
  ___ 2. Missionary confined to apartment.
  ___ 3. Missionary stayed at mission home.
  ___ 5. Missionary returned to proselyting work.
  ___ 7. Missionary transferred to another mission.
  ___ 8. Missionary given early medical release.
  ___ 9. Other (specify) ____________________________

Total number of missionaries ill 5 or more days per year for entire duration of your mission _______

Missionary Case 1: Missionary ____________________________

1) Description of problem: ____________________________

2) Approximate # days lost: ____________________________
3) Check below the events which took place as a result of the illness or injury
(Check as many as are applicable).
    1. Missionary continued to work without interruption.
    2. Missionary confined to apartment.
    3. Missionary stayed at mission home.
    5. Missionary returned to proselyting work.
    7. Missionary transferred to another mission.
    8. Missionary given early medical release.
    9. Other (specify)

Missionary Case 2: Missionary

1) Description of problem: ____________________________________________
2) Approximate # days lost: ___________________________________________
3) Check below the events which took place as a result of the illness or injury
(Check as many as are applicable).
    1. Missionary continued to work without interruption.
    2. Missionary confined to apartment.
    3. Missionary stayed at mission home.
    5. Missionary returned to proselyting work.
    7. Missionary transferred to another mission.
    8. Missionary given early medical release.
    9. Other (specify) ___________________________________________

Missionary Case 3: Missionary

1) Description of problem: ____________________________________________
2) Approximate # days lost: ___________________________________________
3) Check below the events which took place as a result of the illness or injury
(Check as many as are applicable).
    1. Missionary continued to work without interruption.
    2. Missionary confined to apartment.
    3. Missionary stayed at mission home.
    5. Missionary returned to proselyting work.
    7. Missionary transferred to another mission.
    8. Missionary given early medical release.
    9. Other (specify) ___________________________________________

Missionary Case 4: Missionary

1) Description of problem: ____________________________________________
2) Approximate # days lost: ___________________________________________
3) Check below the events which took place as a result of the illness or injury
(Check as many as are applicable).
    1. Missionary continued to work without interruption.
    2. Missionary confined to apartment.
    3. Missionary stayed at mission home.
Missionary Case 5: Missionary

1) Description of problem: ____________________________________________

2) Approximate # days lost: __________________________________________

3) Check below the events which took place as a result of the illness or injury
   (Check as many as are applicable).
   ______ 1. Missionary continued to work without interruption.
   ______ 2. Missionary confined to apartment.
   ______ 3. Missionary stayed at mission home.
   ______ 5. Missionary returned to proselytizing work.
   ______ 7. Missionary transferred to another mission.
   ______ 8. Missionary given early medical release.
   ______ 9. Other (specify) __________________________________________

II. Summary of Missionary Health Problems

Listed below are a variety of health-related problems. Considering the ill health experienced by all missionaries in your mission, please indicate for each problem: 1) the approximate number of cases which occurred annually; and 2) the average number of proselytizing days lost per case.

Please answer to the best of your recollection each item by circling the most appropriate choice even though the answers may only be an estimate.

<table>
<thead>
<tr>
<th>HEALTH PROBLEMS</th>
<th>NO. OF CASES PER YEAR</th>
<th>NO. OF LOST DAYS PER CASE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.   Colds, sore throats, upper respiratory</td>
<td>ABCD&lt;br&gt;FGH</td>
<td>ABCD&lt;br&gt;FGH</td>
</tr>
<tr>
<td>infections</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.   Cavities, wisdom teeth, other oral</td>
<td>ABCD&lt;br&gt;FGH</td>
<td>ABCD&lt;br&gt;FGH</td>
</tr>
<tr>
<td>problems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.   Boils, boils, fungus, other skin</td>
<td>ABCD&lt;br&gt;FGH</td>
<td>ABCD&lt;br&gt;FGH</td>
</tr>
<tr>
<td>infections</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.   Diarrhea, amoebic dysentery, appendicitis, other intestinal disorders</td>
<td>ABCD&lt;br&gt;FGH</td>
<td>ABCD&lt;br&gt;FGH</td>
</tr>
<tr>
<td>5.   Fleas, scabies, lice</td>
<td>ABCD&lt;br&gt;FGH</td>
<td>ABCD&lt;br&gt;FGH</td>
</tr>
<tr>
<td>6.   Peptic ulcers</td>
<td>ABCD&lt;br&gt;FGH</td>
<td>ABCD&lt;br&gt;FGH</td>
</tr>
<tr>
<td>7.   Nutrition</td>
<td>ABCD&lt;br&gt;FGH</td>
<td>ABCD&lt;br&gt;FGH</td>
</tr>
<tr>
<td>8.   Problems of the knee, back, ankle or</td>
<td>ABCD&lt;br&gt;FGH</td>
<td>ABCD&lt;br&gt;FGH</td>
</tr>
<tr>
<td>hip</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.   Infectious diseases (hepatitis, malaria, yellow fever, etc.)</td>
<td>ABCD&lt;br&gt;FGH</td>
<td>ABCD&lt;br&gt;FGH</td>
</tr>
</tbody>
</table>
### Health Problems

<table>
<thead>
<tr>
<th>Health Problem</th>
<th>No. of Cases Per Year</th>
<th>No. of Lost Days Per Case</th>
</tr>
</thead>
<tbody>
<tr>
<td>10. Other (specify)</td>
<td>ABCDEFGH</td>
<td>ABCDEFGH</td>
</tr>
<tr>
<td>Social/Emotional</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Schizophrenia (out of touch with reality)</td>
<td>ABCDEFGH</td>
<td>ABCDEFGH</td>
</tr>
<tr>
<td>12. Depression (moody)</td>
<td>ABCDEFGH</td>
<td>ABCDEFGH</td>
</tr>
<tr>
<td>13. Suicidal tendencies</td>
<td>ABCDEFGH</td>
<td>ABCDEFGH</td>
</tr>
<tr>
<td>14. Discipline (breaking mission rules)</td>
<td>ABCDEFGH</td>
<td>ABCDEFGH</td>
</tr>
<tr>
<td>15. Neurosis (unacceptable social behavior)</td>
<td>ABCDEFGH</td>
<td>ABCDEFGH</td>
</tr>
<tr>
<td>16. Emotional stress - inability to adapt</td>
<td>ABCDEFGH</td>
<td>ABCDEFGH</td>
</tr>
<tr>
<td>17. Other (specify)</td>
<td>ABCDEFGH</td>
<td>ABCDEFGH</td>
</tr>
<tr>
<td>Accidents/Injuries</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. Broken bones</td>
<td>ABCDEFGH</td>
<td>ABCDEFGH</td>
</tr>
<tr>
<td>19. Sprains and strains</td>
<td>ABCDEFGH</td>
<td>ABCDEFGH</td>
</tr>
<tr>
<td>20. Insect bites and stings</td>
<td>ABCDEFGH</td>
<td>ABCDEFGH</td>
</tr>
<tr>
<td>21. Burns (including sunburns)</td>
<td>ABCDEFGH</td>
<td>ABCDEFGH</td>
</tr>
<tr>
<td>22. Food and chemical poisoning</td>
<td>ABCDEFGH</td>
<td>ABCDEFGH</td>
</tr>
<tr>
<td>23. Cuts and abrasions</td>
<td>ABCDEFGH</td>
<td>ABCDEFGH</td>
</tr>
<tr>
<td>24. Nosebleeds</td>
<td>ABCDEFGH</td>
<td>ABCDEFGH</td>
</tr>
<tr>
<td>25. Heat exhaustion/heat stroke</td>
<td>ABCDEFGH</td>
<td>ABCDEFGH</td>
</tr>
<tr>
<td>26. Frostbite</td>
<td>ABCDEFGH</td>
<td>ABCDEFGH</td>
</tr>
</tbody>
</table>

III. Personal Comments

27. What would you consider the most serious health problems faced by missionaries in the area where you served?

28. To what extent are afflicted missionaries able to obtain adequate medical care or counseling services in the mission where you served?

29. Please note any additional information or suggestions which may assist missionaries in maintaining their health and productivity?
APPENDIX B

FIRST AID TEACHING
UNIT SCRIPT
FIRST AID

"When we bear one another's burdens
we fulfill the law of Christ!"

Hi! I'm Sister Watters. My husband, President Watters, is the Mission President here. He has asked me to tell you a little about first aid emergencies that you might encounter on your mission and how to treat them.

You know, a mission is an exciting and fulfilling experience. We certainly hope that yours won't be marred by accident or illness. But, so often, missionaries lose considerable time--and often considerable money--because of accidental injury or not knowing how to properly treat first aid emergencies, particularly in areas that are far away from good medical help.

I'd like to tell you about some of the situations that we've encountered, and some of the pointers that we have learned in preventing and treating them. I hope that this knowledge will be of service to your companion, to others, and to yourself. As we go along, imagine that it is your companion who is hurt, and ask yourself, what would I do?
I remember the day Elder Smith and Elder Hurley, somewhat elated after a day of fruitful tracting, pedaled their bicycles a little too close to each other and mixed pedals with spokes. Elder Smith suffered a pretty bad scrape on his hand. He was bleeding a little and there were small pieces of gravel in the wound.

Luckily, Elder Hurley knew what to do. He took Elder Smith into a nearby home and washed his own hands thoroughly. Then he washed the wound with a clean, soapy cloth, washing away from the wound so dirt was not pushed into it. He thoroughly removed all dirt and gravel so that infection would not set in. Elder Hurley stopped the bleeding by pressing a clean cloth directly over the wound, and held it there until the bleeding stopped. Then he tied the dressing in place with his tie, placing the knot over the wound to increase the pressure.

Proper care for this type of injury is essential to prevent infection. Redness, swelling, throbbing pain and, sometimes in later stages, pus are signs of infection. If infection does occur, see a doctor. While we're discussing minor bleeding and infection, let me mention that dog bites are treated similarly. That is, wash the wound thoroughly with soap and water, and apply a clean dressing. The big
difference, though, is that a doctor should be consulted for animal bites because of the danger of rabies.

Sometimes bleeding is much more severe than Elder Smith's experience. On their way to zone conference, Elder Rhodes and Elder Cope were involved in a car accident. Elder Cope's wrist was severely cut and blood was literally spurting from the wound. Elder Rhodes was unsure of what to do. Would you have known what to do? Speed is of the greatest importance in this type of situation since excessive blood loss can threaten life. The first thing you must do is immediately apply pressure directly on the wound. If you have a clean cloth handkerchief or something like that available, use it. If not, use your bare hand. If blood soaks through the cloth, do not remove it. This would disturb clots that have already formed. Just apply more cloth over the dressing. While applying direct pressure, elevate the wrist to reduce bleeding. When the bleeding has been controlled, tie the dressing in place with your tie or some similar material. Don't attempt to clean a severe wound. Infection can be controlled by the doctor. Just stop the bleeding. Ninety-nine percent of the time, these steps will stop bleeding. If they don't...
Apply a tourniquet. Now this is very risky business and should only be done in order to save a life. Use a band of some kind at least two inches wide and wrap it twice around the limb just above the injury. A neck tie would be ideal. Tie a knot and secure a stick, pen, or other form of leverage with a double knot. Turn the stick until the bleeding stops, then anchor the loose end of the stick. Never remove or loosen a tourniquet once it has been applied. A doctor must see the patient immediately. Remember! When you use a tourniquet, you may save a life but risk losing a limb.

Remember, too, that bleeding can be severe enough to take a life. It must be handled quickly by following these steps: Apply direct pressure, elevate the wound, and only as a last resort, apply a tourniquet.

Well, thank goodness severe bleeding is rare! A more frequent king of bleeding is nosebleed. While rarely a threat to life, it certainly can be a nuisance. To treat a nose-bleed first sit the person up with his head forward. Have him close the nostril that is not bleeding and blow through the bleeding nostril. This will remove obstructions and actually speed clotting. Have him breathe evenly through the bleeding nostril. In addition, cold cloths or ice over the nose will help to reduce bleeding. If these efforts should fail, just
pinch the nostrils closed for about fifteen minutes. If the nose
is still bleeding after these methods, pack gauze or a similar
soft material well up into the nostril. Let it remain for
several hours. Placing soft material under the upper lip
helps some nosebleeds. (If they are frequent, or persistent
see a doctor.)

One night Elder Bunnell fell down a flight of dimly
lit stairs. He found he couldn't move his arm without it
hurting and it looked as though it might be broken. You should
know what to do in a like situation. Mistakes are costly and
may result in additional injury to the broken limb. When a
bone is broken it is extremely important to keep the victim
or a bystander from moving the injured part. It's best to
keep the part still until the professionals arrive. In this
situation, though (due to the location of these elders), medical
aid was not available, so Elder Bunnell's companion, Elder
Pearson, had to take care of the situation himself. Elder
Pearson searched for any rigid article to use as a splint. He
could have used newspapers, magazines, rulers, sticks, an
umbrella, a pillow, a blanket, or any other article to immo-
bilize the joints above and below the break. Elder Pearson
found a small stack of newspapers. After padding the news-
papers for comfort, he tied the papers onto the broken arm
with his tie and his handkerchief so that the joints above and below the break were immobilized, being careful to minimize movement. It might be tempting to use string, rope, or wire but that's not a good idea. It may damage the skin and cut off circulation. Elder Pearson used a belt to make a sling and then tied the splinted arm to Elder Bunnell's body with another tie for added rigidity. Once a splint has been applied, it is important to keep checking the victim's fingers or toes to make sure the circulation is sufficient. If the fingers or toes show discoloration, loosen the ties.

By the way, if you cannot find rigid articles to splint the fracture, the victim's own body makes a fairly good splint. For instance, bind a broken arm to the body or a broken leg to the good leg.

That brings to mind the story of Elder Thurgeson and Elder Shaw. They were riding their bikes to a baptismal service when a teenager drove his car into Elder Thurgeson. He couldn't move his leg and was suffering severe pain.

When Elder Shaw looked at the leg, he found the bone had broken right through the skin. Blood was flowing freely from the broken skin. In this case, direct pressure to stop the bleeding is the first step to take. Although it may further injure the surrounding tissues, we have to risk that possibility
to save a life. Elder Shaw used a clean handkerchief to stop the bleeding, then he tied the handkerchief in place with his tie. By then, medical aid arrived and took care of Elder Thurgeson. If there is no medical aid available a padded splint should be used.

Dislocated bones probably occur more frequently. To hear Elder Schow tell it is almost humorous. He and Elder Kelly were riding their bikes down a dark street. Elder Kelly was in the lead when he suddenly vanished. Elder Schow helped Elder Kelly and his bike out of the excavated hole, but found that Elder Kelly had dislocated a thumb.

All too often, we want to be like the old coach and dramatically grab the thumb and jerk it into place. But don't you dare! The finger joints are very complex and can be seriously injured if a finger is reset improperly. Elder Schow wisely immobilized the thumb with thick layers of padding around it so it could not be moved at all. A doctor took care of the rest.

If you should have to administer first aid for a broken bone or a dislocation, there are three general guidelines to remember:

First, don't straighten a limb that has been broken or dislocated. Second, if you think a bone is broken, treat
it as such. Third, decrease possibilities for further injury to the injured part by immobilizing it or supporting it by splinting.

Sprains and strains are injuries that occur quite often, too. Sprains are stretching or tearing injuries in and around the joints. They occur most often in the ankle and the knee, but also may occur in the wrist, fingers, and thumb. Fractures are often mistaken for sprains, particularly in the fingers and ankle and it's hard to tell a severe sprain from a fracture without an x-ray examination.

I remember the time when Sister Sowby and I were walking together behind the mission home. Somehow she turned her ankle and it began to swell. We quickly took her inside and wrapped her foot from above the ankle to the base of the toes with an ace bandage. It's important to wrap it tightly so swelling can't occur. We then quickly had her soak it in cold water—the colder the better—up to the knee for thirty minutes with the wrap in place. She kept the ankle elevated as much as possible for a good twenty-four hours. This combination of wrapping, cold, and elevation keeps swelling down. Somewhere between 24 and 36 hours later we applied a little heat for comfort. It was really amazing how quickly she completely recovered! In sprains the old
adage, "walk it off" is incorrect. This increases swelling, which greatly prolongs recovery time. Try to stay off of it and elevate it as much as possible for 24 to 36 hours. If pain and swelling should persist, see a doctor, as it may be broken.

When we changed mission homes, Elder Tichy, in all his zeal, put too much muscle into moving the printing press and he strained his back. Strains are stretching or tearing injuries to the muscles from over exertion, usually improper lifting or overestimating one's own strength and trying to lift something too heavy.

We immediately applied cold packs to Elder Tichy's back for thirty minutes. The cold reduces internal bleeding and swelling. He felt better and wanted to help, but it was still quite painful so we had him rest for a day. After about 24 to 36 hours we applied a little heat for thirty minutes two or three times a day. He slept with his mattress on the floor and a pillow under his hips for support. When he wanted to sleep on his back, we put the pillow under his knees. We were thanked by a rapid recovery without complications. Had the pain persisted two to three days, we would have taken him to the doctor.
All too often Elders and Sisters suffer burns in their attempts to cook. Elder Karren spilled scalding oil on his hand when the handle of his frying pan gave way. The result was a painful, blistered burn. Elder Hafen immediately submerged his hand in a sink of cold water. This is the best thing to do because it stops the burning process, relieves pain, and promotes healing. Cold packs should be used for a burn that cannot be submerged. A cold moist towel or cold packs made from moist towels or plastic with crushed ice can be applied over the burned area. After the pain subsides, gently blot the burn dry. Healing occurs faster when the burned area is exposed to air. However, if the air causes pain or if the burn will be contaminated, a dry airtight sterile dressing may be applied. Folded towels, linen, plastic, or a combination of these may be used. You can reduce pain and swelling by elevating the burned part. If blisters form, do not break them.

Oh yes, another important thing to remember is don't use grease, margarine, antiseptics, commercial preparations, ointments, sprays or home remedies, as these can lead to further complications and interfere with medical treatment.

Another kind of burn that we see so often is the common sunburn. Actually, sunburn is treated with cold water or cold
packs like other burns. But we should be wise and prevent it from happening. To prevent sunburn:

Don't expose your bare arms and face for more than 15 minutes at a time until you have developed a protective suntan.

You might also use a commercial preparation which blocks out harmful rays. Also, if appropriate, sunglasses may be used to protect your eyes from overexposure to glare from the sun, sand, water, ice, and snow.

Keep in mind that cloudy weather does not insure protection against harmful exposure to the sun.

Another interesting situation occurred one day when Elder Schiraldi and Elder Bolich were taking a short cut across an open field. Evidently, they offended a local bee colony and both received physical retribution in the form of stings. Insect stings and bites are generally of minor consequence. However, there might be cases in which severe problems may develop. It's wise to know what to do in any event. If breathing becomes difficult following a bee sting, or if stomach cramps or nausea result, immediate medical care is vital. However, this is extremely rare. While most stings are painful they are not generally life threatening.

Getting back to the bees... If a bee leaves the stinger in place, it must be removed to stop the injection of more venom. If you squeeze it when removing it, more poison will enter
the wound. Just use the edge of a knife or a fingernail and scrape it out. Then wash the area with soap and water to decrease the possibility of infection. A cold pack will help relieve pain and swelling.

The first aid for most other insect bites is similar. Remember, remove the stinger, wash with soap and water, and apply a cold pack.

If a pesky insect imbeds itself in your skin, smother it with a thick oil such as salad oil or a motor oil. This will suffocate the bug and cause it to back out. Then carefully remove it with tweezers, being careful not to break off the head or other body parts. Wash the area repeatedly with soap and water. If you have an antiseptic, apply it to the bite.

Certain insects and spiders can cause severe tissue damage and shock. If any bite or sting becomes excessively swollen, lower the part to keep the poison from spreading, apply cold to reduce swelling and pain, see a doctor.

Most of you will be working in a climate that is different from your climate at home. I remember an Elder Rollins. He was a new missionary from Anchorage, Alaska. He was tracting in a very warm, humid part of the country. He became weak and uncomfortable, and began sweating profusely
and complained of dizziness, cramps, and nausea. He also looked very pale, and felt extremely faint. Heat exhaustion and heat cramps occur due to the loss of water and salts as the body tries to cool itself. They may occur separately or in combination. It usually occurs in those who are not accustomed to the climate, or who are not in good physical condition, and who are fatigued. The symptoms of heat exhaustion are much like those which Elder Rollins experienced: cool, wet, pale skin, accompanied by weakness, nausea, dizziness, and sometimes muscle cramps. Elder Karren found a shady place and had his companion lie down. He raised his feet, loosened his tie, and unbuttoned his shirt. He then gave him a cool drink of salted water. The proper mixture is about one teaspoonful of salt per glass of water. He sipped about a glass every half hour as long as he was thirsty. His companion fanned him and put cool wet cloths on his face and wrists. If the victim vomits due to the salt water solution, stop giving it to him and take him to a medical facility. The cramps that sometimes accompany heat exhaustion can be relieved by gentle muscle massage. A good rest overnight prepared Elder Rollins for the next day's work.

The danger of heat exhaustion can be minimized by increasing physical activity slowly, resting occasionally,
drinking plenty of water and slightly increasing salt intake
during this adjustment period.

In our country, we had very severe winters. I remem-
ber the winter when Elder Heiner's fingers were frostbitten. After conducting street discussions his fingertips looked pale and glossy and felt numb. Frostbite is the freezing of body tissue fluids. It can happen almost without your knowing it, and correct treatment is vital and may prevent the loss of a limb. Those parts most often affected are the ears, nose, hands, and feet. It's especially important to recognize frostbite while it is taking place. Elder Heiner later told us that he had felt tingling sensations and pain in the early stages of freezing. The skin in frostbite becomes slightly red at first, later turning pale and glossy. Numbness often prevents one from realizing frostbite is occurring. In some cases, blisters later form. In treating frostbite, we want to quickly warm the frozen part and restore circulation.

When his companion saw his hands he told Elder Heiner to warm them under his own arm pits while they rushed inside. If your feet are frostbitten, don't walk on them unless it's necessary to get to a warm place.

Once inside, Elder Heiner's rings and watch articles which constrict circulation, were removed and his hands were
placed in warm water. Now remember when you soak a frostbite, be sure the temperature of the water stays constant. It took 45 quite painful minutes for Elder Heiner's hand to become flushed which indicated that circulation had returned. Even though thawing is painful, it must take place. Elder Heiner's companion gave him some warm soup while he was soaking his hands to help warm him up. Once his hands looked flushed, they were taken out of the water and dried off, then raised and lowered repeatedly to increase circulation.

At this point, extra care must be taken not to allow the hands to be refrozen. If they are, they must be thawed at room temperature and protected from any movement or injury.

After thawing Elder Heiner's fingers we separated them with gauze, and his hands were covered with a clean bandage and elevated. A frostbite victim should see a doctor as soon as possible. We covered Elder Heiner very well and moved him in a car making sure his hands would not refreeze. I'm sure you've heard stories about old-timers rubbing snow on frostbitten fingers. Well, forget it! Rubbing, freezing, or burning the skin with hot water bottles or heaters are very harmful practices.

Now, injuries caused from cold weather need not waste your proselyting time. Remember to wear warm clothing
such as thermal underwear, wind and water-proof outer clothing and hats (remember to cover the ears!) and also wear mittens and extra socks. The clothing should be dry and not tight.

Recognize that tingling sensation and pain, and reddened skin that later turns pale, and numbness are signs of frostbite. Limit your exposure time to cold. Once you get frostbite it is easier to get it again. Proper rest and optimum health will help you resist the cold. Keep your fingers and toes moving, avoid fatigue and excessive perspiration, and change damp clothing.

Now you'll wear out many pairs of shoes on your mission and, consequently, may suffer blisters when you begin to wear new ones. Of course, the best medicine for blisters is prevention. Break in new shoes gradually, rotating old and new pairs of shoes if possible. If sensitive areas develop, reduce friction by applying adhesive tape or a bandaid to that area.

Elder Hofeins gave us a good pointer. When he developed a blister he relieved all pressure from the blister until it receded naturally. He did this—and was still able to wear his shoe—by making a doughnut bandage. He just
cut a hole through several layers of cloth or paper and taped that over the blister.

If such efforts to relieve the pressure fail, break the blister. But first wash the entire area with soap and water. Then, make a small hole at the base of the blister with a needle which has been sterilized in a match flame or soaked in rubbing alcohol. Drain the fluid from the blister, and apply a sterile dressing. If the blister has already broken, wash the area thoroughly and cover it with a sterile dressing.

We've covered a lot of facts about first aid, but there is one more important thing you need to know, how to save the life of someone who is choking. When food is lodged and coughing does not work, the victim will gasp and turn red, then blue. But don't wait. Many people die each year from choking. The Heimlich maneuver is the most effective way to remove the obstruction. Quickly place your fist, thumb in, above the navel of the choking person as shown here. Cover that hand with your other hand. Tell the victim to try to relax. Then in a rapid motion pull your fist in and up firmly. That pressure will push air out of the lungs and force the lodged object from the throat. It may have to be repeated two or three times. But this simple move has already saved hundreds of lives. It may save your companion's life or even your own.
Well, I hope that you've enjoyed our discussion as much as I have. Please remember that first aid does not eliminate the need for professional medical care. Yet the principles we have taught you, when properly applied, will save you much time, money, and further injury. The Lord's work requires strong, healthy bodies and happy, confident spirits. Use this knowledge in serving Him, and may He bless you in your labors.
APPENDIX C

THE MEMBERS OF THE JURY OF EXPERTS
AND THEIR QUALIFICATIONS
THE MEMBERS OF THE JURY OF EXPERTS
AND THEIR QUALIFICATIONS

Medical Doctors

Dr. Cloyd C. Hofeins--M.D., Director, Brigham Young University Health Center

Dr. Keith Hooker--M.D., Chief, Emergency Room, Utah Valley Hospital, Director of Three County, Emergency Medical Services

Advanced First Aid Instructors

Dr. Keith Karren--Ph.D., Qualified Emergency Medical Technician (EMT), Advanced American Red Cross Instructor, and Cardio-Pulmonary Resuscitation Instructor

Dr. Brent Q. Hafen--Ph.D., Advanced American Red Cross Instructor, Author of first aid manuals

Former Mission Presidents

Dr. C. Dixon Anderson--Ph.D., Professor of Spanish, Brigham Young University, Former Mission President of Argentina Mission

Dr. Eran A. Call--Ph.D., Business Program Coordinator, Brigham Young University, Former Mission President of Mexico City
APPENDIX D

JURY RATING FORM FOR DETERMINING HOW EFFECTIVELY THE FIRST AID TEACHING UNIT COVERS THE FIRST AID TOPIC AREAS
Dear Jury Member:

Having now read the missionary first aid script and viewed the first aid slide presentation, please rate each as to how effectively it covers the specified topic. Please provide reasons for all ratings which are below 3.

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>SCRIPT</th>
<th>SLIDE PRESENTATION</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MINOR BLEEDING</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>MAJOR BLEEDING</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>NOSEBLEED</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>FRACTURES</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>DISLOCATIONS</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>SPRAINS</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>STRAINS</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>BURNS</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>SUNBURN</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>INSECT STINGS</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
</tbody>
</table>
(cont.)

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>SCRIPT</th>
<th>SLIDE PRESENTATION</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMBEDDED INSECTS</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>HEAT EXHAUSTION/CRAMPS</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>FROSTBITE</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>BLISTERS</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>CHOKING</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
</tbody>
</table>
1. Ferguson, Dr. Isaac, manager of the L.D.S. Church Health Services. Personal interview. Salt Lake City, Utah. November 25, 1975.


34. "Standards for Cardio-pulmonary Resuscitation (CPR) and Emergency Cardial Care (ECC)." Supplement to *JAMA*, CCXXVII, No. 7, February 18, 1974, 833-868.

35. "Dr. Heimlich's Lifesaving Bear Hug." Reprint from *Medics*, no date.


37. The Intermountain Regional Poison Control Center. *What to Do in Case of Poisoning*. [Salt Lake City]: n.n.


40. American Red Cross. *First Aid for the Home*, a one page handout.


A FIRST AID TEACHING UNIT FOR
THE MISSIONARY SYSTEM OF THE
CHURCH OF JESUS CHRIST OF
LATTER-DAY SAINTS

PART I - TEACHING UNIT DEVELOPMENT

Glenn R. Schiraldi
Department of Health Sciences
M.S. Degree, August 1976

ABSTRACT

The purpose of this study was to develop a sixty-minute, mediated practical first aid teaching unit for the missionary system of the Church of Jesus Christ of Latter-day Saints (L.D.S. Church). The teaching unit, a slide presentation, provides the skills and knowledge for preventing and treating first aid emergencies which are commonly encountered by missionaries. Fifteen first aid topic areas were defined as required by the L.D.S. missionaries.

It was concluded that the script and slide presentation effectively cover all fifteen required first aid topic areas in the time period allotted for the instruction.

COMMITTEE APPROVAL: Ray Walters, Committee Chairman

Ronald Rhodes, Committee Member

Ray Walters, Department Chairman