Veterans Health Initiatives

Caring for War Wounded

Sponsored by
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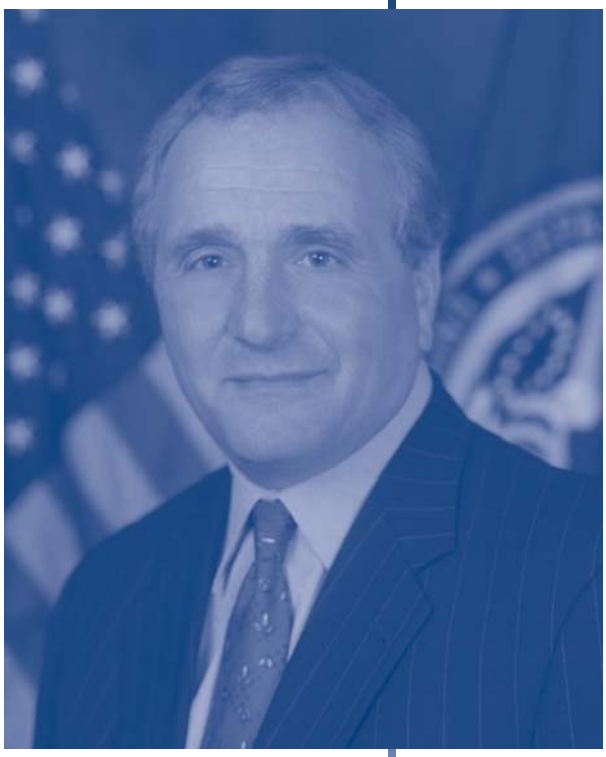
Department of Veterans Affairs

Employee Education System

Hon. Anthony J. Principi - Secretary of Veterans Affairs

Actual statement as heard on satellite broadcast



Hello, everyone, thank you for tuning in. As I speak, hundreds of thousands of America's finest citizens are putting their lives on the line to disarm Iraq of weapons of mass destruction, to end Saddam Hussein's support of terrorism, and to free the Iraqi people. Our troops are conducting themselves in the highest traditions of the American military. They are doing their jobs with skill and bravery. The future of peace and the hopes of the Iraqi people depend on them.

In the course of defending freedom, some of these brave men and women will make the ultimate sacrifice for our nation, others will be wounded. Those who are injured or become ill, in America's service have every right to expect the best possible care our nation can provide. It is our privilege, and our honor, to share with the Department of Defense the responsibility for providing them that care on behalf of a grateful nation.

Today's Department of Veterans Affairs is better prepared than ever to provide exceptional care for the range of problems war casualties, and other returning veterans may present to us. We are working with DoD to ensure that the men and women who now fight for our freedom in the Persian Gulf receive appropriate health care and compensation in return for their service.

DoD is documenting the health care provided to forces deployed in the Gulf, monitoring the environment in which our forces are deployed, and will document which service members were exposed to danger in the event toxic exposure is detected. DoD will also provide us with rosters of service members who have separated from military service, and will work with us to develop processes to share information including individual assignments data, unit location data, environmental surveillance data, and medical surveillance data.

Together, our two departments are working together to ensure that our brave men and women now serving in the Gulf will be cared for with the dignity and respect they earn as they place themselves in harm's way on our behalf. In this satellite broadcast, and in a second broadcast to follow, you'll learn additional details about our coordination with the Department of Defense. We'll give you information on today's battlefield as we understand it, and on specific issues that may affect the health of returning troops, as well as clinical information on specific types of war-related injuries caused by both traditional weapons like explosives, and new threats like weapons of mass destruction.

Following each broadcast, VHA will schedule a telephone conference, so you will have an additional opportunity to speak with, and ask questions of, VA experts in each of the areas under discussion. Our Department has no greater mission, no more sacred responsibility, than to save the lives of those who have borne the battle; no more important duty than to make whole again in mind and body those who are wounded and sick; no more pressing task than to devote all our efforts to enable ill and injured servicemen to resume their lives at the point where they were interrupted when America once again answered Saddam Hussein's challenge to peace.

I do not ask, I insist that you participate fully in this training program; and that you share what you have learned with your colleagues who are unable to take part. The care we provide to the young heroes now participating in "Operation Iraqi Freedom" will define the Department of Veterans Affairs for a new generation of Americans and their families. Our training must be as intense as our troops have received; our planning must be as comprehensive and thorough as theirs; and our victory must be as complete as theirs most assuredly will be. For us, as for them, failure is unthinkable. God bless our great country and the men and women who defend her.

Dr. Robert Roswell, MD - Under Secretary of Veterans Affairs for Health

Actual statement as heard on satellite broadcast

The first satellite in this two part series provided background information about VA/DoD collaboration designed to help us better meet the needs of veterans returning from the current war with Iraq. Included was information about endemic environmental hazards in SW Asia, pre- and post-deployment activities conducted by DoD with returnees from the war zone, and a discussion of VA health care benefits after combat deployment.

Today's program will focus on the clinical issues and situations VA clinicians will address when faced with returning casualties from the war who come to VA for care. These patients will have been stabilized to enable them to be transported from the war zone to the United States, but we believe many of these men and women will be in the acute stages of their illness or injury. While issues of wounds from chemical, biological, or radiological agents will be addressed; we will also focus on the management of wounds inflicted by traditional weapons such as explosives and small arms, including amputations, burns, and other traumatic injuries.

Mental health needs of casualties will be discussed, but not only in the context of individuals with identified mental problems as the cause of evacuation. It will be important to provide assessment of and support for the emotional needs of those with physical injuries. The program will begin with a discussion of family support activities in DoD and the importance of working with the families of casualties as part of the recovery process. Remember, that many returnees will be members of the Reserves and National Guard, for whom family support structures are not so well established as for active duty troops living in military communities.

Although we hope it is not the case, it is important to realize that the clinical skills addressed in this broadcast can also be useful in treating survivors of potential terrorist attack in our own cities and towns. Finally, we know that when this war is over, and our victorious troops return, they will have eligibility for care in VA, and the threats they faced in combat will be the kinds of situations experienced by those who have been injured, reinforcing the value of the information in these broadcasts and the Web sites that will support their back up materials.

Thank you for participating in this learning experience and for the service you provide to our nation's veterans and returning troops.

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Independent Study Outline

Purpose

On 20 March 2003, the drive to free the people of Iraq from the tyranny of Saddam Hussein started when President George Bush gave the order that began “Operation Iraqi Freedom”. Many health care providers are engaged in the treatment of U.S. military members involved in “Operation Iraqi Freedom”. As with all previous wars where U.S. service men and women have participated, there will be casualties. Many of these casualties will come to the VA for continuing care. All VA clinicians should have an understanding of the experiences and exposures of these most recent of America’s combat veterans. This is the reason for this VHI, which was originally presented as a satellite videoconference on 26-27 March 2003.

Background

This independent study module is being released as a part of the Veterans Health Initiative (VHI). The VHI is a comprehensive program of continuing education that recognizes the connection between certain health effects and military service and emphasizes better military medical histories for those wounded during Gulf War II.

Objectives

After completing this independent study, participants will be able to:

1. define the VA/DoD Contingency Back-Up System;
2. list the environmental and endemic hazards of deployment to Southwest Asia;
3. explain the purpose of DoD Pre-Deployment screening and the Force Health Protection Program;
4. list the VA health care benefits after combat deployment;
5. describe the specific combat related injuries, including wounds from traditional weapons and high-velocity weapons;
6. identify injuries associated with chemical warfare agents;
7. identify injuries associated with pesticide agents;
8. identify injuries associated with biological warfare agents;
9. identify injuries associated with radiological warfare;
10. explain the effect of combat on mental health; and
11. describe the family support programs for veterans and their families.

Target Audience

This independent study is primarily designed for Department of Veterans Affairs clinicians and other interested VA staff. Other health care providers, especially those in VA health care facilities, also are encouraged to complete the study.

Format

This program is available in booklet form and on the Web at: http://www.va.gov/vhi.

Program Description

This program includes:

- independent study material
- test for CME credits
- program evaluation

This activity has been planned and implemented in accordance with the Essentials and Standards of the Accreditation Council for Continuing Medical Education (ACCME) through the joint sponsorship of VA Employee Education System and Department of Veterans Affairs Office of Public Health and Environmental Hazards. The VA Employee Education System is accredited by the ACCME to provide continuing medical education for physicians.

Content Materials:

- Introduction
- VA/DoD Contingency Back-Up System
- Environmental and endemic hazards of deployment to Southwest Asia
- DoD Pre-Deployment screening and the Force Health Protection Program
- VA health care benefits after combat deployment
- Specific combat related injuries, including wounds from traditional weapons and high-velocity weapons
- Injuries associated with chemical warfare agents
- Injuries associated with pesticide agents
- Injuries associated with biological warfare agents
- Injuries associated with radiological warfare
- Combat effects on mental health
- Family support programs for veterans and their families
- References
- Independent Study Test Questions for CME Credit
- Independent Study Registration/Answer/Participant Satisfaction Form

Program Implementation and VA Application Procedure

To receive credit for this course:

1. Read the independent study materials.
2. Complete the CME test questions. A passing score of 70% or higher on the CME test is required to receive credit. This test may be retaken.
3. Complete the program evaluation.
4. The estimated study time for this program is 5 hours.

If you are using the Independent Study Registration/Answer/Evaluation Form (two sided) at the back of the independent study booklet, **(NOTE: Scantron forms cannot be photocopied. For additional copies of this independent study, Scantron forms or other VHI independent study modules, please contact your facility education contact person.)** please send the completed form within two weeks after reading the material to:

Employee Education Resource Center
Attn: SDU
Medical Forum, Suite 500
950 North 22nd Street
Birmingham, AL 35203-5300

If you have attained a passing score of 70% or higher, a certificate will be mailed to you approximately 6-8 weeks after your test has been graded. The test may be retaken.

The CME test and program evaluation can also be completed using the VA Internet. The address is: http://www.ees-learning.net.

After you take the test, you will receive immediate feedback as to pass or fail. You will be allowed to retake the test. Upon passing the test and completing the program evaluation, you will be able to immediately print your certificate according to instructions.

NOTE: If you experience difficulty reaching this Web site, please contact the Help Desk via e-mail at eeslibrixhelp@lrn.va.gov, or call 1-866-496-0463. You may also contact your local computer support staff or librarian for assistance.

NOTE: In order to complete the CME test and Evaluation, your computer must have Internet Explorer 4.0 or Netscape 4.0 or higher.

If you have questions or special needs concerning this independent study, please contact:

Bob Smith, EdD, MCP
205-731-1812, Ext. 317; E-mail - bob.smith@lrn.va.gov.

This program will no longer be authorized for CME credit after 31 December 2004.

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Association of Social Work Boards (ASWB)
VA Employee Education System, Provider Number 1040, is approved as a provider for social work continuing education by the Association of Social Work Boards (ASWB), (1-800-225-6880) through the Approved Continuing Education (ACE) program. VA Employee Education System maintains responsibility for the program. Social workers will receive 5 continuing education clock hours for participating in this course.

American Nurses Credentialing Center (ANCC)
VA Employee Education System designates this educational activity for 6 contact hours in continuing nursing education.

The Employee Education System maintains responsibility for the program. A certificate of attendance will be awarded to participants and accreditation records will be on file at the Employee Education System. In order to receive a certificate from EES, you must complete the material, complete and pass the CME test with a 70% or higher, and complete a program evaluation.

Report of Training

It is the program participant's responsibility to ensure that this training is documented in the appropriate location according to his/her locally prescribed process.

Disclosure Statement

The Employee Education System (EES) must insure balance, independence, objectivity, and scientific rigor for all EES sponsored educational activities. The intent of this disclosure is not to prevent faculty with a significant financial or other relationship from presenting materials, but rather to provide the participant with information on which they can make their own judgments.

It remains for the participant to determine whether the faculty interests or relationships influence the materials presented with regard to exposition or conclusion. When an unapproved use of a FDA approved drug or medical device, or an investigational product not yet FDA approved for any purpose is mentioned, EES requires disclosure to the participants.

Faculty have provided the following information:

Lawrence Deyton, MD

Recommendations for several treatment or prophylaxis strategies in this lecture are based on consensus recommendations developed with HHS, CDC, NIH, and FDA involvement. These recommendations have been widely published (JAMA) and presented by CDC and other Federal Agencies as currently recommended treatment or prophylaxis for response to bioterror use of these infectious agents. These recommendations are based on the best available evidence for biologic activity against these agents of bioterrorism, but do not represent uses currently approved by the FDA.

Americans with Disabilities Act Policy

The Employee Education System wishes to ensure no individual with a disability is excluded, denied services, segregated, or otherwise treated differently from other individuals attending this workshop because of the absence of auxiliary aids and services. If you require any special arrangements to fully participate in this independent study, please contact Bob Smith, EdD, MCP, Program Manager at:
205-731-1812 extension 317, or e-mail bob.smith@lrn.va.gov.

Introduction

On 20 March 2003, the drive to free the people of Iraq from the tyranny of Saddam Hussein started when President George Bush gave the order that began “Operation Iraqi Freedom”. Many health care providers are engaged in the treatment of U.S. military members involved in “Operation Iraqi Freedom”. As with all previous wars where U.S. service men and women have participated, there will be casualties. Many of these casualties will come to the VA for continuing care. All VA clinicians should have an understanding of the experiences and exposures of these most recent of America’s combat veterans. This is the reason for this VHI, which was originally presented as a satellite videoconference on 26-27 March 2003.

Course Purpose: To provide valuable information to all health care providers engaged in the treatment of U.S. military members involved in “Operation Iraqi Freedom”.

Course Goals: The 11 goals of this course are to provide issues and lessons learned from Gulf War I with up-to-date information on:

Goal 1: The VA/DoD Contingency Back-Up System.

Goal 2: Environmental and endemic hazards of deployment to Southwest Asia.

Goal 3: The DoD Pre-Deployment screening and Force Health Protection Program.

Goal 4: The VA health care benefits after combat deployment.

Goal 5: Specific combat related injuries, including wounds from traditional weapons and high-velocity weapons.

Goal 6: Injuries associated with chemical warfare agents.

Goal 7: Injuries associated with pesticide agents.

Goal 8: Injuries associated with biological warfare agents.

Goal 9: Injuries associated with radiological warfare.

Goal 10: Combat effects on mental health.

Goal 11: Family support programs for veterans and their families.

VA/DoD Contingency Back-Up System

Objectives

Explain the VHA's Fourth Mission "Emergency Management";

Define the VA/DoD Contingency Back-Up System;

List the components of the VA/DoD Contingency Back-Up System; and

Explain the purpose of the Federal Coordinating Centers.

Introduction

The mission of the Veterans Health Administration is to "provide a broad spectrum of medical, surgical, and rehabilitative care to its customers. Our goal is to share information about these benefits and services to make it as easy as possible for you to receive the care you need".

This mission consists of four distinct areas. These four areas enable VHA to provide the services and support for those that put themselves "in harm's way" for their country. They are:

- Medical Care
- Education
- Research
- Contingency Support

Table 1 provides the four missions of VHA, and their associated Web site.

VHA Missions and Associated Web Sites

Mission	Intranet Web site	Internet Web site
Medical Care	N/A	http://www.va.gov/health_benefits/page.cfm?pg=13
Education	N/A	There is no Internet Web site
Research	N/A	http://www.va.gov/health_benefits/page.cfm?pg=15
Contingency Support	N/A	http://www.va.gov/emshg

Table 1

VHA's Fourth Mission - Emergency Management

The Veterans Health Administration is set up to respond very quickly to manage crises, and provide the leadership necessary to ensure continuity of operations. The VA Continuity of Operations Planning (COOP) plan was set into motion on September 11, 2001. The execution of this plan included manning of alternate sites, which served as command centers and gave the VA leadership the ability to manage this national crisis.

VHA's Fourth Mission "Emergency Management" is intended to ensure that regardless of the crisis or emergency, that medical care and support functions continue as needed. The emergency functions, which are outlined below, play an integral part in the success of VHA and Emergency Management.

- VA/DoD Contingencies
- National Disaster Medical System (NDMS)
- Federal Response Plan (FRP)
- Natural and Technological Hazards
- Continuity of Government (COG)/Continuity of Operations Planning (COOP)

VA/DoD Contingencies

The VA serves as the primary medical backup to the military health care system during and immediately following an outbreak of war or national emergency. The VA/DoD Contingency Hospital System Plan outlines how VHA supports that effort.

The following are components of the VA's response to VA/DoD Contingencies.

- Area Emergency Managers (AEMs)
- VAMC emergency plans
- All-hazards approach
- Comprehensive Emergency Management (Figure 1, top of next page)
- Public Law 97-174 is the authorizing legislation naming VA the primary backup to the military health care system during war or other emergencies. This is accomplished through:
  - Primary Receiving Centers (65 in VA)
  - Secondary Support Centers (66 in VA)
  - Regular counting of bed availability of NDMS and VA beds

For more information go to: http://www.va.gov/emshg.

The Four Phases of Comprehensive Emergency Management

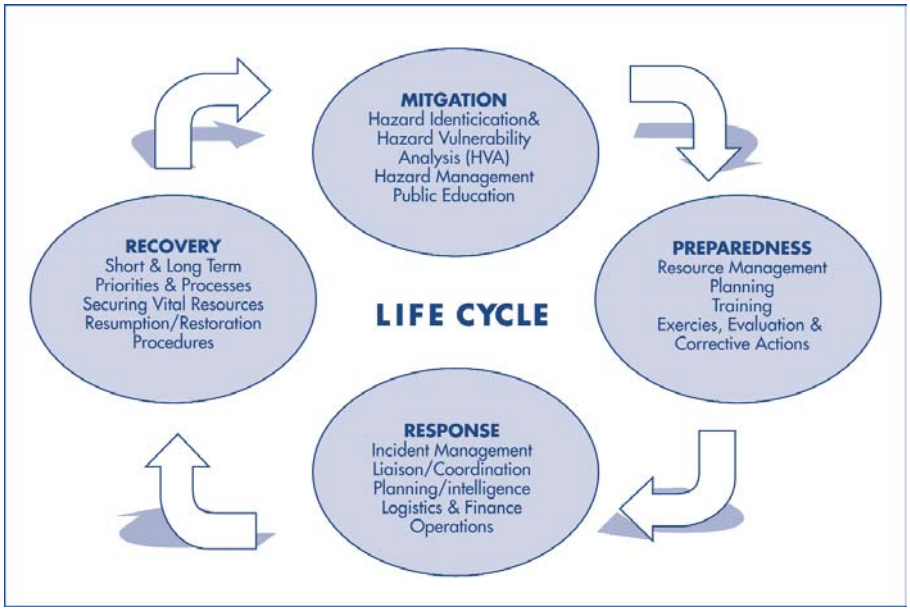

Figure 1

National Disaster Medical System (NDMS)

The National Disaster Medical System (NDMS) is a federally coordinated initiative that augments the nation's emergency medical response capability. The four federal partners in NDMS have traditionally been the Department of Health and Human Services (U.S. Public Health Service), Federal Emergency Management Agency (FEMA), DoD, and the VA. The Office of Homeland Security will assume responsibility for coordinating this function in the future. The overall purpose of NDMS is to establish a single national medical response capability for:

- assisting state and local authorities in dealing with the medical and public health effects of major peacetime disasters; and
- providing support to the military medical system in caring for casualties resulting from overseas armed conflicts.

NDMS has two major components:

1. Disaster Medical Assistance Teams (DMATs) with necessary supplies and equipment that will be dispatched to a disaster site within the U.S. from the country's major metropolitan areas.
2. A voluntary hospital system that will provide definitive care to disaster victims who are evacuated out of the disaster area to designated NDMS metropolitan areas.

In peacetime, NDMS will only be activated when state resources have been overwhelmed by a disaster and a request has been made for federal assistance. DoD can activate the system for casualties of an overseas armed conflict. For more information go to:

http://www.va.gov/emshg.

Federal Response Plan (FRP)

The FRP (Public Law 93-288), as amended, established the basis for the provision of federal assistance to a state and its affected local governments impacted by a catastrophic or significant disaster, or emergency that results in a requirement for federal response assistance. The VA has been assigned the responsibility to support four of the twelve Emergency Support Functions (ESFs). The Emergency Management Strategic Health Group (EMSHG) will coordinate VHA response to any missions that may be tasked under the FRP. Specifically the VA may be tasked with:

1. Engineering Services
2. Mass Care and Sheltering
3. Resource Support
4. Health and Medical Support

Natural and Technological Hazards

According to Executive Order 12657, the VA is responsible for:

1. providing medical assistance using their Medical Emergency Radiological Response Team (MERRT); and
2. providing temporary housing.

As part of the Federal Radiological Emergency Response Plan (FRERP) (May 1, 1996), the VA's MERRT is a federal resource that is available to respond to radiological emergencies, which includes nuclear power plant accidents, and injuries associated with radiological accidents.

Continuity of Government (COG) Operations

VA Handbook 0320 (Emergency Preparedness Planning Procedures and Operational Requirements) paragraph 3 b. (1) (a) outlines the requirements that all VA organizations develop a plan to ensure COG and Continuity of Operations Planning (COOP) Operations. Executive Order 12656 (EO 12656) and Presidential Decision Directive 67 (PDD 67) also provide requirements for these plans. Specifically:

EO 12656 (Assignment of Emergency Preparedness Responsibilities) - Charged the VA to plan for emergency health care services for VA beneficiaries in VA medical facilities, active duty personnel, and, as

resources permit, to civilians in communities affected by national security emergencies. Also, to provide mortuary services for eligible veterans and to advise on methods for internment of the dead during national security emergencies.

PDD 67 (Continuity of Operations) - Tasks all Federal Departments and Agencies, including the VA to ensure that their critical functions and operations continue under all circumstances and a wide range of possible threats. VA works closely with FEMA to ensure compliance with the COG and COOP requirements in PDD 67.

The VA has specific relocation sites set up to ensure continuity of operations in the case of an emergency. Refer to your facilities specific COOP document for the relocation site.

Deployments

As stated in the Introduction for this section, VHA is set up to respond very quickly to manage any potential crisis. The VHA also responds to presidentially declared disasters, such as Hurricanes Andrew, and Floyd, and the floods that occurred in Houston, Texas. Over 1000 VA employees were involved in these operations. VHA also provides on-site support for high-threat events, such as:

- NATO 50
- Olympics
- Inaugurations
- Papal Visits
- Economic Summits of the eight world leaders

VHA Role in Emergency Preparedness

VHA operates the largest integrated national health care system in the country with 1200 sites nationwide. The VHA is ready to provide significant assistance should mass casualty situations arise. In the past, VHA has responded well to emergent needs, and is prepared to provide assistance to DoD should the need arise. Each facility is continuously reviewing, drilling, and revising, as needed their emergency plans. Part of VHA's role is to ensure that each VAMC is prepared for emergencies, and that they are prepared to provide support to HHS. The below bullets highlight some of the roles of VHA.

- VAMC Preparedness
  - AEMs around the country assisting in All-hazards approach
  - Emergency Management Program Guidebook
  - Pharmaceutical Caches
  - Mass Decontamination Capability
  - Partnership with local communities

- Support of HHS
  - NDMS Caches
  - CDC Stockpiles
  - NDMS Education and Training

Pharmaceutical Caches

The items below are but a few of the accomplishments of VHA and their mission associated with Emergency Management and Pharmaceutical Caches.

1. HHS has contracted with VHA to purchase and maintain 4 caches, which can be deployed with NDMS teams. VHA also maintains a special events cache and a Congressional cache.
2. CDC uses VHA Acquisitions to purchase antibiotics and vaccine stockpiles, maintained by the suppliers until needed.
3. After 9/11/01, VHA decided to stockpile pharmaceuticals for its own use.
   - As of 4/18/03 there are 89 caches (of the 143 planned) deployed to VAMCs.
   - These caches contain supplies useful in case of the use of weapons of mass destruction.
   - The large or small caches contain supplies for 2000 or 1000 patients per day for 2 days.
   - They require space, inventory control system, personnel, and training to maintain.

Federal Coordinating Centers

Only specific VAMCs have responsibilities under the NDMS. These facilities are designated as Federal Coordinating Centers (FCCs) for the system in their respective NDMS area. A listing of VA FCCs by VISN is provided on the next page in Table 2. The principal responsibilities of the FCCs are as follows:

1. Coordination of NDMS definitive medical care in assigned local areas.
2. Solicitation and organization of local, private sector hospitals, and community support services occurs in advance of an event.
3. VA is responsible for enrollment of non-federal local hospitals in NDMS in specific areas.
4. Coordination and reporting (to Global Patient Requirements Movement Center or GPRMC) of NDMS area bed availability occurs regularly. Coordination with local/state authorities occurs with:
   - Preparing of local NDMS patient reception plans.
   - Planning and conducting annual NDMS exercises.
   - Management of NDMS operations during activation.

Those VAMCs that are designated as FCCs for the NDMS have specific responsibilities for development, exercise, and activation of supporting plans. These VA FCCs must develop a plan with the community for the reception, transportation, tracking, and disposition of casualties being evacuated from the site of a nationally declared disaster. Table 2 lists the VA Federal Coordinating Centers by VISN.

VA Federal Coordinating Centers by VISN

VISN	Coordinating Center
1	Bedford, Northampton
2	Albany, Buffalo, Syracuse
3	Castle Point, Northport, Brooklyn, Lyons, Manhattan
4	Philadelphia, Pittsburgh
5	
6	Richmond, Salisbury
7	Atlanta, Birmingham
8	Miami, San Juan, Tampa, Orlando
9	Lexington, Louisville, Memphis, Nashville, Knoxville
10	Cleveland
11	Detroit, Indianapolis
12	Milwaukee
15	Kansas City, Wichita
16	Houston, New Orleans, Little Rock, Jackson, Shreveport, Oklahoma City
17	Dallas, San Antonio
18	Albuquerque
19	Salt Lake City
20	Portland
21	San Francisco
22	Long Beach, Riverside, San Bernardino
23	Minneapolis, Des Moines

Table 2

Summary

VA's primary mission is veterans care - "Our goal is to provide excellence in patient care, veterans' benefits and customer satisfaction. We have reformed our department internally and are striving for high quality, prompt and seamless service to veterans. Our department's employees continue to offer their dedication and commitment to help veterans get the services they have earned. Our nation's veterans deserve no less." (Secretary Principi - http://www.va.gov/about_va/)

As Secretary Principi said in the above statement, the VA's success is a result of it's dedicated, caring, and professional employees. With these employees, the VA can, and will respond in a time of disaster whether due to war, terrorism, or natural disaster.

Frequently Asked Questions

FAQ #1 - What is the VA/DoD Contingency Back-up plan?

A: The VA serves as the primary medical backup to the military health care system during and immediately following an outbreak of war or national emergency. The VA/DoD Contingency Hospital System Plan outlines how VHA supports that effort.

FAQ #2 - What structures are in place to handle these contingencies?

A: National Disaster Medical System (NDMS), Federal Response Plan (FRP), National and Continuity of Government (COG)/Continuity of Operations Planning (COOP) plans are in place to handle contingencies as they arise.

FAQ #3 - What's unique to the military contingency plan?

A: Only specific VAMCs have responsibilities under the NDMS. These facilities are designated as Federal Coordinating Centers (FCCs) for the system in their respective NDMS area.

FAQ #4 - What's the main point of this section?

A: VA is a large integrated system that has a plan for the management of emergencies, both natural and manmade. Every VAMC has a local emergency management plan, and is prepared to participate in their local community plans. The VA is ready for any contingency that may arise.

Environmental and Endemic Hazards of Deployment to Southwest Asia

Objectives

List the exposures that combat veterans may encounter;

Define biological hazards;

List the pathogens endemic to the Iraqi region;

List the chemical hazards combat veterans may encounter; and

Describe how these exposures might influence a health care provider's interaction with their patients.

Introduction

Southwest Asia is not a particularly inhospitable environment for U.S. troops; it is a livable place for our troops. There are certainly geographic areas in the world that may be considered inhospitable, unfriendly, or very threatening from a disease standpoint. How hospitable an environment is, has as much to do with changes in the individual routines of troops as with the translocation from North America to another continent, and specifically from a garrison, peacetime setting to a real-world mission. Individuals typically experience occupational, situational, and personal changes, so every piece of the medical history should be understood in this context.

Troops are changing their daily routines. Their sleep habits are different. Their meals are different. The stressors that are on their bodies (greater physical activity, and psychological stressors) are different. Their immune systems are being challenged with antigens they are not familiar with.

The questions that health care providers need to ask when receiving patients from Southwest Asia include:

"Where did we put our troops?"

"What habits did they change?"

"What work were they doing?"

Environmental Exposures

Some of the environmental exposures that might have an impact on the

troop's health are rather complex. The possible environmental influences on human health constitute a complex subject, which can be divided into two categories:

1. Natural - general atmosphere, sun, wind, dust, etc.
2. Sources influenced by human activities - industry, occupation, sanitation, recreation, medical care, etc.

Within each category, there are three distinct levels of proximity:

1. General - typically produces lower levels of exposure.
2. Immediate - part of the occupational exposure or the individual working with a substance.
3. Internal - substances that are internal to the troop's body.

Natural Sources

General Exposure - Southwest Asia experiences extreme temperature variation (cool to cold at night to extremely hot during the day). Not all places in Southwest Asia have very high altitudes, but for troops not accustomed to being at 8,000 feet or higher, their performance may be diminished. Also, within the general environment is the amount of solar radiation that affects the troops. Wind, which causes dust problems, can also create problems from blowing sand, especially if the winds are strong enough to produce a sand storm.

Immediate Exposure - More immediate to the troops are arthropods that are either venomous or serve as vectors of infectious disease, as well as direct exposure to infectious agents through airborne or direct contact.

Internal Exposure - The food and beverages troops consume are naturally occurring. There may be things about those substances a troop takes in that might result in contamination or can lead to disease because they're harmful.

Sources Influenced by Human Activities

General Exposure - As a rule, many of the general exposures that are influenced by human activities are industry-based. Industrial plants that are in Southwest Asia might emit many different chemicals. Pollution standards in Southwest Asia do not follow the same pollution standards as in the United States. The general categories of concern include: air pollution, water pollution, and soil pollution. Munitions and oil fires like those experienced in Gulf War I are hazards that are also in the general environment.

Immediate Exposure - Generally this is what the troops work with.

This includes: fuel, pesticides, and repellents applied near or on their bodies, such as DEET and permethrin. DEET and permethrin are **NOT** toxic agents, but one has to consider all exposures in a multi-factorial context. Other immediate exposure factors include cleaners, and noise (whether constant or impact). Noise is also an environmental stressor that can harm the body. Radiation is another factor (whether it is ionizing or non-ionizing). The troops will be exposed to predominantly non-ionizing radiation sources.

Internal Exposure - Many things the troops receive internally that are unnatural are for good reasons. Immunization, chemoprophylactic medication, self-medications, particularly over-the-counter drugs, nutritional supplements, and even topical substances (sun screen) all contribute to the health of the troops. There are also other forms of unnatural substances such as embedded shrapnel (to be discussed in Section 5).

Biological Hazards and Pathogens

There are pathogens that are occurring worldwide or at least also in North America, and are not unusual to the troops. These pathogens still have an impact on their health. For example, acute respiratory diseases. The troops might be exposed to tuberculosis, which still occurs worldwide, including in the United States. It is more prevalent in Southwest Asia.

There are other potential exposure hazards such as vivax malaria, which is the most prevalent vector-borne disease the troops will encounter. Another protozoan that is not malaria, but also vector-borne, is leishmaniasis (transmitted by sand flies). Figures 1-3 depict a sandfly, the leishmaniasis pathogen, and a skin lesion associated with leishmaniasis.

Figure 1

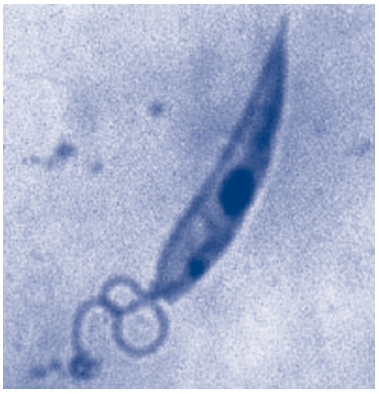

Figure 2

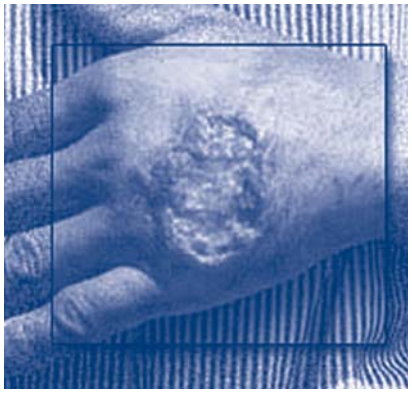

Figure 3

There are also a variety of viruses that are borne by vectors that are unique to Southwest Asia as well. To see a comprehensive list of vector-borne diseases, see the VHI "Endemic Infectious Diseases of Southwest Asia" at: http://www.va.gov/vhi.

Pathogens can also be transmitted via airborne methods. This includes tuberculosis and a number of other respiratory pathogens.

Not all pathogens cause acute diseases. Acute in this circumstance means occurring during the operation in which the troops are involved. The manifestations present themselves, and presumably, they are diagnosed and treated. When the diagnosis is delayed, there might be chronicity, or complication resulting from the missed diagnosis. Diseases are not always easy to diagnose. More often when there is a delay in diagnosis of an infectious disease, it is because it is a latent period, such as tuberculosis or chronic, such as Hepatitis B.

Chemical Hazards

Chemical hazards are one area of warfare where there is quite a bit of interest. These hazards may occur as respirable agents (inhaled). In that regard one should look at three different aspects, are they soluble, very soluble, or are they relatively not soluble? This is important, because less soluble agents are actually more likely to be deeply inhaled. With soluble agents, the troops back off because of irritation to their upper respiratory tract or their eyes. This is similar to a room full of ammonia. This irritation prevents manifestations that are more complicated.

> ***Less soluble hazards*** **-** Less soluble hazards can get deep into the lungs and can cause parenchymal disease. Chemicals like chlorine, phosgene, and nitric oxide are examples of less soluble chemicals. These chemicals make people very ill, and when they present to an emergency department, a clinic, or a battalion aid station, the clinician may not know what is going on and have to deal with the symptoms immediately. The chemicals are less likely to be of great impact to VA hospitals.

Oil Well Fires

The concern with oil well fires has to do with whether or not they have a long-lasting impact on the health of the troops. All oil well fire effects are acute, and may have a secondary effect on the immune system. They may induce problems like asthma in someone who is predisposed. More often than not, the discussion centers around two classes of compounds: **asphyxiants** or **irritants.**

> ***Asphyxiants*** **-** carbon monoxide, carbon dioxide, hydrogen sulfide, and methane. In high concentrations, they can be quite hazardous, but the individual has to be in an enclosed space, such as an

occupational environment. Oil well fires do not present that situation. The fumes from the fires go high into the atmosphere, where there is much diffusion. The results from Gulf War I showed that there was not a lot of disease from the oil well fires, even for the firefighters who were right near the hazard.

Irritants **-** are oxides, like nitrogen and sulfur. Irritants can have effects that are very subtle, so clinicians need to be aware that they may complicate a history in the person who says, "I was near the oil well fire, and I have a lot of irritation, or I have wheezing". The patient remembers the obvious effects, the irritating effects of those chemicals. They also remember the physical effects, such as watery eyes and coughing.

Many of the items discussed in this section are of high importance to health care providers, and are critical to the health of the troops in the region. Health care providers need to be aware of the manner in which they interact with the patient who experienced one of the environmental or endemic hazards of their deployment to Southwest Asia.

Interaction with Patients

Knowing about these exposures could influence the way providers interact with their patients. It is important for clinicians who do not usually think in epidemiological terms to take a different approach. They will need to think in terms such as: medical history; occupational history; what were the troops/patient exposed to because of their job; where were the troops located in the country?

Listen to the person; even though they may be biased and affected by what they remembered feeling or seeing, there may be some truth to their statement from a medical standpoint. What they remember seeing and feeling has to be taken into account in trying to track what could have happened to this person. Use their occupational history which in the military is their occupation.

Chemicals, unlike infectious agents are unlikely to present with latent effects. Troops are in an environment, which is relatively short term in duration. Even if they are there for six months, or 12 months, there is no comparison between their exposure and the exposure of a worker who has a life-long career working around a certain chemical.

Standards are applied in the U.S. for the ambient environment; however, there is much greater pollution in certain parts of Southwest Asia, especially where base camps may have been set up. All the black smoke that was in the air needs to be kept in perspective, because what the troops were exposed to, in country, or in the theater, was for a relatively short duration. The duration needs to be kept in mind at all times.

DoD Pre-Deployment Screening and Force Health Protection Program

Objectives

Define how DoD ensures military members are healthy when deployed;

List the DoD pre-deployment procedures;

Describe how DoD prevents military members from getting sick while on deployment; and

Explain how DoD ensures that sick and injured military members get the care and treatment they need while on the battlefield.

Introduction

The top priority of medical leadership in DoD is to protect the health of the men and women in uniform, particularly when they are deployed. The Force Health Protection Program is based on the lessons learned from Gulf War I and subsequent deployments. From these lessons learned, DoD will do a better job protecting those who go in harm's way.

The Force Health Protection Program consists of three very important parts:

1. A fit and healthy force
2. Prevention of disease and injury
3. Treatment and care for ill or injured individuals

Part 1 - A Fit and Healthy Force

Since the U.S. military is a fighting force, it is required that all who desire to serve are medically fit. This starts with making sure we recruit and maintain a fit and healthy force. The military has created a continuum of health care once an individual enters active duty. This continuum is critical for the first part of the Force Health Protection Program. The continuum has three parts:

1. A very rigorous entrance physical examination and a comprehensive medical history is completed on each individual.
2. Health promotion is emphasized. Physical training is emphasized from the first day an individual enters the military. Recruit training

uses a system of incremental physical training to strengthen the force.

3. Physical fitness testing is a requirement. Depending on the branch of military, each individual must complete at a minimum an annual physical fitness test. Inability to pass this test can lead to separation from service.

Part 2 - Prevention of Disease and Injury

The DoD educates its service members about the medical threat(s) during deployment and combat. The identification of the threat(s) is accomplished through intelligence reports or measuring what environmental danger(s) may be in their deployed areas. (Section 2 provided information on the environmental dangers service members will experience, and Sections 6-9 outline some of the chemical, biological, and radiological weapons that are used in combat).

The identification is comprehensive in nature, and attempts to determine whether the threat is:

- Chemical
- Industrial
- Biological
- Natural-occurring diseases

Once the determination has been made concerning the threat, DoD ensures that the troops understand what protective measures are required, to include vaccinations, chemical and biological protective clothing, or pesticides to reduce insect or pest exposure.

Part 3 - Treatment and Care for Ill or Injured Individuals

Part 3 of the Force Health Protection Program is accomplished by providing care far-forward in the theater of operations. This care consists of providing far-forward surgical care, medical evacuation with intensive care in the air, and most importantly, by ensuring that health concerns are addressed directly with the individual. The DoD has developed the capability for electronic capture of medical care in a deployment theater.

Health and War

DoD ensures when the need arises to send young men and women into harm's way, that they are fit and ready to do their job. This is successful because DoD has recruited volunteers who are fit and meet the required standards for deployment.

When a military member deploys for war, his or her health and fitness have been maintained by involvement in very rigorous training. If service members are not deployed, they are training to deploy. As a cohesive unit,

they know if someone is not able to do his/her job, and the ingrained medical component in the military is there to provide care on a free and easy access basis.

If a military member has a disqualifying medical condition, he/she can no longer stay on active duty. Those who are on active duty are considered worldwide deployable. This is the foundation of knowing that there is a fit and healthy force.

Pre-deployment Medical Procedures

When individuals are identified for deployment, a number of pre-deployment health related issues must be completed. This includes:

1. Review of medical records/history
    a. Ensure that the member has an up-to-date periodic physical examination.
    b. Has the member had an annual dental examination?
    c. Has an HIV screening test been completed within the last 12 months?
    d. Is the member's health record up-to-date (i.e., vaccines, PPD skin test)?
2. Complete a health assessment (Ask the member the following)
    a. "How would you rate your health?"
    b. "Do you have any medical conditions that aren't in your health record?"
    c. "Do you have a medical board process going on where you have a medical condition that perhaps is disqualifying?"
    d. "In the past year, have you sought counseling or care for your mental health?"
    e. "Do you have any health concerns at this time?"
3. Based on the results of these questions, which is reviewed by a medical provider with the individual present, a determination is made if the member is ready and fit for deployment. If they are, the medical provider will certify that the person is fit and ready to deploy.

Prevention Training and Deployment

Prevention is a multi-layered approach. The success of the prevention is based on the use of valuable intelligence, understanding what threat the enemy has, and where the chemical and biological agents are located.

Understanding the threat and knowing the diseases endemic to the area is also part of the protection mission. Prior to deployment, the troops receive a thorough medical briefing on what they may encounter. If they are going into an area of malaria, malaria prophylaxis is given, and they are told the importance of the prophylaxis.

The troops are briefed on the use of insect repellent. This critical information is provided to prevent any of the vector-borne diseases. There is extensive training on the use of chemical and biological protective equipment. This equipment has been greatly improved over the last decade. The new uniforms are much lighter; the new gas mask has better vision capability. In addition, every troop has at least two of these outfits, ready to go. Therefore, training is really key and critical to protect the individuals.

There is also an environmental assessment. This assessment provides information on chemical or biological agents, as well as industrial chemicals, or any other pollutant in the areas where the troops will deploy. Samples of the soil, air, and water are taken. These data are archived. An electronic medical surveillance capability is established for the theater of operations. The information obtained from this surveillance program will be extremely valuable. It will provide information about the troops current medical problems in theater. DoD is working very hard to track unit locations, and to keep track of where people were during the time they were deployed. This focus is to make sure an electronic record is started and to have the record available for any question, whether immediately or subsequent to deployment.

Battlefield Medical Care

Today's military footprint is much smaller than the past. The high technology weapon systems available, such as the bombs and guidance systems, allow the military to have fewer troops in the theater. This is also true for the medical assets in the theater. Surgeons with a backpack can go far-forward, set up a surgical theater, and do surgery on a seriously wounded person, right behind the firing line. The capability exists to get airplanes into the forward area to load this critically ill person into an intensive care unit and fly them out of the theater. This is done very quickly. In addition, the medical assets are designed to move forward. The medical assets are modular and have the ability to set up facilities with several beds or a 200 bed hospital, if need be, in the theater.

Post-Deployment Care

The DoD performs an important Post-Deployment Health Assessment as troops are leaving the deployment area, or as soon as they get back. They are asked:

1. "How would you rate your health?"
2. "Do you have any unresolved medical or dental problems?"
3. "Have you sought, or do you intend to seek, counseling or care for your mental health?"
4. "Do you have concerns about possible exposures or events during this deployment?"
5. "Do you currently have any questions or concerns about your health?"

DoD and the VA have trained their primary care providers to ask individuals seeking care if they believe their health concerns may be related to a deployment. If the patient answers "Yes," then the Post-Deployment Health Clinical Practice Guidelines (http://www.va.gov/environagents) developed jointly by DoD and VA will be used to allow the primary care provider to focus the medical examination, order medical testing for the individual if needed, utilize data from the theater to answer questions, and provide the individual appropriate health care.

VA Health Care Benefits after Combat Deployment

Objectives

Describe the VA's clinical care programs for veterans with difficult to diagnose, or disabling diseases;

Describe the VA training and educational materials developed to help VA health care providers provide care for Gulf War veterans;

Describe the VA/DoD Post-Deployment Health Clinical Practice Guidelines;

Explain how the VA provides information on environmental health concerns to veterans and families, and to health care providers;

Define special VA compensation authority for Gulf War veterans with difficult to diagnose diseases;

Explain what the VA has done to improve access to health care for all combat veterans;

Describe how the VA's Vet Center Program helps veterans from all wars/conflicts;

Explain how the VA has worked with DoD to improve surveillance and medical record keeping; and

Explain how a veteran obtains health care benefits.

Introduction

With recent military action putting U.S. service members back in Iraq, and similar military actions in nearby Afghanistan, many people are asking VA about the health issues involved. Specifically, people want to know how VA is better prepared today to handle the problems with undiagnosed illness such as we saw after Gulf War I?

The VA has learned a lot from our experiences taking care of veterans from Gulf War I, and before that, from the Vietnam War. Today, we understand that the majority of veterans returning from combat and peacekeeping missions abroad are able to make the transition to civilian life with few problems. Most who come to VA for health care receive conventional diagnoses and treatments, and leave satisfied with the quality of their health care.

Nevertheless, we have also learned that some veterans have more problems in their return to civilian life and a small percentage develop difficult to diagnose illnesses that can be disabling.

The following are some specific examples of VA's transformation since the end of Gulf War I. These changes leave us better prepared today than we've ever been to handle health care, compensation and information issues for veterans from all deployments who may have difficult to diagnose illnesses, and their families. VA has developed a number of cutting-edge programs to respond to these needs, both for veterans of Gulf War I/II, and of future combat and peacekeeping missions wherever they occur.

Difficult to Diagnose, or Disabling Illnesses

The VA is constantly looking for ways to improve care for veterans with difficult to diagnose or disabling illnesses. Combat veterans suffering from chronic and ill-defined illnesses are a significant concern for VA, veterans, and their families. The VA's experience treating veterans from Gulf War I and the Vietnam War illustrated the need to develop new specialized health services for all combat veterans with difficult to diagnose health problems. In 2001, the VA established two War-Related Illness and Injury Study Centers (WRIISCs) at the Washington, DC, and East Orange, NJ VAMCs. This follows VA's tradition of establishing specialized clinical and research programs for the special health care needs of veterans, including VA's Mental Illness Research, Education and Clinical Centers (MIRECCs) and the National Center for PTSD.

Equally important, the WRIISCs are also charged with conducting research to develop better diagnoses and treatments for difficult to diagnose illnesses. They also provide clinical education for VA and other health care providers, and appropriate risk communication and outreach tools for interacting with patients and their families who have health concerns related to environmental exposures experienced while on deployment.

An emphasis on good risk communication and outreach were identified as critical needs following the VA's experience treating veterans from Gulf War I. For example, the WRIISCs have developed a range of materials outlining the environmental and other health risks for military service in new deployments such as to the Persian Gulf, Afghanistan, and the former country of Yugoslavia. These materials are designed to effectively communicate this information to veterans, their families, and other concerned Americans.

Following start-up staffing, and construction, the WRIISCs are providing in-depth clinical care and evaluation for veterans with debilitating symptoms that remain unexplained after thorough medical examinations by local VAMCs. The WRIISCs accept veteran patient referrals from all across the country, and from all combat eras. Just recently, one center received the first World War 2 veteran patient, who apparently had been suffering from difficult to diagnose illnesses for decades. The clinical load of the two centers is expected to reach about 100 inpatients and several hundred outpatients per year.

The unique clinical components of these programs are available for any combat veteran with a referral. Information, and how to make a referral is available at http://www.va.gov/environagents.

Training Health Care Providers for Post-Deployment Care

The VA has trained their health care providers to provide the most appropriate care for veterans including Gulf War veterans after military and peacekeeping missions. Fortunately, the VA has good evidence-based medical approaches for treating veterans after deployment. Since Gulf War I, the VA has developed in collaboration with DoD, some new Clinical Practice Guidelines (CPGs) that provide our clinicians with the information they need to take advantage of the best scientifically supported practices for treating their patients. This includes:

- the general purpose Post-Deployment Health CPGs; and
- a new CPG on unexplained fatigue and pain.

These CPGs provide information on how to provide care to the patient who presents with a particular set of health complaints or concerns that they believe are associated with their military deployment. The CPGs can be accessed at: http://www.va.gov/environagents.

Through experience, the VA has learned that many combat veterans have concerns about the hazardous exposures they may have experienced during their deployment. Specifically, veterans and their families want information about what they (the veterans) were exposed to while deployed and how such exposures may have affected their health or even the health of their families. In response, the VA has developed a range of special training programs that address issues related to deployment environmental health concerns. These special programs are designed to train our health care providers to be knowledgeable about the hazards and health concerns related to specific deployments.

For example, the VA has developed new Independent Study Guides for physicians on Gulf War & Health, on service in Vietnam, POW health issues, and on many related topics. The Independent Study Guides are available at: http://www.va.gov/environagents.

Veterans Health Initiatives

In partial response to addressing the educational needs of VA health care providers, VA has developed a program called the “Veterans Health Initiative” (VHI). One of the basic reasons for the VHI is to make sure that every veteran patient who comes to VA will be met by health care providers who are knowledgeable about their particular deployment, about what happened, and what exposures were involved. Inevitably, many VA health care providers have had little or no military service, and are not always aware of issues related to military deployment. For example, many health

care providers providing health care to Vietnam Veterans were born after the Vietnam War was over! Lack of information can lead to credibility problems for the health care provider.

One major product of this effort is a comprehensive group of independent study modules (paper-based and web-based) that may be taken for CME credit. In fact, this course you are presently doing is part of this initiative. These modules provide information on subjects such as Gulf War Illness; Vietnam War and Agent Orange; American Ex-Prisoners of War; and others.

The VHI's, can be accessed at: http://www.va.gov/vhi.

Post-Deployment Health Clinical Practice Guidelines

The Post-Deployment Health Clinical Practice Guidelines (available at http://www.va.gov/environagents) were developed jointly by VA and DoD following Gulf War I to help veterans and their health care providers deal with deployment related health concerns. These guidelines were developed to implement the lessons learned after Gulf War I and the Vietnam War.

These guidelines focus particularly on those instances where diagnoses for health problems are not obvious. The VA recognizes that many wounds veterans come back with are not as obvious as should be; for example, the result of a wound from shrapnel or a bullet. The exposure, the risks that they encountered while they were deployed might not leave obvious scars. In some cases, a critical health concern for the veteran revolves around what he or her family believes has happened to the veteran. If they are concerned about a particular environmental exposure, or something that happened to them during their deployment, even if it is not necessarily clinically relevant, if the veteran believes it is relevant, then it is something that the clinician has to deal with to ensure effective health care.

The Post-Deployment Clinical Practice Guidelines serve as a tool kit that provides some basic information to help primary care clinicians deal with the patients suffering from difficult to diagnose illnesses. Many health care providers will encounter these concerned patients and families, and these guidelines offer an important tool to help deal with the veteran and their family.

When veterans and their families have concerns about possible exposure to environmental hazards during deployment, the health care provider is often put in the position of needing some basic information on the nature and health effects of a particular exposure. Sometimes available scientific and medical information is the key to a meaningful discussion between health care provider and patient. However, many times the critical factor is what others are telling the veteran about the exposure. What did their officers tell them? What did their buddies tell them? And what have they seen on the subject in the news and on the Internet? Most important of all, is determining the symptoms and problems they had, and why they think this is due to the exposure.

In summary, the veteran who comes in and has concerns about the use or exposure to a specific deployment environmental hazard will probably not be satisfied if the clinician responds, "I don't know about it," or "I don't think that caused your problem." The provider has to be able to deal with the veteran's health concerns in a reasonable and forthright manner, and, if necessary, do some basic background research on the details of a specific deployment. The Post-Deployment Health Clinical Practice Guidelines are a tool describing various straightforward approaches to achieve this.

The VA provides basic information about environmental health concerns to veterans and their families. We understand that outreach to veterans and their families is critical! Many combat veterans and their families have specific concerns about the health impact of environmental exposures during their deployment. To meet those needs, VA has developed a wide range of outreach products, most of which are aimed at health care providers as well as veterans and their families. These include:

- Newsletters to veterans covering health and compensation issues, including environmental health issues;
- The same information contained in the newsletters can be accessed at: at http://www.va.gov/environagents; and
- New fact sheets on health concerns related to deployment on the war on terrorism in Afghanistan and Southwest Asia including Gulf War II – for both veterans and their health care providers.

Current VA Health Care Programs

Access to VA health care and other benefits are naturally the most critical issues for most veterans. The VA has learned how to better meet those critical issues in the years since Gulf War I. In particular, the VA recognized that there was a problem in health care access, especially among Reserve and National Guard members. For these service members, as soon as they separated from active duty after coming back from Gulf War I, they lost the military health care access they previously had enjoyed. Once they were discharged, health care in many instances was available only from VA. Many veterans reported frustrating delays and other obstacles in getting the health care from VA that they justifiably felt they had earned.

To get around these difficulties in accessing VA health care, the VA sought legislation from Congress. In 1998, VA received authority to provide health care for combat veterans for up to two years after the veteran separates from active duty. What was particularly useful in this authority is that this health care is available regardless of whether or not it can be proven that the illness or injury, particularly a difficult to diagnose illness, was due to the military experience. This eliminated the burden previously placed upon the veteran. The veteran no longer has to prove that their health problem was combat related before they could receive free health care from VA. This

law is a major breakthrough for veterans because now VA can always give the veteran the benefit of the doubt and get them in for the health care they may need after hazardous deployments. For more information about this important program, go to http://www.va.gov/environagents.

VA's Vet Center

The VA's Vet Centers, originally developed to provide a wide variety of social services to Vietnam veterans, have been invaluable in providing similar readjustment and counseling services to veterans from more recent combat and peacekeeping missions. In fact, more than 115,000 Gulf War I veterans have made use of their services, and over 200,000 veterans from the conflict in Bosnia and Herzegovina have used these services as well. There are over 200 Vet Centers in the United States serving deserving veterans. For more information, go to http://www.va.gov/RCS.

Compensation for Difficult to Diagnose Illnesses

The VA's experience of caring for Gulf War I veterans has also led to a greater appreciation of the need to assist veterans with unexplained symptoms. Disabled Gulf War I veterans are entitled to equitable compensation for illnesses and injuries experienced during military service. However, the paucity of scientific knowledge regarding the relationship between military environmental exposures and human health consequences originally hindered VA's ability to establish the required connection between Gulf War I service and veterans' health problems. This difficulty was further exacerbated by the reality that some veterans have disabling multi-symptom illnesses for which no established medical diagnosis can be found.

These complex health issues have also come under close scrutiny by Congress and veterans' service organizations. In a precedent-setting development, Congress passed Public Law 103-446 in 1995 which gave the VA the authority to compensate veterans with difficult to diagnose illnesses. The VA can now provide compensation to Gulf War I veterans who exhibit objective evidence of 10 percent or greater disability for at least six months, which may include disability due to fatigue, skin conditions, headache, muscle and joint pain, sleep disturbances, abnormal weight loss, menstrual disorders, neurologic, neuropsychological, respiratory, gastrointestinal, and cardiovascular illnesses. Approximately 3,200 Gulf War I veterans have received compensation based upon this law.

Surveillance and Record Keeping

For veterans to be able to take advantage of VA health care and benefits programs, veterans and VA need access to the records documenting their military experiences. Toward that end, the VA has worked with DoD to improve surveillance (to improve data collection during deployment) and

medical record keeping and record transmittal. One example is the development of a lifelong medical record for veterans who are on active duty. Once they separate from military service, their military record will go with them, providing a continuum of medical and other relevant information.

VA has also collaborated with DoD in developing baseline health data for active duty military personnel. This data includes critical initial information taken when individuals first join the military service, (the baseline) followed by their health status during their military career. VA also worked with DoD to develop more accessible physical examinations, and separation physical examinations.

A major change to record administration is the process of getting the records to the VA. In the past, the medical record went to St. Louis, and if needed the VA would request them. Now, DoD hands them over to the VA without going through a middleman. In addition, as electronic records become more of the standard, the systems will be able to share information instantaneously when a person leaves active duty and becomes eligible for VA care.

Obtaining Benefits

Information on obtaining benefits can be found at: http://www.va.gov. This Internet site was designed for easy use by veterans. The user can get information on how to fill out a compensation claim. The Web site is a good place to start.

For those that are not Web savvy, there are Veteran's Benefits Counselors at all VA Regional Offices and VA Medical Centers. These counselors bring the important human interaction that many veterans prefer.

As a health care provider, it is important that you are aware of the system of benefits the VA has for the veteran. More importantly, as a health care provider, you must know whom to refer the veteran to within the VA system so the veteran gets the help that is outside your area of expertise.

Specific Combat Related Injuries, including Wounds from Traditional Weapons and High-Velocity Weapons

Objectives

Explain the need to train VA staff in treating wounds from traditional weapons;

List the type of injuries the health care provider will treat;

Explain the significance of wounds from high-velocity weapons;

Describe the treatment the wounded veteran received from DoD prior to transfer to a VAMC;

List the treatment types the VA will provide for the wounded veteran;

Describe the range of medical specialists the VA has on staff to treat the war wounded; and

Explain how VA uses community resources to assist the war wounded.

WARNING

The pictures presented in this section are graphic, however, it is important for the health care providers to actually see, experience, and know what many of our troops have had to endure during their deployment and combat.

Introduction

Some of the health care providers in VA have experience with combat related injuries, both as a VA employee, and as a field physician. However, many VA and DoD health care providers have not seen traumatic injuries

that might result from Gulf War II. This section is a good introduction for the providers who have never seen injuries from a war.

Some of the injuries of deployed veterans result in treatment at routine sick call. Environmental type of exposures and traditional accidents are also injuries that happen to deployed troops. However, in time of war, troops will experience more complex and critical injuries especially from high-velocity projectiles or anti-personnel mines.

Environmental Exposure and Minor Accidents

Injuries experienced by troops, especially in a combat situation depend upon where the troops are deployed. In Somalia, the injuries ranged from heat injuries (Figure 1), to soldiers experiencing death (Figure 2) from high-velocity projectiles.

Figure 1

Figure 2

High-Velocity Weapons Injuries

Wounds from high-velocity weapons are different wounds than from traditional weapons. There is tremendous tissue damage to the body due to the high-velocity and the caliber of the weapon. Figure 3 is a graphic of an AK-47, a weapon that will cause the types of injuries this section describes. Figure 4 depicts an individual who was shot in the right posterior part of the arm by an AK-47, with a large exit wound in the forearm.

Figure 3

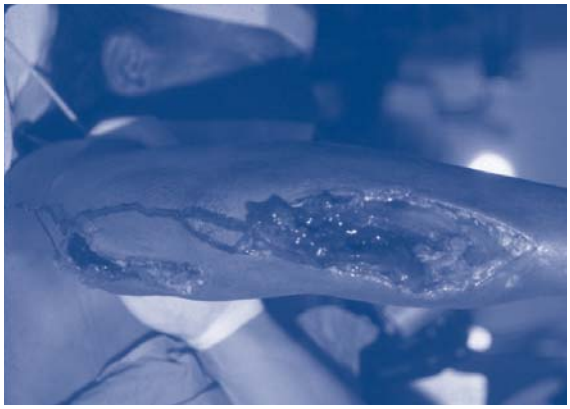

Figure 4

Figure 5 depicts a soldier who was shot by a high-velocity weapon round to the head and eye area.

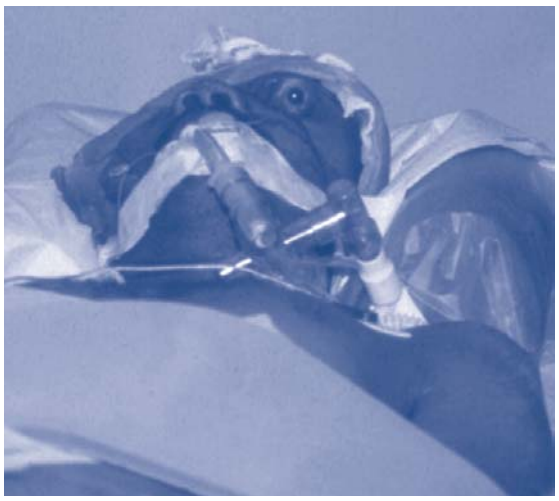

Figure 5

Unusual Weapons of War

Many unusual weapons and combat devices will cause serious injury to individuals who encounter them. Booby traps, grenades, rocket propelled grenades (RPG's), and the anti-personnel mine are but a few of the devices used to maim and kill people.

In Somalia, the U.S. forces experienced these devices first hand. Figure 6 depicts a soldier who has a fuse from a booby trap in his left hand. Figure 7 is the fuse that was removed from the soldier's hand. The surgeons in the field were able to save the soldiers hand.

Figure 6

Figure 7

Figure 8

Probably one of the most dangerous devices used in warfare is the anti-personnel mine. Many of the areas where there have been wars within the last 20 years have seen extreme use of these mines. Figure 8 demonstrates the damage an anti-personnel mine will do to a soldier.

VA Treatment of Wounded Veterans

Veterans being treated at a VA hospital are part of a continuum of treatment. This starts at the site where the veteran is wounded - field treatment. The wounded individual is evacuated from the battle zone by helicopter, truck, etc. After they are evacuated from the battle zone, they receive treatment in the combat theater hospital, with subsequent transfer to an evacuation hospital if needed. This treatment will continue at a military treatment facility with their final stop at a VAMC.

Treatment in the field is fairly advanced. There are now advanced deployment groups, five individuals that are likely to perform more complex surgery in the field than has been done before. Many of the patients VA sees are patients that have received relatively less fluid than they would have in the past in order to treat shock. VA will also see more vascular repair of extremities with so-called external fixators.

In cases where primary amputations are necessary, the patients VA will receive will have orthodox circular amputation and skin traction. Therefore, VA will be responsible for tissue reconstructions, but some stabilizations will be done as they pass rapidly through the system, such as flaps, revisions of bypasses, nerve repairs, tendon transfer, and orthopedic revisions of stumps.

For further information on amputation, refer to the VHI module “Traumatic Amputation and Prosthetics” at: http://www.va.gov/vhi.

VA Clinical Staff

The VA is staffed very well, and in terms of specialists, the VA is prepared to handle the individuals who are sent to their facilities.

The VA currently has about 450 full-time general surgeons and up to 900 FTE’s in general surgery. Each of the 130 facilities have contract arrangements or full-time arrangements with orthopedics, urology, neurosurgery, plastic surgery, and the like. For the conventional injuries, the VA is well prepared.

Community Resources

The VA is also prepared to tap into community resources if needed. The use of community resources will be particularly necessary in burns. In the past, most of the burns have been referred to burn centers. For example, in Washington, when the Pentagon was struck, the burn victims were sent to a civilian hospital, the Washington Hospital Center. To support the needs of each respective VAMC, there are arrangements and affiliations in place. In addition, each major VA is equipped with a large cache of appropriate fluids and antibiotic types.

Injuries Associated with Chemical Warfare Agents

Objectives

List the most common chemical agents our service members might be exposed to while in combat;

Describe the differences and similarities in potential exposures to chemical weapons from Gulf War I to Gulf War II;

Explain how chemical agents are absorbed into and eliminated from the body;

List the signs and symptoms of exposure to different chemical agent classes;

Explain how exposure to chemical agents affect reproductive health;

Identify the way veterans can and cannot be tested to verify if they were exposed to chemical agents;

Describe the long-term injuries from exposure to chemical agents and how VA will treat them; and

List the other available resources for information on chemical warfare agents and injuries associated with their use.

Introduction

During Gulf War I, U.S. service members were potentially exposed to a variety of chemical warfare agents that were known to be in the Iraqi arsenal at that time. Given the concern about chemical warfare agents in Iraq today, it seems likely U.S. soldiers deployed during Gulf War II may be at risk from exposure to these same agents.

This section will provide a brief description of these agents, how service members can be exposed to them, what health effects including reproductive health effects they can cause, what various groups that have reviewed Gulf War I health effects have said about these agents, and their impact on the health of Gulf War I veterans.

Chemical Warfare Agents - What are they?

Chemical warfare agents are materials that are deliberately designed to cause lethal and debilitating toxic effects in humans. In the last decade the most common chemical warfare agents of concern include:

- OrganoPhosphorus (OP) Nerve Agents; for example:
  - Sarin
  - Soman
  - VX
- Vesicant (blistering) Agents; for example:
  - Mustard Agent

The OP military nerve agents have a chemistry and a cholinergic mode-of-action essentially identical to the commonly used OP pesticides, described in the next section. The main difference is that the military nerve agents are designed to be more toxic to humans.

How might Gulf War veterans have been exposed?

In 1991, Iraq was known to possess both chemical and biological weapons, a fact later confirmed from inspections by United Nations inspection teams. However, the U.S. Department of Defense (DoD) has reported that neither chemical nor biological weapons were intentionally used by Iraqi forces against coalition forces during Gulf War I.

DoD has indicated that one U.S. soldier might have received a burn from mustard agent (on his arm), caused by accidental exposure while exploring a captured bunker in southern Iraq. The British Ministry of Defence has also concluded that Iraqi forces used neither chemical nor biological agents during Gulf War I.

Although there was no deliberate use of chemical weapons during Gulf War I, some Gulf War I veterans may have been exposed to trace levels of chemical warfare agents. The most notorious example happened in March 1991. Following the Gulf War I cease-fire, U.S. service members used explosives to destroy a large ammunition depot in southern Iraq, known as Khamisiyah.

This site was later found to have contained chemical agent munitions that contained Sarin and the closely related agent Cyclosarin (both OP agents). Small amounts of these agents were released into the atmosphere during demolition. Other munitions at that site contained mustard agent, but DoD has concluded that their destruction did not lead to any release of the agent.

Based upon atmospheric transport modeling carried out by the CIA, in 1997 the DoD notified nearly 100,000 Gulf War I veterans who had been in the vicinity of Khamisiyah at the time of the demolitions, that they may have been exposed to trace levels of military OP agents. This model provided data that showed some veterans could have been exposed to low-levels of Sarin and Cyclosarin chemical agents, levels which were too low to cause any

acute (immediate) cholinergic poison signs and symptoms.

The exact levels of exposure have been estimated to be very low or trace, and DoD has clinically confirmed this estimate with the observation that no cases of acute cholinergic poisoning symptoms related to exposure to OP nerve agents were reported during Gulf War I.

Nevertheless, low-level (below that required to cause any signs or symptoms) exposures from inhalation may have occurred to some U.S. service members in the Gulf War I region in the days following the cease-fire in 1991.

How are chemical warfare agents absorbed and eliminated from the body?

Chemical warfare agents can be absorbed either by inhalation of vapors, or through dermal contact.

Sarin and Cyclosarin are relatively volatile agents, and the primary exposure concern for these agents is via inhalation.

Mustard agent is much less volatile, and the primary exposure is dermal contact, although inhalation of aerosolized mustard agent also can be an important route of exposure.

All of these chemical warfare agents are rapidly metabolized and excreted, primarily in the urine, following any route of exposure.

What are the signs and symptoms of exposure?

The OP chemical warfare agents cause symptoms that are virtually identical to those caused by OP pesticides. These agents cause inhibition of the enzyme acetylcholineesterase (AChE), which is crucial to normal nerve and nerve/muscle functioning. The inhibition is irreversible, and complete recovery involves the body's production of new enzyme to replace the inhibited AChE. This production can take days to weeks.

Acute cholinergic poisoning symptoms usually develop within minutes or hours of exposure, and include miosis, headache, nausea, dizziness, anxiety, and restlessness.

Life-threatening symptoms may include muscle fasciculation, weakness, tremor, uncoordination, vomiting, abdominal cramps, diarrhea, sweating, salivation, and excessive tearing, and death can occur by respiratory paralysis.

According to DoD, in-theater medical personnel did not report any acute cholinergic poisoning symptoms consistent with acute poisoning from these chemical warfare agents in service personnel during Gulf War I. This is significant because some patients surviving severe OP poisoning later go on to develop subtle, chronic neurological abnormalities that can be detected using standardized neurological tests. For example, subtle deficiencies are

reported for survivors of acute OP poisoning in tests for intellectual functioning, academic skills, abstraction, and flexibility of thinking, and simple motor skills.

Although certain OP chemicals used in the past have been known to cause delayed neuropathies (or polyneuropathies) following recovery from acute cholinergic poisoning, the OP chemical warfare agents as a class are not normally considered to cause such effects.

Exposure to mustard agent can cause severe irritation and tissue damage, which includes typical blistering to eyes, skin, the respiratory track and gastrointestinal tracks.

Signs and symptoms from mustard agent are delayed for some hours following exposure. The mustard agents are considered to be likely human carcinogens, and humans exposed to mustard agent are at increased risk of leukemia, and respiratory and skin cancers in decades following exposure.

How may exposure to these agents affect reproductive health of Gulf War veterans?

OP nerve agents, including pesticides and chemical warfare agents, are not considered to be teratogenic agents. Although mustard agents are considered to be likely human carcinogens, current information is not sufficient to conclude that they have human reproductive health effects, especially following exposure to males.

Is there a test to verify exposure?

OP and mustard chemical weapon nerve and blister agents are rapidly metabolized and excreted from the body, and metabolites indicating exposure can be detected in urine in hours following exposure. Metabolism and excretion of these compounds will be complete within days of an exposure in cases where the individual survives the initial exposure.

NOTE: Consequently, there is no test available today that can confirm exposure to these chemical warfare agents that may have occurred several months or years in the past.

What have independent review groups concluded about the risks?

A number of independent scientific groups have reviewed the potential health impacts from exposure to chemical warfare agents during Gulf War I. There are numerous references available (see reference section) that will provide more valuable information concerning chemical warfare agents.

STUDIES OF IMPORTANCE

The Presidential Advisory Committee on Gulf War Veterans' Illnesses (PAC) concluded in their 1996 report that "[b]ased on available data, it is unlikely the health effects reported by Gulf War veterans today are the result of exposure to OP or mustard CW agents during the Gulf War."

The Defense Science Board Task Force on Persian Gulf War Health Effects (DSB) concluded in their 1994 report that " . . . there is no indication from research that there would be chronic sequelae from low level exposure even if it had occurred."

The Institute of Medicine 1996 report "Health Consequences of Service During the Persian Gulf War" (IOM) concluded that " . . . there is no available evidence in human or animal studies to date that exposure to nerve agents at low levels that do not produce any detectable acute clinical or physiological manifestations results in any chronic or long-term adverse health effects."

NOTE: Nevertheless, it is important to note that all of these independent review groups caution that we do not have a great deal of information to base conclusions about long-term effects of exposure to low-levels of chemical warfare agents, and that further research may be justified.

Injuries Associated with Pesticide Agents

Objectives

List the pesticides our service members might be exposed to while on deployment;

Describe the difference in exposure to pesticides from Gulf War I to Gulf War II;

Explain how pesticides are absorbed into and eliminated from the body;

List the signs and symptoms of exposure to pesticides;

Explain how exposure to pesticides may affect reproductive health;

Identify the way veterans can be tested to verify if they were exposed to pesticides;

Describe the long-term injuries from exposure to pesticides and how VA will treat them; and

List the other available resources for information on pesticides and injuries associated with their use.

Pesticides - What are they?

Pesticides are products containing chemicals that are designed to prevent, destroy, repel, or reduce pests.

In the U.S., pesticides are mainly regulated by the U.S. Environmental Protection Agency (EPA). The EPA is charged with evaluating the safety of pesticides before they can be marketed and used in the U.S., and to ensure that they will **NOT** pose unreasonable adverse effects to human health and the environment. The EPA grants those pesticides that meet their requirements a license or "registration" which permits their distribution, sale, and use. In general, pesticides are regulated and licensed for specific uses, such as with a specific crop, by a licensed applicator.

Some pesticides are considered sufficiently safe to be licensed for essentially unrestricted use in the U.S. for home and personal protection. Such pesticides are commonly available at garden stores and even supermarkets.

In 1991 during Gulf War I, DoD shipped a variety of pesticides to protect U.S. service members from endemic pests. These included carbaryl (Sevin®), chlorpyrifos (Dursban®), DEET (for example OFF® and Cutters®), diazanon, dichlorvos (Vapona®), lindane, Malathion, methomyl (Lannate®), permethrin, propoxur (Baygon®), pyrethroids, and rodenticide baits.

These pesticides represent four major pesticide categories, including organophosphorus (OP), methyl carbamate (MC), organochlorine (i.e., lindane), and pyrethroid (i.e., permethrin). The insect repellent DEET is unique in that it is not part of a broader chemical class of pesticides.

At the time of Gulf War I, all of these specific pesticide products were each registered by the EPA for general unrestricted use by private citizens in the U.S., that is, anyone could purchase these materials for home use without restrictions. The EPA made this determination based on scientific studies demonstrating that these pesticides can be used without posing unreasonable risks to people or the environment.

Most of these pesticides are still readily available today. However, chlorpyrifos (Dursban®) was removed from general household use by the EPA in June 2000. This decision was based on acute toxicity health risk concerns, particularly to exposed children.

There have been anecdotal reports of pesticides that may have been purchased locally in the Gulf War I Theater. The potential significance of these anecdotes is difficult to evaluate today, more than 12 years after Gulf War I.

How might Gulf War I veterans have been exposed?

U.S. service members may have been exposed to any of the pesticides shipped to the Gulf during Gulf War I in the same manner that civilians in the U.S. may be exposed.

Even careful conventional use of these pesticides will result in some small exposure to those using the products, or those in the immediate vicinity, although the health risks in such normal use are considered to be negligible. That is why these pesticides are considered safe for unrestricted home use.

Most of these products are used as sprays, which can result in exposure from inhalation of vapors, or from skin contact and absorption.

Contrary to some reports, military clothing was not pretreated with insect repellents prior to shipment.

According to DoD policy at the time of Gulf War I, most U.S. service members had access ONLY to permethrin in a spray can for treating clothing, and DEET liquid or stick for personal protection against mosquitoes and flies. Unrestricted use or even potential misuse of these two

pesticides would have resulted in exposure by those using the materials, and possibly those in the immediate vicinity where they were used.

According to DoD, all the other pesticides shipped to Gulf War I were to be used only by specifically trained personnel, or for special applications. For example, in Gulf War I, lindane was reportedly used as a delousing agent for Iraqi prisoners of war.

Other pesticides were used for sanitation or insect control purposes (e.g., Malathion and Dursban®(chlorpyrifos)) at military facilities.

Personnel involved with applying these materials and those in the immediate vicinity would have had some exposure to them, although exposure levels under these controlled conditions would presumably be quite small.

How are pesticides absorbed and eliminated from the body?

Most of these pesticides are applied as sprays. Any material used as a spray can enter the body through breathing the aerosolized and vapor form of the material. DEET applied as a liquid or stick to the skin can enter the body by absorption through the skin.

Most Gulf War I service members would be most likely to have pesticides enter their bodies through accidental breathing of vapors produced from spray application of the insecticide, but absorption from skin contact during application operations may also have occurred.

In general, once these pesticides enter the body, they are quickly metabolized (broken down) in the body and excreted in urine and feces. Their rapid metabolism and excretion from the body is one reason why this group of pesticides is considered to be sufficiently safe for unrestricted use in the United States.

Lindane, the only organochlorine pesticide in this group, is metabolized and excreted relatively more slowly than the other non-organochlorine pesticides.

What are the signs and symptoms of exposure?

As a class, the organophosphorus (OP) pesticides cause inhibition of the enzyme acetylcholineesterase (AChE), just like the OP military nerve agents described earlier. AChE is crucial to normal nerve and nerve/muscle functioning.

Inhibition of AChE by OP pesticides is generally irreversible, and complete recovery involves the body's production of new enzyme over a period of days or weeks. In contrast, inhibition by methyl carbamate pesticides is a reversible process.

Thus, acute (immediate) cholinergic poisoning symptoms usually develop within hours of exposure, and include miosis, headache, nausea, dizziness, anxiety, and restlessness.

Life-threatening symptoms from acute cholinergic poisoning may include muscle fasciculation, weakness, tremor, uncoordination, vomiting, abdominal cramps, diarrhea, sweating, salivation, and excessive tearing, and death can occur by respiratory paralysis.

Acute cholinergic poisoning by more toxic OP pesticides is a serious health issue. Recently, the EPA restricted the use of Dursban® (chlorpyrifos); one of the OP pesticides used in Gulf War I, to trained applicators only, based on concerns about excessive acute toxicity risks. Previously, and during Gulf War I, Dursban® had been approved for unrestricted home use.

Some patients who survive severe acute OP poisoning show subtle, chronic neurological abnormalities that can be detected using standardized neurological tests. These effects can remain for months or perhaps even years following the acute poisoning event.

For example, subtle deficiencies are reported for survivors of acute OP poisoning in tests for intellectual functioning, academic skills, abstraction and flexibility of thinking, and simple motor skills.

However, according to DoD, in-theater medical personnel did not report any acute symptoms in Gulf War I service personnel consistent with acute cholinergic poisoning that would be caused by either OP pesticides or related chemical warfare agents.

Although a few OP pesticides are known to cause delayed neuropathies (or polyneuropathies) following recovery from acute cholinergic poisoning, none of the OP pesticides used in Gulf War I are considered normally to cause such effects.

The methyl carbamate (MC) pesticides cause reversible inhibition of the enzyme AChE, and acute poisoning results in symptoms that are very similar to that seen with OP pesticides, but with shorter duration. Acute MC poisoning has not been associated with chronic neurologic effects.

Permethrin has very low human toxicity. This is a major reason why it is licensed by EPA for unrestricted use in personal care products such as shampoos and lotions, or for treating clothing. There are few reported human poisonings from this pesticide.

DEET, introduced as an insect repellent in the 1950s, remains widely used in the U.S. today in brands such as OFF® and Cutters®.

According to EPA, there are 225 DEET registered repellent products to be applied directly to the skin and clothing in various forms including aerosol and non-aerosol sprays, creams, lotions, sticks, foams, and towelettes.

DEET generally is of low acute toxicity, and based on the available toxicological data, the EPA reports that the normal use of DEET does not present a health concern to the general U.S. population.

Although DEET's use has been implicated in causing seizures among children, the EPA reports that the data are insufficient to establish DEET as the cause of the reported effects. However, because of DEET's unusual use pattern (direct application to human skin and clothing) and its possible association with seizure incidents, the EPA considers it prudent to require clear, common sense use directions and improved label warnings with restrictions on all DEET product labels.

How may exposure to these pesticides affect reproductive health of Gulf War I veterans?

In general, the EPA requires information from manufacturers demonstrating a pesticide does not cause birth defects or other reproductive and developmental toxic effects to allow licensing it for unrestricted general use by the U.S. public.

As pesticide classes, the OP, MC, permethrin, and DEET are not considered to be teratogenic in laboratory animals. The risk of birth defects in children of men who were exposed to any agents prior to conception of the child is clearly much lower than to women or to men within months of conception, only about 7 percent of veterans from Gulf War I were women.

Finally, it seems likely that overall pesticide exposure by U.S. service members during Gulf War I would have been similar to pesticide exposure to a similar group of U.S. civilians who remained in the United States.

Thus, it appears unlikely that birth defects in offspring of Gulf War I veterans are related to pesticide exposures that occurred during the war.

Is there a test to determine exposure?

All of these pesticides, including the organochlorine agent lindane, are rapidly metabolized and excreted following exposure.

NOTE: Therefore, there is no test available today that can detect an exposure to any of these pesticides that may have occurred in 1991.

Furthermore, all these pesticides are widely used within the U.S., and essentially all Americans are likely to have some exposure.

NOTE: Consequently, even if a test for exposure were available it would be difficult to distinguish exposures that may have occurred during Gulf War I from exposures that may have occurred after returning to the United States.

What have independent review groups concluded about the risks?

Several scientific review committees have also reviewed the health consequences of possible exposure to pesticides by U.S. service members during Gulf War I. There are numerous references available (see reference section) that will provide more valuable information concerning pesticides.

STUDIES OF IMPORTANCE

The Presidential Advisory Committee on Gulf War Veterans' Illness concluded in their 1996 report that "it is unlikely that health effects and symptoms reported today by Gulf War veterans are the result of exposures to pesticides during the Gulf War."

The 1996 IOM report concluded that "[in] general, it appears that the average personal usage of the pesticides available in the PGW Theater of operations was low and unlikely to be associated with induction of chronic disease."

In addition to these reports, the 1994 NIH Technology Assessment Workshop Statement concluded that "chronic responses to OP are considered unlikely because of the absence of reported polyneuropathies among the examined veterans."

Lastly, the 1994 Defense Science Board report concluded " . . . there were no reports of acute pesticide poisoning during the war. If continued analysis of the VA registry indicates a higher incidence of neurophysical disorders in those veterans whose duties included routine application of pesticides, pesticide exposure may come under closer scrutiny as an etiological factor for other participants." However, neurophysiologic diagnoses do not appear to be unusual in VA's registry data.

Injuries Associated with Biological Warfare Agents

Objectives

List the agents that might be involved in biological warfare;

Explain the symptoms of biological warfare agents;

Explain how clinicians can prevent the spread of pathogens within their medical centers; and

List the long-term issues associated with biological warfare.

Introduction

VA clinicians have to recognize that mass exposures to biological agents are possible in the battlefield. When patients are admitted to a VA hospital, the clinician may already know the etiology of the exposures because of treatment rendered on the battlefield. However, combat injuries may send a soldier to the hospital and, due to the incubation period of some of these agents, symptoms may only begin to develop once hospitalized. All staff need to be aware of these possibilities so they can recognize illnesses due to these agents and take action when needed.

Post-deployment health care needs related to possible exposure of biological warfare agents are a major concern for the VA and the Department of Defense. This section is important and valuable for those that will treat our service members. Information will be presented on agents such as anthrax, smallpox, plague, botulism, tularemia, and viral hemorrhagic fevers. With the release of any biological agent, a diagnostic and treatment continuum is of value for medical personnel. The continuum includes:

1. Clinical Presentation
2. Diagnosis
3. Treatment
4. Infection Control
5. Long-Term Issues

Key points about biological warfare agents related to the continuum are:

- Mass exposures are possible in the battlefield
- Etiology may be known upon admission to VA facilities
- Primary diagnostic work-up likely not required but initial presentation after admission is possible due to longer incubation periods of some agents
- Possibility exists of organisms with altered toxic profile

Categories of Biological Warfare Agents

The Center for Disease Control categorizes biological agents into three categories, A, B and C (Table 1). This section will focus on only Category "A" agents. The Category "A" agents are important because they are easily disseminated, easily transmitted, they have a high mortality rate and high social disruption potential. The Category "A" agents are: anthrax, botulism, plague, smallpox, tularemia, and viral hemorrhagic fever.

Since these agents have catastrophic potential, it is important that all medical personnel understand the need for special preparations related to the treatment of the potential victims. Table 1 below presents the categories of recognized biological warfare agents.

BIOLOGICAL WARFARE AGENTS		
Category A	**Category B**	**Category C**
Anthrax	Brucellosis	Hantavirus
Botulism	Foodborne/Waterborne (e.g. Salmonella)	Multidrug-resistant Tuberculosis
Plague	Q Fever	Nipah Virus
Smallpox	Staphylococcal Enterotoxin B	Tickborne Hemorrhagic Fever
Tularemia	Viral Encephalitis	Yellow Fever
Viral Hemorrhagic Fever		

Table 1

Anthrax

- *Bacillus anthracis (B. anthracis):* gram-positive spore-forming rod, spore and vegetative forms
- Found in soil or herding animals
- Industrial exposure (hides, wool handlers)
- Spores can be long-lived
- No person-to-person transmission

Figure 1 is anthrax shown under an electron microscope. Figures 2 and 3 are light microscopic views of anthrax.

Figure 1

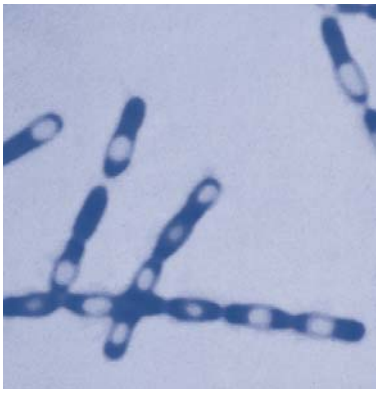

Figure 2

Figure 3

Anthrax is a bacterial infection, which presents in several major forms: predominantly skin (cutaneous) and inhalational. The person who is infected with cutaneous anthrax will develop a sore that progresses to a very classic black eschar (scab). A clinician, who sees a patient with a skin wound that has a black eschar, should assume the patient has skin anthrax until proven otherwise.

The more serious form of anthrax is inhalational, that is, it is breathed into the lungs. The organism is deposited deep into the lung. The patient may present with a fever, but then rapidly progresses to other symptoms associated with inhalational anthrax. This patient needs rapid intensive intervention.

Cutaneous Anthrax

Cutaneous anthrax infects the body by entering through unintact skin, or broken skin. The information listed below outlines some of the manifestations of the disease.

- *B. anthracis* enters through unintact skin
- Incubation 1-12 days
- Small papule forms in 1-2 days that progresses to a vesicle
- The vesicle progresses to a necrotic ulcer that forms with a black eschar
- The lesion is painless with surrounding edema
- Fever, headache, malaise, and regional lymphadenopathy may be present

Figures 4-9 illustrate the stages of presentation associated with cutaneous anthrax. Figure 4 shows an early cutaneous anthrax lesion at the vesicular stage. Figure 5 shows the surrounding edema and early diagnostic black eschar. Figures 6 and 7 shows the progression of a lesion on the neck, again, note the diagnostic black eschar. Figure 8 shows evidence of regional lymphadenopathy. Figure 9 shows the diagnostic black eschar.

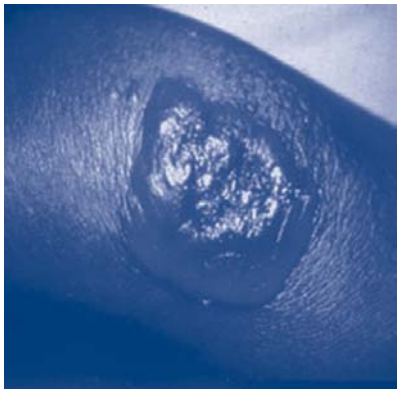

Figure 4

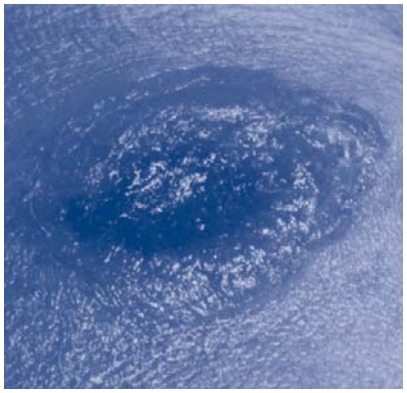

Figure 5

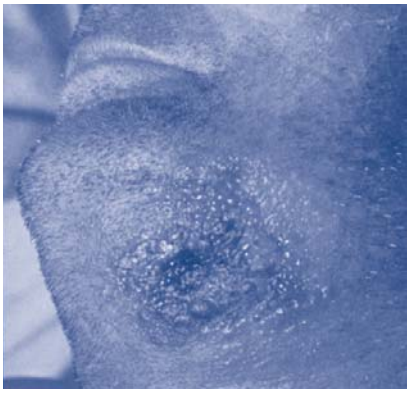

Figure 6

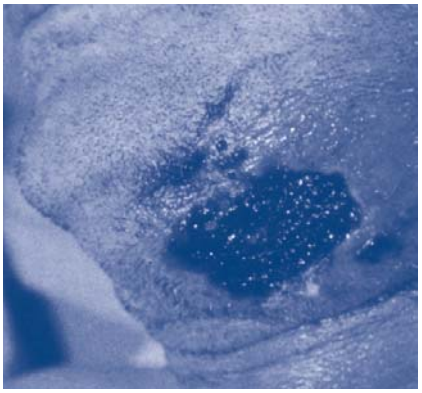

Figure 7

Figure 8

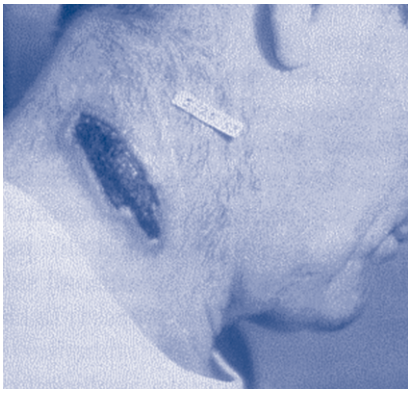

Figure 9

Inhalation Anthrax

Inhalational anthrax is the most serious form of anthrax. It is a fulminating, toxic illness associated with fever, systemic symptoms associate with radiologic findings of mediastinal widening, without pneumonia. The information below outlines the manifestations of inhalational anthrax.

Pathogenesis of Inhalation Anthrax

- *B. anthracis* spores are deposited in terminal bronchioles and alveoli
- Spores are ingested by macrophages that migrate to peribronchia/mediastinal lymph nodes
- Spores incubate, become vegetative (in approximately 10 d)
- The vegetative form of *B. anthracis* produces toxin that causes all the damage

Clinical Findings of Inhalation Anthrax

- Fever, fatigue, chest pain, non-productive cough
- Hemorrhagic mediastinitis evident on CXR/CT/MRI after 1-3 days
- Abrupt onset of severe respiratory distress
- Septic shock and death 1-3 days later
- Meningitis and plural effusions are possible findings
- CXR/CT/MRI Findings (at this stage)
  - Widened mediastinum, pleural effusion
  - Pulmonary infiltrates possible, but maybe not

According to Inglesby, et al., in the May 1, 2002 edition of JAMA, the following are the signs, symptoms, and findings associated with the anthrax attacks in the U.S. after September 11, 2001.

Signs and Symptoms in 10 cases:

- Fever/chills 10/10
- Nonproductive cough 9/10
- Dyspnea 8/10
- Myalgia 6/10
- Abdominal pain 3/10
- Rhinorhea 1/10
- Fatigue/malaise 10/10
- Nausea/vomiting 9/10
- Chest pain 7/10
- Headache 5/10
- Sore throat 2/10

Lab and X-ray Findings in 10 cases:

- WBC normal to slight elevation with left shift frequent
- Transaminases >40 u/l 9/10
- CXR 10/10 abnormal
  - Pleural effusions 8/10
  - Pulmonary infiltrates/consolidation 7/10
  - Mediastinal widening 7/10
- CT 8/8 cases abnormal
  - Mediastinal widening 7/8
  - Pleural effusion 8/8

Anthrax and Biological Warfare Prophylaxis and Treatment

Anthrax has already been used as a biological terror agent and could be used against the troops in "Operation Iraqi Freedom" and the people of the United States.

In the aftermath of the September 11, 2001 terrorist attack, there were several actual attacks and many false attacks with anthrax. If there is a documented attack using anthrax, many troops might be in the area and thus, prophylaxis will be required. Those with documented exposure, but without clinical symptoms consistent with the disease of anthrax should receive chemoprophylaxis to prevent development of disease.

Documented Exposure (from proven source or shared environment with proven case)

- Ciprofloxacin or Doxycycline for 60 days
- Prophylaxis is NOT indicated for those without exposure to a documented case or reservoir of *B. anthracis.*

Anthrax Treatment

The recommended treatment for documented infection with *B. anthracis* consists of the following:

- Cutaneous: Oral ciprofloxacin x 60d
- Inhalation: Early empiric treatment (high index of suspicion, clinically compatible scenario)
  - combination antibiotics – then based on in vitro activity using IV ciprofloxacin or doxycycline + 1 or 2 additional antibiotics (rifampin, vancomycin, penicillin, ampicillin, chloramphenicol, imipenem, clindamycin, clarithromycin)
- Switch to oral ciprofloxacin or doxycycline when appropriate

- Total treatment – 60 days
- Expect need for drainage of pleural effusions

Infection Control

Neither cutaneous nor inhalation anthrax are transmitted person-to-person so normal hospital infection control procedures are adequate. The following is the recommended control procedures:

- No need for isolation – no person-to-person transmission
- Standard barrier precautions
- High-efficiency particulate air filter masks are not indicated
- No need to prophylax patient contacts (unless they had similar exposure as patient)

Long Term Issues of Anthrax

- Cutaneous – not much
- Pulmonic – probable need for long-term recovery period due to extensive tissue damage by toxins and systemic disease
- Difficult decontamination of source areas – thus, potential for prolonged exposure

Botulinum Toxin

Botulism is an intoxication by botulinum toxin, a highly lethal toxin that can be put in food, liquids, or aerosolized. It causes an acute afebrile illness (i.e., the patient is sick, but without a fever). Intoxication with botulinum toxin starts with cranial nerve palsies and can progress to respiratory muscle paralysis where a patient may need artificial ventilation for a period of weeks to months. It is a very intensive process.

General Information on Botulinum Toxin:

- Easy to produce or acquire in large quantities
- Highly lethal via aerosol or food
- Incubation of clinical manifestations:
  - 2 hrs – 8 days (foodborne)
  - 12 – 80 hrs (inhalation – experimental)
- Action: Blocks cholinergic synapses

Clinical Information

- Acute, afebrile, symmetric, descending flaccid paralysis
- Multiple cranial nerve palsies (ptosis, diplopia, blurred vision, enlarged/sluggish pupils, dysarthria, dysphonia, dysphagia)
- Dry mouth/injected pharynx
- Progressive loss of gag reflex and respiratory muscle activity
- Artificial ventilatory support may be required for long periods

Botulinum Intoxication – Primarily a Clinical Diagnosis

- Toxin assay (reference lab)

Treatment

- Mostly supportive
  - Ventilator support (weeks to months may be required)
  - Botulinum antitoxin – equine, as early as possible to retard or arrest progression

Prophylaxis

- None until symptoms develop

Infection control for patients with exposure to botulinum toxin requires no special requirements or isolation. Standard precautions need to be provided as a routine since this is a biological infection. Human-to-human transmission is not of concern; decontamination is accomplished by removal of exposed materials or clothes and washing.

Plague

Yersinia pestis (*Y. pestis*) is the organism that causes plague. Plague can present in two main ways: bubonic plague - where a person gets bitten by an infected insect, is exposed to *Y. pestis,* and presents with regional infection manifested by a large swollen lymph node, called a bubo (Figure 10). However, the more serious form is pneumonic plague, where an individual breathes in the organisms (Figure 11 – micrograph of *Y. pestis* organisms) and presents with a nonspecific febrile illness that progresses rapidly to pneumonia, septic shock, disseminated intravascular coagulation (DIC), and death. The pneumonic plague is a highly contagious condition in the hospital setting.

Figure 10

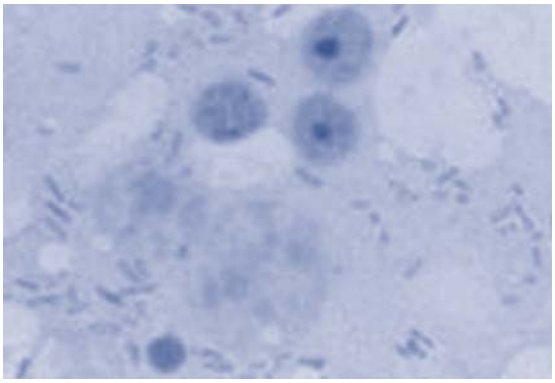

Figure 11

Bubonic Plague

- vector-borne
  - adenopathy (bubo)

Pneumonic Plague - most likely form of attack. Clinical Presentation:

- Chills, fever, weakness, head ache, malaise, cough, nausea/vomiting
- Fulminant pneumonia, bloody sputum
- Septic shock, DIC, purpura, gangrene
- Rapid progression – exposure to death 2-6 d
- High mortality, but may respond to early treatment

Plague Treatment

- Rapid initiation of antibiotic treatment is required:
  - Streptomycin IM or Gentamicin IV/IM or
  - Doxycycline, ciprofloxacin, chloramphenicol (all IV)
  - Change to PO when indicated

- In Mass Casualty Settings:
  - Doxycycline, ciprofloxacin, chloramphenicol PO
- All therapy continued for 10 days

Prophylaxis

- When exposure is confirmed:
  - IV antibiotics for anyone with T >38.5C or cough
  - PO antibiotics for symptoms after mass exposure
  - For asymptomatic exposures or close contacts of proven cases:
- Doxycycline, ciprofloxacin, chloramphenicol x 7 days PO

Infection Control

Plague infection control issues are very important because this organism is transmitted via respiratory droplets. Standard respiratory droplet precautions are required of hospital workers using surgical masks, gowns, gloves, and eye protection. Patients should be isolated for up to 48 hours after antibiotics are administered for this infection. Inpatients who have been diagnosed with plague who are in the hospital and are being transferred around the hospital should also wear surgical masks to prevent infection of other hospital workers.

In addition, mortuary workers and other hospital personnel should be advised of the diagnosis of plague. It is important to emphasize for those in whom exposure to aerosolized *Y. pestis* has been confirmed, prophylaxis should be instituted as soon as possible. Anyone who has been exposed, who has a fever or cough should be treated as if they have plague and get appropriate IV antibiotics and clinical monitoring. In addition, for close contacts of cases, they can also receive oral antibiotics for seven days.

- Transmission via respiratory droplets
- Standard respiratory droplet precautions (surgical masks, gowns, gloves, eye protection)
- Patient isolation 48 hrs after initiation of antibiotics
- Patients in transit should wear surgical masks
- Mortuary workers should be advised about diagnosis in order to take appropriate precautions
- No spore formation – thus, no unusual environmental decontamination needed

Plague Complications

Patients are also likely to need treatment for complications such as:

- Gram-negative sepsis
- ARDS
- DIC
- Shock
- Multi-organ failure

Smallpox

Smallpox is a disease that is easily transmissible person-to-person. It presents as a nonspecific viral syndrome with fever, headache, fatigue, and malaise that progresses to a characteristic rash. It is a very highly contagious disease, particularly in the rash stage (Figures 12, 13, and 14).

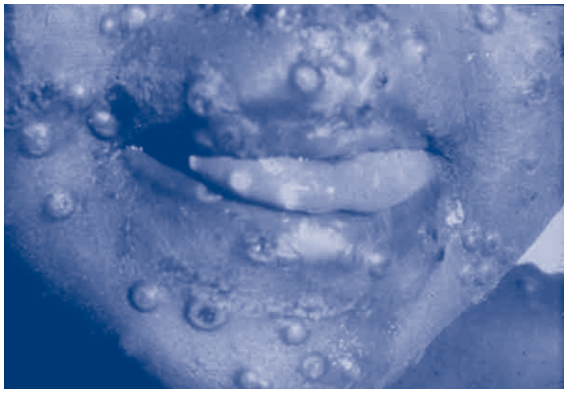

Figure 12

Figure 13

Figure 14

The clinical manifestations of smallpox (variola) have some similarities and important differences with chickenpox (varicella). The similarities and differences are summarized in Table 2 (top of next page).

Smallpox vs. Chickenpox		
	Variola (Smallpox)	Varicella (Chickenpox)
Incubation	7-17 days	14-21 days
Prodrome	2-4 days	Minimal/none
Distribution*	Centrifugal	Centripetal
Progression*	Synchronous	Asynchronous
Scab formation	10-14 d p rash	4-7 d rash
Scab separation	14-28 d p rash	<14 d rash

* denotes important differences

Table 2

Smallpox presents in the following manner:

- Incubation ~ 12 days (7-17)
- Early symptoms are nonspecific: fever, headache, backache, vomiting, malaise, aches for 2-4 days
- Rash appears 2-3 days later
  - centrifugal pattern
  - synchronous emergence and progression from maculopapules to vesicles to pustules
  - scabs over in 1-2 weeks
- Mortality ~ 30% - due to toxemia
- Laboratory diagnosis not required after index cases are confirmed (BL-4 Lab required)

Smallpox Treatment

There is no known treatment for smallpox. Medical personnel will need to provide supportive measures, and isolate the patient to prevent further infections. This is important, because transmission occurs primarily after rash appears. As part of this treatment, consider isolation at non-hospital facilities. Antivirals are under investigation as a treatment, and antibiotic prescriptions may be used for secondary bacterial infections.

Infection Control

Infection control for smallpox has to take immediate priority once it has been determined that there is a patient with smallpox. Infection control involves appropriate isolation and vaccination of contacts. The smallpox

vaccine is likely effective in preventing appearance of smallpox if given within 3-4 days of exposure. The following procedures make up this response:

- ACTIVATE FACILITY SMALLPOX HEALTH CARE RESPONSE TEAM
- Initiate smallpox vaccination of all hospital workers (include housekeeping, mortuary workers, etc)
  - Vaccinate all close contacts of index case(s)
- Patients should be kept in respiratory isolation: aerosols and pustules are infectious
- Keep isolated for 7-10 days after onset of rash
- Bedding & equipment – autoclave, destroy, or launder with hot water/bleach

Tularemia

Tularemia is a bacterial infection caused by *Francisella tularensis* (*F. tularensis*) that presents as a febrile illness with a wide array of clinical manifestations depending on where the bacteria enters the body. Tularemia can present as a systemic infection, as an oral or mouth or throat infection, a skin infection, or pulmonary infection, and can be slower to present than plague or anthrax. The clinical presentation of tularemia is similar to Q Fever (caused by *Coxiella burnetti*) and distinguishing between the two may be difficult without laboratory confirmation.

Tularemia Infection Features

- *F. tularensis:* small, non-motile, aerobic, gram-negative *coccobacillus*
- One of the most infectious pathogens known – inhalation of as few as 10 organisms can cause disease
- Occurs widely, recovered from soil/water and vegetation
- Vectors mostly small mammals (moles, mice, rats, rabbits)
- Humans become infected naturally by bites from flees/ticks, from infected animals or exposure to animal tissue, fluids, or aerosols
- Between 1985-1992, 1409 cases reported in U.S. with 20 deaths
- No person-to-person transmission

Tularemia Clinical Presentation

- Sudden onset of non-specific febrile illness
- Forms: Ulceroglandular, glandular, oculoglandular, oropharyngeal, pneumonic, typhoidal, and septic
  - In pneumonic tularemia, pharyngitis, bronchiolitis, pneumonitis, pleuritis, hilar lymphadenitits are common
  - Pulse/temperature dissociation is common

Tularemia – Diagnosis

- Rapid diagnostic testing is not available
- Gram stain or DFA are used on secretions, or biopsy specimens
- Definitive Diagnosis: Growth of *F. tularensis* from culture of pharyngeal washings/sputum or other infected fluids confirms diagnosis

Treatment

- Streptomycin IM or gentamicin IM or IV or ciprofloxacin IV (10d), doxycycline, chloramphenicol IV (14-21 d)
- In mass casualty setting and in prophylaxis:
  - Doxycycline PO 100mg BID x 14 days
  - Ciprofloxacin PO 500 mg BID x 14 days
- Vaccination: a live attenuated vaccine is under review by FDA

Infection Control

- No person-to-person transmission
- Standard precautions for hospital, labs, linens, housekeeping, and mortuary workers
- Standard precautions for environmental decontamination and protection

Viral Hemorrhagic Fevers (VHF)

Viral hemorrhagic fevers (VHF) are actually a collection of several viruses (Ebola, Lassa, Marburg, Rift Valley Fever (Rift VF), New World Congo-Crimean Hemorrhagic Fever virus, and New World Arenaviridae (NWA)), all of which present as a severe febrile illness, where coagulation problems are the predominate clinical sequelae. Because of frequent bleeding, the viral

hemorrhagic fever viruses are also very contagious in the hospital setting. Thus, strict blood and body fluid precautions are needed to maximize infection control. VHF's have an incubation period of 4-21 days, with a mortality rate that varies from 10-90%.

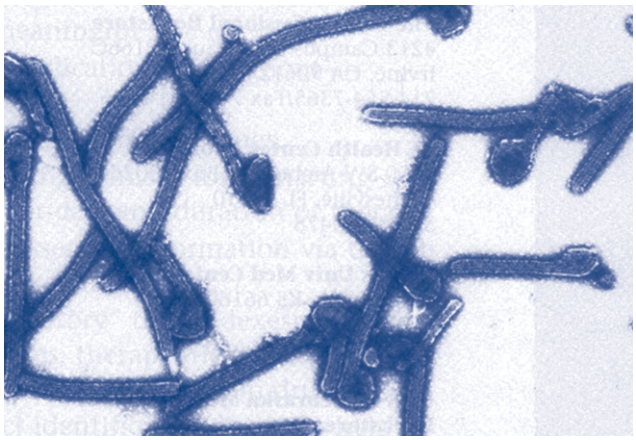

Figure 15

Figure 15 is an example of a VHF (ebola virus).

VHF Diagnostic Criteria: Diagnosis requires high index of suspicion and viral isolation at CDC or USAMRIID.

- Temperature >38.3C of <3 wks
- Severe illness
- 2 symptoms: epistaxis, hemorrhagic rash, hematemesis, hemoptysis, bloody stool
- No predisposition for hemorrhagic disease

Treatment

- Primarily supportive
- Ribavirin x 10 d (only for Lassa, NWA, Rift VF)
- Prophylaxis: None proven effective
- If symptoms in exposed individual develop (T >38.3C) within 21 days – treat as active case

Infection Control

Infection control procedures for patients with the viral hemorrhagic fevers are important. There are numerous infection control procedures that MUST be adhered to. The quality of the infection control program will keep the infection level low, or non-existent.

- VHFs are highly infectious via blood/bodily secretions
- Isolation and barrier precautions required:
  - Strict hand hygiene, double gloves
  - Impermeable gowns, coverings
  - N-95 masks or PAPRs
  - Face shields/goggles
- Required for health care workers and housekeeping, mortuary staff, etc
- Patients in isolation rooms

- Negative air pressure rooms thru HEPA filter
- Restricted access by non-essential staff/visitors
- Patients with same diagnosis can be roomed together
- Patients with Ebola, Marburg, Lassa, NWA – no sexual activity for 90 days after recovery

Long-Term Issues Associated With the Use of Biological Warfare Agents

The long-term sequelae of the use of biological warfare agents must also be considered. They include:

- Psychological Impact & PTSD – HUGE long term issue (Hyams, et al., 2002)
- Long Term Health Impact of Those Exposed
- Worried Well Phenomenon
- Public Communications

The Department of Veterans Affairs Employee Education System, with the Office of Public Health and Environmental Hazards has produced a Veterans Health Initiative "Endemic Infectious Diseases of Southwest Asia" that is comprehensive in nature, and is a valuable resource to support the information contained in this section. The VHI can be accessed at: http://www.va.gov/vhi.

Injuries Associated with Radiological Warfare

Objectives

Describe a scenario in which troops might be exposed to radiological material;

Explain the key points regarding radiological exposure;

Define the special situations that might involve VAMC staff when working with battlefield casualties; and

List the dangers of radioactivity related to depleted uranium.

Introduction

The intelligence on whether Iraq has nuclear weapons is uncertain, but that does not rule out the possible use of a radiological dispersant device or “dirty bomb”. The scenario for use of one of these dirty bombs is uncertain, however the possibility exists that this could happen.

The radiological dispersant device or “dirty bomb” is comprised of radioactive material, and a conventional bomb. The “dirty” term is derived from exploding the bomb, and spreading the contaminating radioactive material around the surrounding area. Even though the possibility is low that Iraq has a nuclear weapon, it should be kept in mind as a potential source of radioactivity as well.

An important concept to understand is the difference between exposure and contamination. A soldier who encounters a piece of radioactive material in the desert will experience exposure. The soldier will be irradiated and receive irradiation. A soldier who is contaminated would have radioactive material in or on his/her body. If the service personnel was involved in an explosion where radioactive material enters the body, (e.g., ingested, inhaled, or by wound contamination), they would be contaminated.

The exposure level is hard to determine if dosemetry device is not worn. When a person is exposed, they are NOT radioactive, they are just exposed.

Exposure to Radiation

The injuries experienced from exposure to radiation vary from burns to death. Figure 1 shows the hands of an individual who was exposed to a high level of radioactivity. This is a radiation burn.

There is no way to tell the difference between a radiation burn and a thermal burn, other than **NOT** being exposed to something that is hot or a flame. Therefore, health care providers need to consider a history when symptoms present as shown in Figure 1.

Figure 1

Individuals may experience different types of radiological exposure such as irradiation (Figure 2), external contamination (Figure 3), and internal contamination (Figure 4). The levels and type of exposure will determine the decontamination and treatment required for the victim.

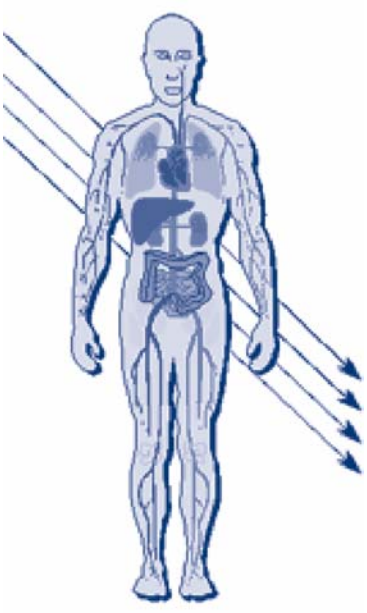

Figure 2

Figure 3

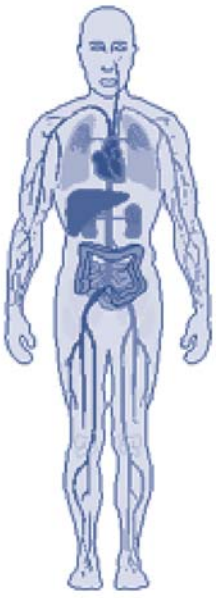

Figure 4

It is important to learn the phases of acute radiation syndrome, and what they do to the victim. Figure 5 depicts the levels of exposure, and the potential damage to the victim. Figure 6 lists the Units of Measurement for radiation.

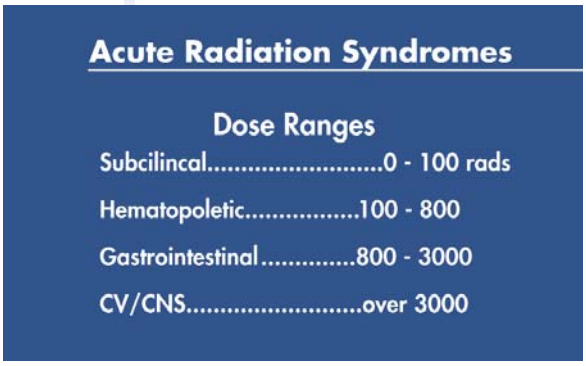

Figure 5

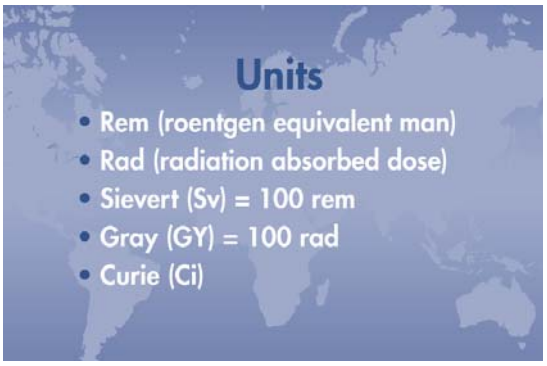

Figure 6

For example, if somebody receives 200 or 300 rads (2 to 3 grays) of radiation, they would suffer the hematological phase of radiation syndrome, which means 30 days after the exposure, the white cells would fall to very dangerous levels. They would then experience infection, and could have bleeding disorders. Also, all of the radiation symptoms might manifest themselves at the time these military personnel are at a VA hospital.

The victim may be internally or externally contaminated. To decontaminate an individual who has external contamination, remove the clothing and thoroughly wash the body; this will remove 95% of the contamination. Internal contamination has three different ways to enter the body: inhalation, ingestion, and direct exposure with entry through a wound. Regardless of entry point, treatment may be necessary. The treatment is discussed in the next portion of this section.

Special Situations for VAMC Staff

Since many of the individuals the VA will receive have been away from the battlefield for a while, the medical personnel need to be aware of the process that the individual has already been through. He/she has been treated for all of the acute injuries, and any kind of radiological injury. However, the important thing is to take care of the surgical emergency first. As a health care provider, if you are worried about the radiation and the patient's bleeding to death, you are not going to help him or her.

However, if the victim comes back to the VA and still has small amounts of embedded material inside a surgical wound, which is now being dressed or closed, the patient has to be taken back to the operating room. A surgeon, a nuclear medical physician, and a health physicist (who will be there with a meter to measure the radioactivity as the surgeon is debriding the wound), will determine if the radioactivity has been removed. This scenario is a possibility at one of the VAMCs.

Another special situation might be if an individual ingests or inhales cesium. If still in the body, there are a number of methods to remove the radioactivity. A publication called NCRP Report Number 65, has information on all the various isotopes and how to treat the victim. Two examples; cesium that is ingested can be treated with Prussian Blue, an oral medication. Prussian Blue is not commercially available without calling Oak Ridge React/TS Facility in Oak Ridge, Tennessee. In addition, iodine, also an oral medication, is used to block the thyroid with stable iodine isotope to prevent uptake of the radioactive iodine. This particular blocking must be done at or shortly after the time of exposure. The victim cannot wait to be transported. However, something like the Prussian Blue treatment and all the other treatments described in NCRP Report may be done after the fact.

Depleted Uranium

Depleted uranium is used in many different warfare weapons. Depleted uranium is radioactive, but only slightly. It has very weak alpha emissions. It is not very dangerous as a radioactive agent, it is however, more dangerous as a heavy metal. In addition, the danger to a returning soldier who is contaminated with depleted uranium is the danger of heavy metal. It is important to remove as much of the depleted uranium from the body as feasible, not from a radiological point of view, but a chemical point of view.

The most important thing clinicians should know about radioactive weapons, is that they are easier to deal with, than chemical or biological weapons. Every hospital has a radiation detector. The ability to measure radioactive contamination in a returning combatant is possible, and the VAMC's have the staff that can remove the contamination if necessary. There are fears, with "radiation", but it is the easiest to deal with.

The VA has produced a comprehensive VHI on Radiation. This VHI has information on depleted uranium. The VHI may be accessed at: http://www.va.gov/vhi.

Combat Effects on Mental Health

Objectives

Describe the lessons learned on how combat effects mental health;

Define Post Traumatic Stress Disorder (PTSD);

Define Acute Stress Disorder (ASD);

Define Combat and Operational Stress Reaction (COSR);

Explain the treatment of Combat and Operational Stress Reaction;

List the health care disciplines within VA that treat mental health issues; and

Describe the model VA uses to treat mental health issues in combat veterans.

Introduction

The Department of Veterans Affairs has been working at regional and national levels to define and roll out its mental health response to receiving acute war casualties.

The VA is a world leader in treating traumatic stress. That skill and experience will serve the VA well in the days ahead.

It is very important that each VAMC/CBOC bring together the full range of partners in the mental health response. These include (but are not limited too):

- Psychiatrists
- Psychologists
- Mental Health Nurses
- Social Workers (mental health settings, and other settings as well)
- Chaplains (many VA chaplains have experience in working with trauma survivors)
- Administrators

- Vet Center Staff
- Volunteers

What have we learned about traumatic stress?

The VA has learned that traumatic stress can present differently in different people and in different conflicts, AND that, given enough stress, anyone can break.

- One out of 5 casualties of WWII was psychiatric
- There seemed to be relatively few acute mental health problems during the Vietnam War, but follow up showed that one third of all combat veterans went on to develop PTSD at some time after the war
  - Half of those Vietnam veterans still had PTSD in the late 1980s
- The best available data show that 10% of combat veterans of Gulf War I have PTSD

What is Post Traumatic Stress Disorder (PTSD)?

PTSD is defined as:

- Intrusive memories, mental images, nightmares, and flashbacks of the stressor;
- Avoidance of reminders and of feelings related to the event;
- This sometimes culminates in severe social and emotional withdrawal;
- Marked trouble falling or staying asleep, a tendency to startle easily, and feelings of panic; and
- By definition, PTSD cannot be diagnosed until 4 weeks after trauma.

What is Acute Stress Disorder (ASD)?

ASD is defined as:

- Involving many of the same intrusive, avoidant, and hyperarousal symptoms associated with PTSD
- At least three of the following dissociative symptoms:
  - A subjective sense of numbing or detachment
  - Absence of emotional responsiveness
  - Dissociative amnesia
- The disturbance lasts for at least 2 days and does not persist beyond 4 weeks after the traumatic stressor

Many in VA are used to dealing with PTSD and ASD, but few have experience with Combat and Operational Stress Reaction (COSR), which may include any of a number of symptoms found in PTSD or ASD, but which may also be limited to:

- dissociation (amnesia, acute confusional states, trance)
- conversion (partial or complete paralysis, blindness, mutism, tremor, etc)
- mixed anxiety states, especially panic attacks

These were once called War Neuroses. They have been a part of every war, and are most often seen at or near the front. War neuroses rarely present in VA settings. The symptoms present differently in different individuals.

> ***NOTE: Because of the way that casualties from the front may now be sent to VAMCs, medical personnel may, indeed see some people with these acute combat responses.***

To get an appreciation of COSR, view “Let There Be Light”, an Army training film that depicts the real-life treatment of these disorders at the end of WWII. The film features real patients and real doctors. It can be obtained from your VA library.

It would be beneficial to identify staff members who are knowledgeable about the management of dissociation and conversion reactions. Hypnosis and sodium amytal treatment have a long record of success in such cases, but these procedures need to be done by experienced people. We have no way of knowing if the problems faced now would be the same as those faced during WWII, but it is safe to say that, while much has changed since the 1940s, people have not.

The mental health effects of combat can present in different phases that may or may not be progressive. A combat veteran can present with acute mutism or hysterical blindness, but not go on to develop ASD or PTSD. Another combat veteran will not show any acute signs of psychological trauma, but will develop delayed onset PTSD months or years after the event. Other veterans will develop:

- Depression
- Substance Abuse
- Mood Disorders
- Schizophrenia

This may be a new disorder for that person or an exacerbation of a pre-existing illness.

One of the most important questions is “Can we prevent chronic illness by acting effectively at the outset?”

Research shows that those who develop peritraumatic dissociation or ASD are more likely to go on to develop PTSD. There is less evidence that early intervention can prevent chronic mental health problems, but it makes good clinical sense to try.

The National Center for PTSD is a valuable source of information for those treating veterans with PTSD. Also, the VA is in the late stages of developing PTSD Clinical Practice Guidelines. These guidelines can be previewed at http://www.guideonline.info/REVIEW/GOL_PTSD/PTSD_TOC.htm.

Additional information on PTSD can be found in the DSM-IV, or in a comprehensive Veterans Health Initiative on PTSD which the VA produced in 2002. The PTSD VHI can be accessed at: http://www.va.gov/vhi.

Mental Health Treatment Model

Keeping in mind that different VAMCs will likely face different demands; a model has been developed that describes the continuum of treatment VA has in place to serve the veterans and their families.

Mental Health Treatment Model - Debriefing

Outcome evaluation studies advise against the use of Critical Incident Stress Debriefing (CISD or, sometimes called CISM), otherwise known as the Mitchell Model. Many people have been trained in CISD and are enthusiastic about using these skills. However, the literature shows that CISD does not prevent PTSD and that being re-exposed to traumatic memories before they are ready may harm some people. This may be especially problematic when applied as single session interventions.

The approach for care should be based on support, normalization of acute responses to trauma, education, identification of appropriate resources, and appropriate triage. Many of these same elements are found in CISD. The important difference is that clinicians should try to avoid re-traumatization by inappropriately re-exposing people to their memories and feelings. Interventions should emphasize good follow up to allow a patient to deal with his or her situation at his or her own rate, and within the context of a reliable therapeutic relationship.

Mental Health Treatment Model - Inpatient Issues

Staff should keep track daily of those patients who could be discharged or transferred out in the event of the need to accept casualties. Beds are tracked nationally.

In some cases, medical center leaders may chose to close entire inpatient psychiatry units and convert them to medical or surgical units. Mental health leaders should be involved in any such planning and should advise top leadership about best options.

One important factor in any such decision is to determine what capacity of beds will be needed to maintain the usual population, or if expecting MH casualties to begin arriving in the future. Regional planning needs to consider the possibility of terrorist attacks at home and the need to maintain capacity for dealing with them.

Many psychiatric wards are neither piped nor wired for even basic medical treatment (oxygen, vacuum, emergency backup power at each bed).

Finally, if the patients are sent to another facility, will a part of the staff need to accompany them to the new facility?

Mental Health Treatment Model - Outpatient Issues

VA clinicians will notice an increase in contacts with existing patients, which will result from the patients viewing the events on the news. This is a basic component of PTSD, but exacerbation under stress can occur in veterans with depression, substance abuse, schizophrenia, and other disorders; especially if that patient is a combat veteran, or perhaps the parent of someone currently in the military.

One measure that proved useful in the immediate aftermath of September 11, 2001, and the 1995 Oklahoma City bombing was to send a letter to the veterans who were enrolled in MH or Vet Center programs. This letter is intended to reassure veterans that the VA is standing by them and is available through the current crisis. Such a letter could be generated by computer and mailed to all veterans with a diagnosis of PTSD, or to all veterans with future MHC appointments.

Letter to Veterans

Dear.....,

Veterans have a special understanding of war and, often, a special sensitivity to news about war. We, the staff of the Mental Health Clinic of your VA Medical Center, are aware that this may be a particularly stressful time for you and your family. We want you to know that we are available to you and that we are standing by to be of help should you need us. Your next scheduled appointment is on [ ] but you can reach us at [ ] if you would like to talk with us sooner. If we can help, please don't hesitate to call.

Sincerely,

Director, Mental Health Clinic

Mental Health Treatment Model - Med/Surg Patients

Many, perhaps even most, combat veterans who go on to develop PTSD, had not been identified as needing mental health intervention in the acute aftermath of combat. It is possible that relatively few returning casualties will be identified as needing acute mental health intervention and that most will be triaged to medical or surgical services. Based on experience in past wars, it would be important to provide basic support and conduct mental health triage on all med/surg casualties.

In doing this, it would be important to emphasize that all clinicians, provide support, answer basic questions, provide education about normal responses to trauma (changes in sleep, dreams, jumpiness, irritability, social withdrawal, etc). Make it clear that these are the normal responses of people living through abnormal events, and identify resources that casualties and their families may find useful now or in the future.

The National Center for PTSD is producing a packet of written materials for patients, families, and staff. One pamphlet will contain basic information about stress responses, warning signs of trouble, and places in the community where people may go to seek more information and help as needed. This information will be posted on VA Web sites as templates into which local VAMC's and Vet Centers can insert appropriate local information.

The staff that does these informal interventions (referred to as "therapy by walking around") might be social workers, nurses, chaplains, or Vet Center staff members. Med/Surg unit nurses and nurse managers are invaluable allies in this process since they know which patients are having trouble sleeping, acting out their dreams, isolating themselves, or are having trouble during or after family visits. All unit staff should be cultivated as partners in this process.

Mental Health Treatment Model - Families

It is not uncommon to see family members in hospital lobbies, lounges, and hallways. However, should large numbers of casualties be brought to VA, it is likely that these members will be younger and that they will have small children with them. They may present in larger numbers than usual and are more likely to be from out of town and have little support in the area. It is important that VAMC staff develop ways of welcoming and engaging these family members.

It might be useful to identify "family rooms" and to provide reading materials (including resource information materials) as well as age appropriate books and toys for children. VA library staff can play a role in selecting and maintaining these materials. Volunteer Services can be of help in finding toys and providing needed day care so that husbands, wives, parents, and older children can have time to visit with casualties without small children in tow.

Among the materials could be informational handouts developed by the National Center for PTSD. These handouts provide basic information about normal psychological responses to combat as well as ways of telling when to consider seeking help from a mental health professional. The literature shows that one of the factors that determines if a patient will develop PTSD is the amount of family support he/she receives. It is reasonable to assume that, by increasing the information that families have about normal responses and helping them know when to ask for help, the VA will be able to improve the level of family support available to the veteran.

Family educational groups should be offered that promote the sharing of information and coping strategies between families. This valuable intervention should be offered at different times of the day.

Mental Health Treatment Model – Small Children and Drop in Centers

VA staff may not be used to making interventions with young children and few child specialists are on staff at VA. There are, however, good resources in many communities who can meet with VA staff and help them develop age appropriate interventions for small children. It would be helpful to identify a play area for children and some volunteer baby-sitting that would allow the parents to deal with other issues.

One useful intervention is a coloring book exercise that brings a parent and child together in a structured activity that allows a child to begin to share responses with that parent. The University of North Carolina at Chapel Hill Department of Psychiatry developed a coloring book for children dealing with war issues. It can be accessed at: http://www.psychiatry.unc.edu/Coloring%20Book%20Project/childtrauma.htm. While this coloring book may need to be modified for children of casualties, it is a good example of materials that can be offered to children and parents at such times.

VAMCs may be able to open “Drop In” areas where visiting family members can always find someone to talk with. They could be staffed by chaplains, nurses, or other staff who would provide informal support, but who would also be ready to triage to other services as appropriate.

Additional Services

Vet Centers - Vet Center staff have a tremendous amount of experience with combat veterans and their families. They may be able to partner with VAMC staff in a variety of ways. At a minimum, VAMC mental health staff should touch base with local Vet Center team leaders to discuss their respective programs for dealing with the current situation and to consider useful collaborations.

Local Community Medical Centers - VAMCs should be aware of which local medical centers may also be receiving casualties (under the provisions of the National Disaster Medical System). Non-VA medical center staff may not have experience or confidence in dealing with combat veterans and it may be helpful to provide basic education and support to colleagues in these other programs. It might be beneficial to agree on how they would seek VA consultation on patients and their families who might need help in dealing with responses to psychological trauma.

American Red Cross - The American Red Cross (ARC) is present in every community across America. VA staff should touch base with local ARC leadership to be sure that information being given out to families of active duty personnel, casualties, and veterans is helpful and consistent with VA communications.

Staff Issues

Help for Staff - One of the most important lessons learned in previous disaster responses is that staff members need support too. At times, dedicated staff members overextend themselves in caring for trauma survivors. They are also sometimes deeply disturbed by the events their patients describe and by their wounds. Each medical center should identify staff members (mental health staff, social workers, chaplains, and/or experienced administrators) who will spend time touching base with caregivers during this operation in order to provide support. Encourage the staff to get reasonable rest and self-care, and help identify appropriate resources should further intervention be advisable. Employee Assistance Programs can be an invaluable help in this.

Dealing With the Media - At times of national crisis, public information is a vital public health intervention. On the other hand, those who provide information to the media can also do great harm if they are not well informed and if they do not understand how to work with the media or how to communicate with those in their audience. Medical Center Public Affairs Officers should approve all media contacts. Those who work with the media may find it helpful to refer to Web sites on psychological trauma such as those operated by the National Center for PTSD (http://www.ncptsd.org) or the International Society for Traumatic Stress Studies (http://www.istss.org).

Educational Outreach to Local Military Bases

The casualties the VA will be treating and their families are part of a larger military community. Because of this, it makes sense for VA to integrate its efforts and resources with those of the military community.

VA and Vet Center facilities near military bases that have deployed major units should establish or strengthen existing relationships with military

family support programs, chaplaincy programs, and with the mental health component of the base hospital. It is essential to reach out to unit chaplains as well as hospital chaplains. Many units will have a divisional surgeon and/or a divisional psychiatrist who is not part of the military hospital team and who could be a valuable partner.

It is critically important to establish a positive relationship with unit command. Without their support, it will be difficult to have any positive impact.

It is also important to create an outreach to local National Guard and Reserve units. Their needs and those of their families may be very different from those of active duty men and women.

Military units are often associated with a Unit Association. These military retirees and their families have the potential to serve as peer counselors and strong community resources to returning casualties and their families, in particular because there is a strong identification through the unit and its mission. They remain an untapped resource with great promise.

VA/DoD Clinical Practice Guidelines for the Management of Traumatic Stress

A combined team of VA and DoD staff are close to completing clinical practice guidelines for the management of combat stress response (also called acute stress response), Acute Stress Disorder, and Acute and Chronic PTSD. Work is underway to provide draft copies of these guidelines as an aid to clinicians dealing with casualties. These evidence-based guidelines offer treatment algorithms with full annotations designed to be effective in both Primary Care and Mental Health settings. These CPGs can be previewed at http://www.guideonline.info/REVIEW/GOL_PTSD/PTSD_TOC.htm.

Conclusion

As it readies itself to meet the challenge of returning casualties from Iraq, VA can rely on its expertise and resources. Mental health can only play its full part if it acts in coordination with other VA components. VA should also coordinate with local military and medical communities. Even if this crisis should pass us by, mental health needs to learn from this experience so that they can be prepared for new conflicts and new challenges.

Frequently Asked Questions

FAQ 1: Are there lessons from VA's experiences after September 11, 2001, that will serve well now?

A: Yes. Know your partners. Practice "therapy by walking around." Be aware of the needs of families and communities. Realize that sharing information can be good therapy, whether it is sitting down with a patient or a family member, or speaking to the public through the media. Finally, take good care of your colleagues and yourself. You are no good to your patient if you work yourself into the ground.

FAQ 2: Does every military unit have a designated mental health program?

A: No. Despite ongoing efforts in DoD, many active duty military personnel worry that talking about mental health responses to combat experiences could impair their unit's mission or even endanger their careers. Yet, without access to appropriate interventions, military men and women may be at greater risk for long term mental health problems. VA mental health experts may be a resource in helping DoD units develop a broader mental health infrastructure. The spectrum could span from educational outreach and peer counseling services to defining access to mental health programs.

FAQ 3: What is the National Center for PTSD?

A: A program developed within VA Mental Health to provide clinical expertise, education, and research about PTSD. The National Center for PTSD's Web site (http://www.ncptsd.org) is an authoritative source of information that includes model disaster plans, educational materials on-line, and the world's largest bibliographic database on traumatic stress studies. They are a tremendous resource available to all VA staff.

Family Support Programs for Veterans and Their Families

Objectives

Explain the need for family support services;

List the VA support services from Gulf War I for the families and the combat wounded veteran;

List the types of support services VHA offers;

Describe the eligibility requirements for services for returning veterans; and

Explain what VA clinicians need to do to get ready to provide support services for combat wounded veterans and their families.

Introduction

The Department of Veterans Affairs is concerned about the physical and mental well-being of the troops in combat; however that concern does not stop with just the troops. The VA is also concerned about the impact of combat on the people the veteran has left behind, the families. Because the family is key to the success of a wounded veteran's care, VA social workers provide counseling, educational, and referral services for family members of veterans.

The VA Social Work Department exists to ensure that the veterans and their families receive the best care available.

MISSION: The mission of VA Social Work is to eliminate psychosocial complications as significant barriers to healthcare interventions for veterans and families. This is accomplished by developing and maintaining integrated, quality programs in patient care, research, education and prevention.

VISION: In return for the investment of veterans' trust and institutional support, VA Social Work will provide the foremost leadership in the psychosocial care of veterans and their families.

VALUES: VA social workers are committed to the psychosocial welfare of veterans and their families. We offer social work staff as our greatest resource.

Our commitment

1. To place at the center of our concern the dignity and worth of the individual.
2. To incorporate into practice an understanding of the veteran within his or her family and sociocultural environment.
3. To value and respect the distinctive role and expertise of each member of the multidisciplinary team.
4. To identify gaps in services/resources and to advocate for systems changes that are responsive to veterans' changing needs.
5. To create within the discipline a learning environment that fosters new knowledge, enhances clinical social work practice and promotes administrative excellence.
6. To be ethical in fulfilling our responsibilities.
7. To be conscientious stewards of institutional and community resources essential to our mission.

Valuable information on the Social Work services can be found at: http://www.va.gov/socialwork

Why Family Support Services are Needed

- Many of the military personnel serving in Gulf War II have never seen combat before and their families are perhaps less prepared
- Large numbers of National Guard members and Reservists have been called to active duty
  - they were quickly mobilized and deployed, giving families little time to prepare
  - many have decreased income, which may lead to financial problems for families left behind
  - some family members have to take on new roles within the family
  - many family members may not be familiar with or have ready access to military installations for counseling and support services
- More military personnel come from diverse ethnic backgrounds. Their family members may not speak English as a first language
- More women have been deployed, sometimes leaving behind young children

The information provided supports the need for the family support programs developed by the VA.

What VA Provided During Gulf War I

- Persian Gulf Family Support Program outreached to more than 20,000 Gulf War I veterans and offered marital and family counseling services to over 1500 of them
- Partnerships with the Department of Defense and the American Red Cross
  - outreach and dissemination of information
  - providing services within and outside VA

Types of Services VHA Can Offer

- Social services
  - referrals for legal, housing, transportation, and financial needs
  - help arranging child care
  - family education re: community services and VA benefits available
  - support groups
  - community support networks
  - coordination of services and case management
- Counseling services
  - marital and family counseling
  - issues of loss
  - psychosocial difficulties associated with injuries
  - psychosocial difficulties associated with rapid mobilization and deployment
  - psychosocial difficulties associated with return home

Eligibility

- Without new federal legislation
  - for two years, VA can provide free medical care to veterans newly-returned from a combat zone
  - services can be provided to the family members of these new veterans in conjunction with care provided to the veterans (family counseling)
  - bereavement counseling to families of veterans
- The legislative authority to offer the Persian Gulf Family Support Program has expired.

To offer the program, VA would need new federal legislation. Under current law, VA staff can offer marital and family counseling to veterans discharged from active duty and their family members for up to two years following the veteran's return from a combat zone. The Department of Defense can offer counseling services to active duty military personnel and their families.

How to Get Ready

- VA clinicians need to:
  - become familiar with the military experience, including military ranks and the differences for National Guard and Reservists
  - clearly understand what services and programs can be offered by VA and to whom
  - become familiar with resources available from DoD, including Tricare services
  - become familiar with resources available in the community
  - develop partnerships with
    - staff at nearby DoD installation
    - American Red Cross contacts
    - staff at community agencies
- develop a plan for provision of services
- develop a plan for outreach, in collaboration with the DoD installation and community partners

Frequently Asked Questions

FAQ 1: Why are family support services needed?

A: Many of the military personnel serving in Gulf War II have never seen combat before, and their families are probably less prepared than the service members themselves.

FAQ 2: What services did VA provide during Gulf War I?

A: The VA provided marital and family counseling services.

FAQ 3: How can social workers help the families of Gulf War veterans?

A: Through the partnerships they have developed with the Department of Defense and the American Red Cross, and by disseminating information to the families about the services VA provides.

FAQ 4: What services can VA social workers provide?

A: Psychosocial services, including counseling, to eligible veterans and their families.

FAQ 5: What are some of the psychosocial difficulties social workers might expect to encounter with family members and returning veterans?

A: The main difficulty will be the reintegration of the veteran into the family upon their return.

FAQ 6: Are Gulf War II veterans eligible for VA health care benefits?

A: Yes. Current legislation provides for a benefit period that is up to 2 years upon return from the combat zone.

FAQ 7: What can VA staff do now to prepare?

A: The two most important things the VA staff can do to prepare for the returning military member is to become familiar with the military experience, and to learn about the programs that the VA offers for the veterans.

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CME EXAM

1 The Fourth Mission of the Veterans Health Administration "Contingency Support" is also known as:

   a. Education

   b. Emergency Management

   c. Medical Care

   d. Research

2. The Federal Response Plan was established by:

   a. Executive Order 12656

   b. Public Law 93-288

   c. Public Law 97-174

   d. Presidential Decision Directive 67

3. Which of the following is NOT a responsibility of the Federal Coordinating Centers?

   a. Coordination with local/state authorities

   b. Enrollment of non-federal local hospitals into NDMS

   c. Management and stockpiling of pharmaceutical caches

   d. Solicitation and organization of local, private sector hospitals, and community support services

4. Which of the following is NOT one of the three distinct levels of proximity?

   a. Advanced

   b. General

   c. Immediate

   d. Internal

5. Chemicals like chlorine, phosgene, and nitric oxide are examples of:
    a. Very soluble chemicals
    b. Soluble chemicals
    c. Relatively not soluble chemicals
    d. Less soluble chemicals

6. A Fit and Healthy Force; Prevention of Disease and Injury; and Treatment and Care for Ill and Injured Individuals are part of the:
    a. Force Health Protection Program
    b. Health and War Health Program
    c. Pre-Deployment Medical Program
    d. Prevention Training and Deployment Program

7. If a military member has a disqualifying medical condition they may:
    a. Stay on active duty and NOT deploy
    b. Stay on active duty and deploy
    c. Deploy, but not enter the combat zone
    d. Be discharged from active duty

8. The Millennium Study is an example of a _____ long-term health status study between DoD & VA.
    a. Blind
    b. Independent
    c. Joint
    d. Pharmaceutical

9. The VA's Vet Center Program started after which war?
    a. Bosnia-Herzegovina
    b. Gulf War I
    c. Gulf War II
    d. Vietnam War

10. Which of the following are the locations for the War Related Illness and Injury Study Centers (WRIISCs)?

    a. VAMC Birmingham, AL and VAMC Washington, DC

    b. VAMC East Orange, NJ and VAMC Washington, DC

    c. VAMC Cleveland, OH and VAMC Long Beach, CA

    d. VAMC East Orange, NJ and VAMC Nashville, TN

11. The purpose of the Post-Deployment Health Clinical Practice Guidelines is to help:

    a. The families of veterans cope with the veterans deployment

    b. The health care provider with the treatment of the veterans family

    c. The health care provider and veteran with health concerns related to their deployment

    d. The veteran cope with concerns that affect their family related to their deployment

12. Booby traps were prevalent in which theater of operation?

    a. Afghanistan

    b. Bosnia–Herzegovina

    c. Iraq

    d. Somalia

13. The VA receives patients that have had what type of treatment associated with amputation?

    a. Tendon repair

    b. Orthodox circular amputation

    c. Nerve repair

    d. Flaps

14. Many health care providers in the VA have:

    a. Experience with combat related injuries

    b. No experience with combat related injuries

    c. Seen gunshot wounds, but not from high-velocity weapons

    d. Never seen gunshot wounds

15. Which of the following chemical agents were found at the Khamisiyah ammunition depot?

    a. Sarin and Mustard agent

    b. Sarin and Soman

    c. Soman and VX

    d. Sarin, Cyclosarin, and Mustard agent

16. Which of the following agents is likely carcinogenic?

    a. Cyclosarin

    b. Mustard agent

    c. Soman

    d. VX

17. Which of the following is NOT considered to be a life-threatening symptom of chemical agents?

    a. Abdominal cramps

    b. Diarrhea

    c. Miosis

    d. Vomiting

18. Which of the following pesticides was removed by the EPA for home use in June 2000 because of acute toxicity concerns?

    a. Baygon® (Propoxur)

    b. Cutters® (DEET)

    c. Dursban® (Chlorpyrifos)

    d. Vapona® (Dichlorvos)

19. Which pesticide in excreted from the body relatively more slowly?

    a. DEET

    b. Lindane

    c. OFF®

    d. Permethrin

20. Which pesticide type causes reversible inhibition of the enzyme AChE?
    a. Methyl Carbamate
    b. Organochlorine
    c. Organophosphorus
    d. Pyrethroids

21. Which Biological Warfare Agent category has agents that have catastrophic potential?
    a. Category A
    b. Category B
    c. Category C
    d. Category D

22. Which Biological Warfare Agent was used in the attacks in the U.S. after 9/11/01?
    a. Botulism
    b. Cutaneous Anthrax
    c. Inhalational Anthrax
    d. Smallpox

23. How many days after an individual received 200-300 rads (2-3 grays) of radiation will it take to drop their white cells to a very dangerous level?
    a. 10 days
    b. 20 days
    c. 30 days
    d. 40 days

24. What type of radioactive emissions does depleted uranium emit?
    a. Very weak Alpha
    b. Weak Alpha
    c. Strong Alpha
    d. Very strong Alpha

25. A medical care provider can diagnose PTSD within ____ weeks after the traumatic event.

    a. 2 weeks

    b. 4 weeks

    c. 6 weeks

    d. 8 weeks

26. Amnesia, acute confusional states, and trance are symptoms consistent with:

    a. Panic attacks

    b. Mixed anxiety state

    c. Dissociation

    d. Conversion

27. What is the percentage of Gulf War I veterans who have been diagnosed with PTSD?

    a. 5%

    b. 10%

    c. 15%

    d. 20%

28. Which department within the VA was created to meet the concerns of the veteran and their family?

    a. Community Outreach Department

    b. Mental Health Department

    c. Social Work Department

    d. Vet Center Department

29. Without new federal legislation, eligibility for medical care will expire ___ year(s) after a veteran returns from a combat zone.

    a. 1 year

    b. 2 years

    c. 3 years

    d. 4 years

30. Approximately how many Gulf War I veterans were serviced through the Persian Gulf Family Support Program?

    a. 20,000

    b. 40,000

    c. 60,000

    d. 80,000