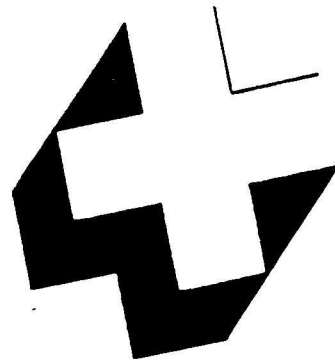


FM 21-11

FIELD MANUAL



**FIRST AID
FOR
SOLDIERS**

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HEADQUARTERS, DEPARTMENT OF THE ARMY

FM 21-11
27 OCTOBER 1988

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FIELD MANUAL

*FM 21-11

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 27 October 1988

FIRST AID FOR SOLDIERS

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★ PREFACE

This manual meets the emergency medical training needs of individual soldiers. Because medical personnel will not always be readily available, the nonmedical soldiers will have to rely heavily on their own skills and knowledge of life-sustaining methods to survive on the integrated battlefield. This manual also addresses first aid measures for other life-threatening situations. It outlines both self-treatment (self-aid) and aid to other soldiers (buddy aid). More importantly, this manual emphasizes prompt and effective action in sustaining life and preventing or minimizing further suffering. First aid is the emergency care given to the sick, injured, or wounded before being treated by medical personnel. The Army Dictionary defines first aid as "urgent and immediate lifesaving and other measures which can be performed for casualties by nonmedical personnel when medical personnel are not immediately available." Nonmedical soldiers have received basic first aid training and should remain skilled in the correct procedures for giving first aid. Mastery of first aid procedures is also part of a group study training program entitled the Combat Lifesaver (DA Pam 351-20). A combat lifesaver is a nonmedical soldier who has been trained to provide emergency care. This includes administering intravenous infusions to casualties as his combat mission permits. Normally, each squad, team, or crew will have one member who is a combat lifesaver. This manual is directed to *all* soldiers. The procedures discussed apply to all types of casualties and the measures described are for use by both male and female soldiers.

Cardiopulmonary resuscitative (CPR) procedures were deleted from this manual. These procedures are not recognized as essential battlefield skills that all soldiers should be able to perform. Management and treatment of casualties on the battlefield has demonstrated that incidence of cardiac arrest are usually secondary to other injuries requiring immediate first aid. Other first aid procedures, such as controlling hemorrhage are far more critical and must be performed well to save lives. Learning and maintaining CPR skills is time and resource intensive. CPR has very little practical application to battlefield first aid and is not listed as a common task for soldiers. The Academy of Health Sciences, US Army refers to the American Heart Association for the CPR standard. If a nonmedical soldier desires to learn CPR, he may contact his supporting medical treatment facility for the appropriate information. All medical personnel, however, must maintain proficiency in CPR and may be available to help soldiers master the skill. The US Army's official reference for CPR is FM 8-230.

This manual has been designed to provide a ready reference for the individual soldier on first aid. *Only the information necessary to support and sustain proficiency in first aid has been boxed and the task number has been listed.* In addition, these first aid tasks for Skill Level 1 have

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been listed in Appendix G. The task number, title, and specific paragraph of the appropriate information is provided in the event a cross-reference is desired.

Acknowledgment

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The provisions of this publication are the subject of international agreement(s):

NATO STANAG	TITLE
2122	Medical Training in First Aid, Basic Hygiene and Emergency Care
2126	First Aid Kits and Emergency Medical Care Kits
2358	Medical First Aid and Hygiene Training in NBC Operations
2871	First Aid Material for Chemical Injuries

Neutral Language

Unless this publication states otherwise, masculine nouns and pronouns do not refer exclusively to men.

Appendixes

Appendix A is a listing of the contents of the First Aid Case and Kits.

Appendix B discusses some casualty transportation procedures. Much is dependent upon the manner in which a casualty is rescued and transported.

Appendix C outlines some basic principles that promote good health. The health of the individual soldier is an important factor in conserving the fighting strength. History has often demonstrated that the course of the battle is influenced more by the health of the soldier than by strategy or tactics.

Appendix E discusses application of digital pressure and illustrates pressure points.

Appendix F discusses specific information on decontamination procedures.

Appendix G is a listing of Skill Level 1 common tasks.

Proponent Statement

The proponent of this publication is the Academy of Health Sciences, US Army. Submit changes for improving this publication on DA Form 2028 directly to Commandant, Academy of Health Sciences, US Army, ATTN: HSHA-CD, Fort Sam Houston, Texas 78234-6100.

CHAPTER 1

FUNDAMENTAL CRITERIA FOR FIRST AID

INTRODUCTION

Soldiers may have to depend upon their first aid knowledge and skills to save themselves or other soldiers. They may be able to save a life, prevent permanent disability, and reduce long periods of hospitalization by knowing *what to do*, *what not to do*, and *when to seek medical assistance*. Anything soldiers can do to keep others in good fighting condition is part of the primary mission to fight or to support the weapons system. Most injured or ill soldiers are able to return to their units to fight and/or support *primarily because they are given appropriate and timely first aid followed by the best medical care possible*. Therefore, all soldiers must remember the basics:

- Check for **BREATHING**: Lack of oxygen intake (through a compromised airway or inadequate breathing) can lead to brain damage or death in very few minutes.
- Check for **BLEEDING**: Life cannot continue without an adequate volume of blood to carry oxygen to tissues.
- Check for **SHOCK**: Unless shock is prevented or treated, death may result even though the injury would not otherwise be fatal.

Section I. EVALUATE CASUALTY

1-1. Casualty Evaluation (081-831-1000)

The time may come when you must instantly apply your knowledge of lifesaving and first aid measures, possibly under combat or other adverse conditions. Any soldier observing an unconscious and/or ill, injured, or wounded person must carefully and skillfully evaluate him to determine the first aid measures required to prevent further injury or death. He should seek help from medical personnel as soon as possible, but must NOT interrupt his evaluation or treatment of the casualty. A second person may be sent to find medical help. One of the cardinal principles of treating a casualty is that the initial rescuer must continue the evaluation and treatment, as the tactical situation permits, until he is relieved by another individual. If, during any part of the evaluation, the casualty exhibits the conditions for which the soldier is checking, the soldier must stop the evaluation and immediately administer first aid. In a chemical environment, the soldier should not evaluate the casualty

until the casualty has been masked and given the antidote. After providing first aid, the soldier must proceed with the evaluation and continue to monitor the casualty for further medical complications until relieved by medical personnel. Learn the following procedures well. You may become *that soldier* who will have to give first aid some day.

NOTE

Remember, when evaluating and/or treating a casualty, you should seek medical aid as soon as possible. DO NOT stop treatment, but if the situation allows, send another person to find medical aid.

WARNING

Again, remember, if there are any signs of chemical or biological agent poisoning, you should immediately mask the casualty. If it is nerve agent poisoning, administer the antidote, using the casualty's injector/ampules. See task 081-831-1031, *Administer First Aid to a Nerve Agent Casualty (Buddy Aid)*.

a. Step ONE. Check the casualty for responsiveness by gently shaking or tapping him while calmly asking, "Are you okay?" Watch for response. If the casualty does not respond, go to step TWO. See Chapter 2, paragraph 2-5 for more information. If the casualty responds, continue with the evaluation.

(1) If the casualty is conscious, ask him where he feels different than usual or where it hurts. Ask him to identify the locations of pain if he can, or to identify the area in which there is no feeling.

(2) If the casualty is conscious but is choking and cannot talk, stop the evaluation and begin treatment. See task 081-831-1003 *Clear an Object from the Throat of a Conscious Casualty*. Also see Chapter 2, paragraph 2-13 for specific details on opening the airway.

WARNING

IF A BROKEN NECK OR BACK IS SUSPECTED, DO NOT MOVE THE CASUALTY UNLESS TO SAVE HIS LIFE. MOVEMENT MAY CAUSE PERMANENT PARALYSIS OR DEATH.

b. Step TWO. Check for breathing. See Chapter 2, paragraph 2-5c for procedure.

(1) If the casualty is breathing, proceed to step FOUR.

(2) If the casualty is not breathing, stop the evaluation and begin treatment (attempt to ventilate). See task 081-831-1042, *Perform Mouth-to-Mouth Resuscitation*. If an airway obstruction is apparent, clear the airway obstruction, then ventilate.

(3) After successfully clearing the casualty's airway, proceed to step THREE.

c. Step THREE. Check for pulse. If pulse is present, and the casualty is breathing, proceed to step FOUR.

(1) If pulse is present, but the casualty is still not breathing, start rescue breathing. See Chapter 2, paragraphs 2-6, and 2-7 for specific methods.

★ (2) If pulse is not found, seek medically trained personnel for help.

d. Step FOUR. Check for bleeding. Look for spurts of blood or blood-soaked clothes. Also check for *both* entry and exit wounds. *If the casualty is bleeding from an open wound, stop the evaluation and begin first aid treatment in accordance with the following tasks, as appropriate:*

(1) Arm or leg wound—Task 081-831-1016, *Put on a Field or Pressure Dressing*. See Chapter 2, paragraphs 2-15, 2-17, 2-18, and 2-19.

(2) Partial or complete amputation—Task 081-831-1017, *Put on a Tourniquet*. See Chapter 2, paragraph 2-20.

(3) Open head wound—Task 081-831-1033, *Apply a Dressing to an Open Head Wound*. See Chapter 3, Section I.

(4) Open abdominal wound—Task 081-831-1025, *Apply a Dressing to an Open Abdominal Wound*. See Chapter 3, paragraph 3-12.

(5) Open chest wound—Task 081-831-1026, *Apply a Dressing to an Open Chest Wound*. See Chapter 3, paragraphs 3-9 and 3-10.

WARNING

IN A CHEMICALLY CONTAMINATED AREA, DO NOT EXPOSE THE WOUND(S).

e. Step FIVE. Check for shock. If signs/symptoms of shock are present, stop the evaluation and begin treatment immediately. The following are nine signs and/or symptoms of shock.

- (1) Sweaty but cool skin (clammy skin).
- (2) Paleness of skin.
- (3) Restlessness or nervousness.
- (4) Thirst.
- (5) Loss of blood (bleeding).
- (6) Confusion (does not seem aware of surroundings).
- (7) Faster than normal breathing rate.
- (8) Blotchy or bluish skin, especially around the mouth.
- (9) Nausea and/or vomiting.

WARNING

LEG FRACTURES MUST BE SPLINTED BEFORE ELEVATING THE LEGS/ AS A TREATMENT FOR SHOCK.

See Chapter 2, Section III for specific information regarding the causes and effects, signs/symptoms, and the treatment/prevention of shock.

f. Step SIX. Check for fractures (Chapter 4).

(1) Check for the following signs/symptoms of a *back or neck injury* and treat as necessary.

- Pain or tenderness of the neck or back area.
- Cuts or bruises in the neck or back area.
- Inability of a casualty to move (paralysis or numbness).
 - Ask about ability to move (paralysis).
 - Touch the casualty's arms and legs and ask whether he can feel your hand (numbness).
- Unusual body or limb position.

WARNING

UNLESS THERE IS IMMEDIATE LIFE-THREATENING DANGER, DO NOT MOVE A CASUALTY WHO HAS A SUSPECTED BACK OR NECK INJURY. MOVEMENT MAY CAUSE PERMANENT PARALYSIS OR DEATH.

(2) Immobilize any casualty suspected of having a neck or back injury by doing the following

- Tell the casualty not to move.
- If a *back injury* is suspected, place padding (rolled or folded to conform to the shape of the arch) under the natural arch of the casualty's back. For example, a blanket may be used as padding.
- If a *neck injury* is suspected, place a roll of cloth under the casualty's neck and put weighted boots (filled with dirt, sand and so forth) or rocks on both sides of his head.

(3) Check the casualty's arms and legs for open or closed fractures.

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Check for *open* fractures.

Look for bleeding.

Look for bone sticking through the skin.

Check for *closed* fractures.

Look for swelling.

Look for discoloration.

Look for deformity.

Look for unusual body position.

★ (4) Stop the evaluation and begin treatment if a fracture to an arm or leg is suspected. See Task 081-831-1034, *Splint a Suspected Fracture*, Chapter 4, paragraphs 4-4 through 4-7.

(5) Check for signs/symptoms of fractures of other body areas (for example, shoulder or hip) and treat as necessary.

g. Step SEVEN. Check for burns. Look carefully for reddened, blistered, or charred skin, also check for singed clothing. If burns are found, stop the evaluation and begin treatment (Chapter 3, paragraph 3-14). See task 081-831-1007, *Give First Aid for Burns*.

h. Step EIGHT. Check for possible head injury.

(1) Look for the following signs and symptoms

Unequal pupils.

Fluid from the ear(s), nose, mouth, or injury site.

Slurred speech.

Confusion.

Sleepiness.

Loss of memory or consciousness.

Staggering in walking.

- Headache.
- Dizziness.
- Vomiting and/or nausea.
- Paralysis.
- Convulsions or twitches.

(2) If a head injury is suspected, continue to watch for signs which would require performance of mouth-to-mouth resuscitation, treatment for shock, or control of bleeding and seek medical aid. See Chapter 3, Section I for specific indications of head injury and treatment. See task 081-831-1033, *Apply a Dressing to an Open Head Wound*.

1-2. Medical Assistance (081-831-1000)

When a nonmedically trained soldier comes upon an unconscious and/or injured soldier, he must accurately evaluate the casualty to determine the first aid measures needed to prevent further injury or death. He should seek medical assistance as soon as possible, but he **MUST NOT** interrupt treatment. To interrupt treatment may cause more harm than good to the casualty. A second person may be sent to find medical help. If, during any part of the evaluation, the casualty exhibits the conditions for which the soldier is checking, the soldier must stop the evaluation and immediately administer first aid. Remember that in a chemical environment, the soldier should not evaluate the casualty until the casualty has been masked and given the antidote. After performing first aid, the soldier must proceed with the evaluation and continue to monitor the casualty for development of conditions which may require the performance of necessary basic life saving measures, such as clearing the airway, mouth-to-mouth resuscitation, preventing shock, and/or bleeding control. He should continue to monitor until relieved by medical personnel.

Section II. UNDERSTAND VITAL BODY FUNCTIONS

1-3. Respiration and Blood Circulation

Respiration (inhalation and exhalation) and blood circulation are vital body functions. Interruption of either of these two functions need not be fatal IF appropriate first aid measures are correctly applied.

a. *Respiration.* When a person inhales, oxygen is taken into the body and when he exhales, carbon dioxide is expelled from the body—this is respiration. Respiration involves the—

- *Airway* (nose, mouth, throat, voice box, windpipe, and bronchial tree). The canal through which air passes to and from the lungs.
- *Lungs* (two elastic organs made up of thousands of tiny air spaces and covered by an airtight membrane).
- *Chest cage* (formed by the muscle-connected ribs which join the spine in back and the breastbone in front). The top part of the chest cage is closed by the structure of the neck, and the bottom part is separated from the abdominal cavity by a large dome-shaped muscle called the diaphragm (Figure 1-1). The diaphragm and rib muscles, which are under the control of the respiratory center in the brain, automatically *contract* and *relax*. *Contraction* increases and *relaxation* decreases the size of the chest cage.

When the chest cage increases and then decreases, the air pressure in the lungs is first less and then more than the atmospheric pressure, thus causing the air to rush in and out of the lungs to equalize the pressure. This cycle of inhaling and exhaling is repeated about 12 to 18 times per minute.

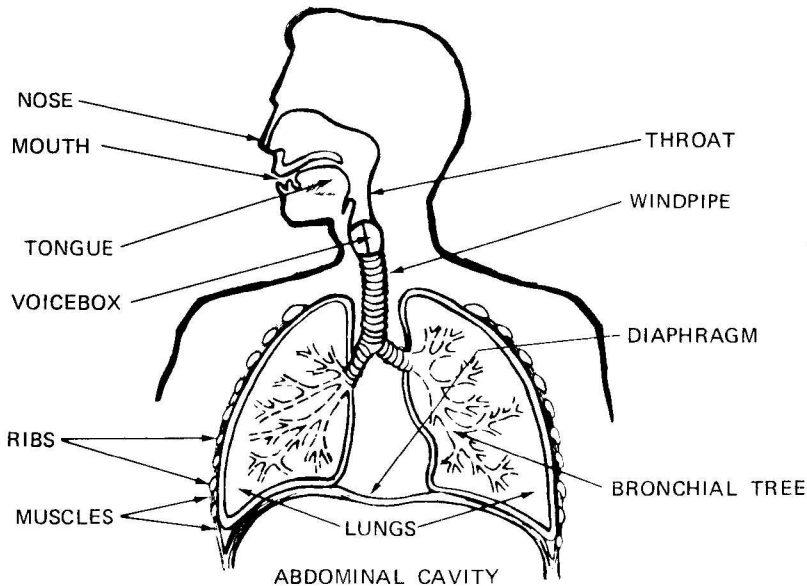


Figure 1-1. Airway, lungs, and chest cage.

b. Blood Circulation. The heart and the blood vessels (arteries, veins, and capillaries) circulate blood through the body tissues. The heart is divided into two separate halves, each acting as a pump. The left side pumps oxygenated blood (bright red) through the arteries into the capillaries; nutrients and oxygen pass from the blood through the walls of the capillaries into the cells. At the same time waste products and carbon dioxide enter the capillaries. From the capillaries the oxygen poor blood is carried through the veins to the right side of the heart and then into the lungs where it expels carbon dioxide and picks up oxygen. Blood in the veins is dark red because of its low oxygen content. Blood does not flow through the veins in spurts as it does through the arteries.

(1) *Heartbeat.* The heart functions as a pump to circulate the blood continuously through the blood vessels to all parts of the body. It *contracts*, forcing the blood from its chambers; then it *relaxes*, permitting its chambers to refill with blood. The rhythmical cycle of *contraction* and *relaxation* is called the heartbeat. The normal heartbeat is from 60 to 80 beats per minute.

(2) *Pulse.* The heartbeat causes a rhythmical *expansion* and *contraction* of the arteries as it forces blood through them. This cycle of expansion and contraction can be felt (monitored) at various body points and is called the *pulse*. The common points for checking the pulse are at the side of the neck (carotid), the groin (femoral), the wrist (radial), and the ankle (posterial tibial).

(a) *Neck (carotid) pulse.* To check the neck (carotid) pulse, feel for a pulse on the side of the casualty's neck closest to you by placing the tips of your first two fingers beside his Adam's apple (Figure 1-2).

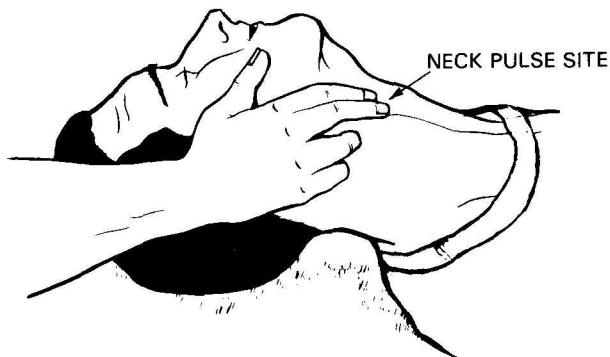


Figure 1-2. Neck (carotid) pulse.

(b) *Groin (femoral) pulse.* To check the groin (femoral) pulse, press the tips of two fingers into the middle of the groin (Figure 1-3).

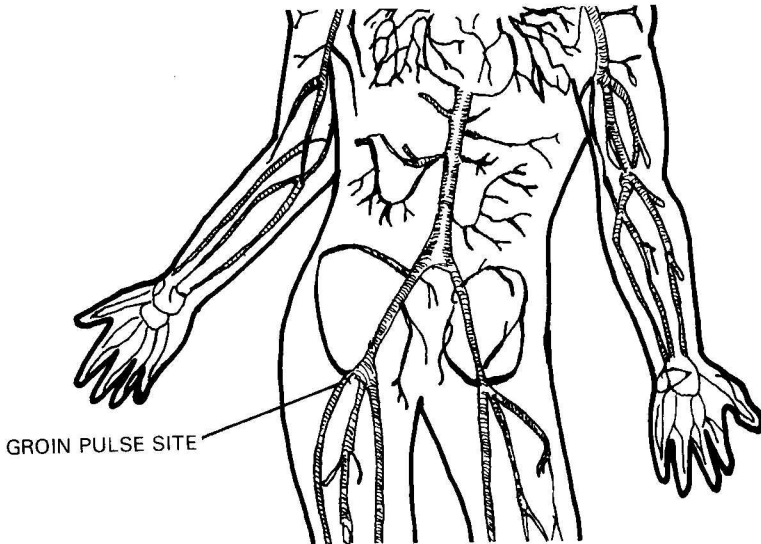


Figure 1-3. Groin (femoral) pulse.

(c) *Wrist (radial) pulse.* To check the wrist (radial) pulse, place your first two fingers on the thumb side of the casualty's wrist (Figure 1-4).

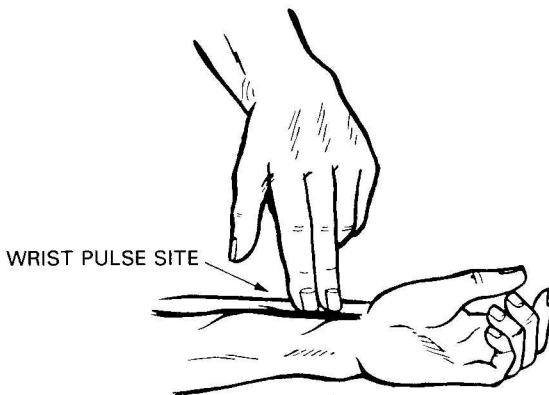


Figure 1-4. Wrist (radial) pulse.

(d) *Ankle (posterial tibial) pulse.* To check the ankle (posterial tibial) pulse, place your first two fingers on the inside of the ankle (Figure 1-5).

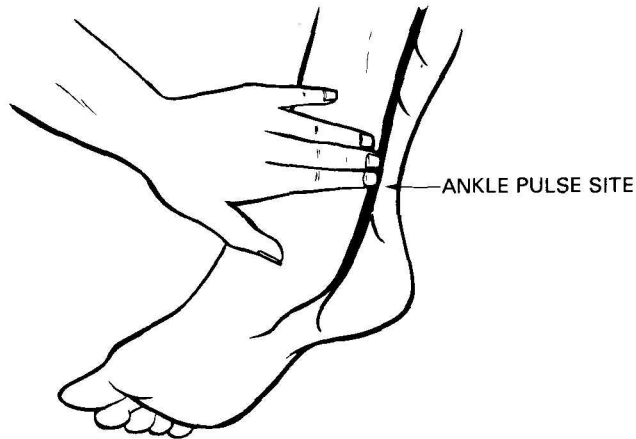


Figure 1-5. Ankle (posterial tibial) pulse.

NOTE

DO NOT use your thumb to check a casualty's pulse because you may confuse your pulse beat with that of the casualty.

1-4. Adverse Conditions

a. Lack of Oxygen. Human life cannot exist without a continuous intake of oxygen. Lack of oxygen rapidly leads to death. First aid involves knowing how to **OPEN THE AIRWAY AND RESTORE BREATHING AND HEARTBEAT** (Chapter 2, Section I).

b. Bleeding. Human life cannot continue without an adequate volume of blood to carry oxygen to the tissues. An important first aid measure is to **STOP THE BLEEDING** to prevent loss of blood (Chapter 2, Section II).

c. Shock. Shock means there is inadequate blood flow to the vital tissues and organs. Shock that remains uncorrected may result in death even though the injury or condition causing the shock would not otherwise be fatal. Shock can result from many causes, such as loss of blood, loss of fluid from deep burns, pain, and reaction to the sight of a wound or blood. First aid includes **PREVENTING SHOCK**, since the casualty's chances of survival are much greater if he does not develop shock (Chapter 2, Section III).

d. Infection. Recovery from a severe injury or a wound depends largely upon how well the injury or wound was initially protected. Infections result from the multiplication and growth (spread) of germs (bacteria: harmful microscopic organisms). Since harmful bacteria are in the air and on the skin and clothing, some of these organisms will immediately invade (contaminate) a break in the skin or an open wound. The objective is to **KEEP ADDITIONAL GERMS OUT OF THE WOUND**. A good working knowledge of basic first aid measures also includes knowing how to dress the wound to avoid infection or additional contamination (Chapters 2 and 3).