

Well Being of the EMS Professional

**EMS Continuing Education
Technician through Technician-Advanced Paramedic**

**Consistent with the
National Occupational Competency Profiles
as developed by
Paramedic Association of Canada
and
“An Alternate Route to Maintenance of Licensure”
as developed by Manitoba Health**

**Evaluated for content by:
CISM portion by Dr. Brian Kowalchuk**

**Developed by:
Educational Subcommittee – Paramedic Association
of Manitoba**

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Disclaimer

These documents were developed for improved accessibility to “An Alternative Route to Maintenance of Licensure” for all paramedics in Manitoba. Regional implementation of Alternate Route is at the discretion of the local EMS Director.

This is a supportive document to the National Occupational Competency Profiles and “An Alternative Route to Maintenance of Licensure.” It is not the intent that this package be used as a stand-alone teaching tool. It is understood that the user has prior learning in this subject area, and that this document is strictly for supplemental continuing medical education. To this end, the Paramedic Association of Manitoba assumes no responsibility for the completeness of information contained within this package.

It is neither the intent of this package to supercede local or provincial protocols, nor to assume responsibility for patient care issues pertaining to the information found herein. Always follow local or provincial guidelines in the care and treatment of any patient.

This package is to be used in conjunction with accepted models for education delivery and assessment, as outlined in “An Alternative Route to Maintenance of Licensure”.

This document was designed to encompass all licensed training levels in the province Technician, Technician-Paramedic, Technician-Advanced Paramedic. Paramedics are encouraged to read beyond their training levels. However, the written test will only be administered at the paramedic’s current level of practice.

All packages have been reviewed by the Paramedic Association of Manitoba’s Educational Subcommittee and physician(s) for medical content.

As the industry of EMS is as dynamic as individual patient care, the profession is constantly evolving to deliver enhanced patient care through education and standards. The Paramedic Association of Manitoba would like to thank those practitioners instrumental in the creation, distribution, and maintenance of these packages. Through your efforts, our patient care improves.

This document will be amended in as timely a manner as possible to reflect changes to the National Occupational Competency Profiles, provincial protocols/Emergency Treatment Guidelines, or the Cognitive Elements outlined in the Alternate Route document.

Any comments, suggestions, errors, omissions, or questions regarding this document may be referred to info@paramedicsofmanitoba.ca , attention Director of Education and Standards.

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Conventions Used in this Manual

The cognitive elements contained in this training module apply to all EMS licensure levels in Manitoba. Therefore no conventions have been used to differentiate between Technician, Technician-Paramedic, Technician Advanced Paramedic.

Well Being of the EMS Professional

Stress is an inherent aspect of Emergency Medical Services. Only in recent years has stress been recognized as a real hazard of emergency work. Prehospital personnel must learn to manage stress, as well as the conditions that cause it. Dealing with stress in a positive manner promotes emotional and physical health and prevents burnout. This package will discuss EMS stress and how to cope with its effects.

Stress

Stress literally means a hardship, force, or strain. From a psychological standpoint, stress can be defined as a state of physical and psychological arousal. It exists to some degree in everyone.

A stressor is any agent or situation that causes stress. Often stress results from a perceived imbalance between demands of the job and our ability to meet those demands. In addition, stress may be increased by the demands imposed by people and events around us.



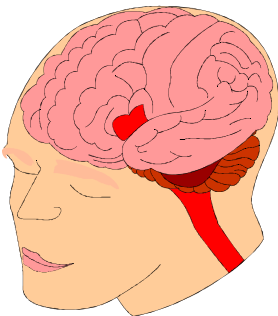
Information received from the various senses is processed and interpreted in the cerebral cortex.

Physiology of Stress

The body's response to stress is termed a stress reaction. The stress reaction is complex and involves many body systems. After detection of the stressor, the cerebral cortex is the part of the brain that we want to be in charge, with its higher mental functions and intellect. Although the cerebral cortex works to assign meaning to the stressor, the Amygdala processes the bare features much more quickly. The Amygdala is a pre-verbal structure in the mid-brain that makes an immediate decision about whether a stimulus is familiar and whether it is relevant. Consequently, if danger or threat is initially perceived, a fight/flight reaction will begin (in less than 1 second) and our higher mental functions will have to work to catch up and steer us toward a more adaptive response. The initial quick decision of the Amygdala is sometimes referred to as an 'Amygdala hijacking'. It explains why, when unexpected conditions confront us, we have to overcome an initial

response (startle, avoidance, attack) using our training and ability to calm ourselves down. The limbic system, located in the mid-brain, is activated with its emotional reaction (fear, anger, rage, hostility, etc.) as a means of quick escape or elimination of a threat. Rarely is such action helpful with complex stressors. The limbic response then proceeds to involve lower brain centers, including the hypothalamus. Over time, if stress is frequent or chronic, a person never fully recovers from momentary activation (alarm state) and a state of chronic activation and altered functioning results (attempts to resist). It is at this stage that a person is vulnerable to disease, changes in mood, personality, and faulty attempts to distract oneself from problems or alter mood through alcohol, drugs, impulsive behavior, etc.

The hypothalamus controls many bodily functions, including temperature and sleep. It also regulates the endocrine system. Once stimulated by the hypothalamus, the endocrine system releases hormones such as epinephrine (adrenaline) and norepinephrine (noradrenaline) in response to the stress. The release of epinephrine further stimulates the brain. The body quickly enters a hyper-alert state commonly called the “fight or flight” response or “alarm reaction.” The fight or flight response is characterized by an increase in heart rate and blood pressure, pupillary dilation, excessive perspiration, increased muscle tension, increased blood glucose levels, and a sense of anxiety. This response prepares the body to deal with any threats, real or perceived.



Information received from the various senses is processed and interpreted in the cerebral cortex.

The Body's Response to Stress

The body is under various levels of stress at all times. However, after repeated exposure to the same stressor, the body will adapt by suppressing the typical emotional and physical responses. The body's response to stress generally goes through the following stages.

- Stage 1: Alarm. An alarm reaction occurs at the first exposure to the stressor. The signs include increased pulse rate, pupillary dilation, and other responses of the sympathetic nervous system. If resistance to stress is diminished, the physiological and emotional response can be overwhelming.
- Stage 2: Resistance. This stage starts when the individual begins to adapt to a chronic stress. Resistance is often brought about by use of various coping mechanisms, some successful, some not. Physiological parameters, such as pulse and blood pressure,

may return to normal, or become chronically elevated. As adaptation develops, resistance increases above the normal level.

- Stage 3: Exhaustion. Prolonged exposure to the same stressors leads to the exhaustion of an individual's adaptation energy. The signs of the alarm reaction reappear, but they are now much more difficult to reverse.

Types of Stress Reactions

A stress reaction has both physical and psychological components. There are three types of stress reactions that can occur: acute, delayed, and cumulative stress.

- **Acute Stress Reaction.** The acute stress reaction usually occurs after a catastrophic event. The reaction has a powerful emotional impact on the rescuer. Catastrophic events capable of evoking such a response have been labeled critical incidents. A Critical Incident is a significant event outside of your normal range that temporarily brings on a sense of vulnerability and/or loss of control. This acute stress reaction is called critical incident stress.

The acute stress reaction may begin at the scene or shortly after the event. Several warning signs or symptoms characterize its onset. Some signs and symptoms require immediate intervention, while others do not. Early intervention from known, supportive, and trained people will help minimize the long term effects of the stress. This can take the form of a one-on-one contact with a recognized Peer Support Provider, a 'defusing' group meeting lead by a senior Peer Support Provider, a meeting arranged with the department's Mental Health Professional or a formal Critical Incident Stress Debriefing (CISD). These may all help to effectively deal with stress and prevent post-traumatic stress disorder. The prognosis depends on effective Critical Incident Support and on the Pre-incident resilience of the affected parties. A lifestyle that promotes a broad range of physical and mental exercise, supportive relationships, good nutrition and conflict management will best predict a good recovery from a critical incident. If indicated, the CISD team may refer the rescuer for professional counselling.

- **Delayed Stress Reactions.** Delayed stress reaction, also called "post-traumatic stress disorder," occurs days, weeks, months, or even years after a critical incident. Not all personnel who experience a critical incident will suffer a delayed stress reaction-but some will. The following signs or symptoms characterize post-traumatic stress disorder.
 - Re-experiencing of the traumatic event.
 - Recurrent and intrusive recollections of the event.
 - Recurrent dreams and nightmares related to the event.
 - Flashbacks, or sudden feelings that the event is recurring, usually after exposure to some triggering stimulus.
 - Diminished responsiveness to the external world.
 - Decreased interest in life.
 - Feeling detached or estranged from others.

- Suppression of normal emotional responses such as love, anger, or fear.
- Physical and cognitive symptoms.
 - Hyper alertness.
 - Difficulty sleeping.
 - Survivor guilt.
 - Memory impairment and difficulty concentrating.
 - Avoidance of any activities that may cause recall of the event.
 - Avoidance of thoughts or feelings associated with the incident.
 - Problems with interpersonal relationships.



Physical and cognitive symptoms of stress include memory impairment and difficulty concentrating.

Post-traumatic stress disorder can interfere with your life. It can provoke marital problems, alcohol and drug abuse, personality changes, and even suicide. Because of this, persons suffering a post-traumatic disorder should seek expert professional help soon.

- **Cumulative Stress Reaction.** The third type of stress reaction is called a cumulative stress reaction, or “burnout.” Cumulative stress, unlike the types of stress discussed earlier, does not result from a single critical incident. Instead, it stems from recurring minor stressors, both work and non-work related. A cumulative stress reaction typically takes years to develop. Initially, the person will experience depression, boredom, apathy, and emotional fatigue. As the reaction progresses, the person will experience sleep disturbances, increasing loss of emotional control frequent physical complaints, physical and emotional fatigue, irritability, and worsening depression. Ultimately, the person will develop extreme fatigue, severe depression, feelings of paranoia, crying spells, loss of sexual drive, inability to perform a job, significant problems managing his or her personal life, and occasionally suicidal or homicidal thinking. Failure to intervene in the early stages of cumulative stress will result in severe disability for the person involved. Often he or she will suffer destruction of close family relationships, divorce, and inability to work in his or her chosen profession. The best treatment for the cumulative stress reaction is prevention. EMS systems should have programs that routinely screen their personnel from signs and symptoms of cumulative stress. Such programs will allow for early intervention, thus avoiding the condition’s devastating consequences. Also, stressful assignments, such

as busy stations or those with a higher incidence of critical patients, should be shared among personnel.

Anxiety

Anxiety is the technical term for the symptoms experienced during stress. In a mild or temporary form it is not debilitating. However, when it becomes dysfunctional it is an anticipatory body-mind state of readiness that persists in the absence of any current perception of threat.

Normal Anxiety Levels

A “normal” level of anxiety varies from individual to individual. It acts as a warning system to put us on guard, so we won’t be overwhelmed by a sudden stimulation or immobilized in a critical situation. “Normal” anxiety may be considered adaptive, because it has evolved to help us cope with stressors by focusing our attention. It helps us increase our tolerance for stress by motivating us to develop coping and/or defense mechanisms.

This process is evident in Emergency Medical Services. The first emergency response that a paramedic makes is a very stressful event. The person experiences a high pulse rate, dilated pupils, poorly organized thought processes, and a feeling of tension. However, over time, the body adapts to stress. Each response becomes more and more routine. However, as long as the paramedic is “on call” for emergency response, his or her level of anxiety never returns to a non-work state. Keeping anxiety at an “on-alert” level is a coping mechanism. Because it is impossible to predict and prepare for the next problem, anxiety helps the paramedic maintain a level of readiness.

Detrimental Anxiety Levels

Although many reactions to anxiety and stress are positive, there are also detrimental ones. Detrimental reactions include the failure of anxiety to stimulate the appropriate coping mechanisms. Conversely, an increase in anxiety that is disproportionate to the actual danger would also be detrimental. These reactions may interfere with a rational thought process, disrupt performance, or cause physical problems. Symptoms of anxiety include:

- Heart palpitations
- Difficult or rapid breathing
- Dry mouth
- Chest tightness or pain
- Anorexia, nausea, vomiting, abdominal cramps, flatulence, or the classic “butterflies in the stomach”
- Flushing, diaphoresis, or fluctuation in body temperature
- Urgency or frequency of urination
- Dysmenorrhea, or decreased sexual drive or performance
- Aching muscles or joints

- Backache or headache

Effects that are not felt include:

- Increased blood pressure and heart rate
- Blood shunting to muscles
- Increased blood glucose levels
- Increased catecholamine production by the adrenal glands
- Reduced peristalsis in the digestive tract
- Pupillary dilation

People react differently to stress. The patient and family may react with anger, guilt, or indecisiveness. As a paramedic, you may react with impatience, fear, or anger. It is important to remember that the patient and family are not as adept at dealing with stress as you, the professional. Because of indecisiveness, the patient and family members should not be given too many alternatives. Despite your emotions, you must maintain a professional attitude and remain non-judgmental.

Paramedic Job Stress

Some of the occupational stressors include:

- **Multiple Role Responsibilities.** The paramedic is often a “jack of all trades.” The various responsibilities may become overwhelming. This is particularly true of systems in which paramedics also function as firefighters, police officers, or safety officers.
- **Unfinished Tasks.** The requirements of the job often leave personal and work tasks incomplete. For example, once a patient is delivered to the hospital, you often lose track of the person with whom you spent a great deal of time and energy treating. On a continuous basis, this can result in stress.
- **Angry or Confused Citizens.** Paramedics do not see society at its best. The very people who require our help can be a source of stress, as a result of either their physical condition or their emotional response to stress.
- **Meeting Continuous Time Constraints.** Emergency medical services, like many other occupations, place time constraints on personnel. Eventually, these constraints can result in stress, especially if they are unreasonable.
- **Absence of Challenge.** It is hard to believe that emergency medical services can be unchallenging. But, routine runs (transfers) can get old. Also, in some systems, interesting and challenging runs are rare.
- **Over demand on Time, Energy, Ability, or Emotions.** Emergency work often demands a great deal of time. Long hours are emotionally and physically demanding. In addition, overwork tends to stress our physical and emotional health.
- **Necessary Restrictions on Practice.** Restrictions limit the scope of practice of the paramedic’s practice. The limits can often be frustrating, especially for personnel with previous medical experience. For example, medical personnel in the military work more independently than paramedics. When such personnel enter EMS, they

often feel frustrated when they are not allowed to conduct procedures that they performed regularly in the military.

- Unpredictable Changes in the Workplace. No one can deny that emergency medical services work varies day to day. However, lack of stability can become stressful.
- Lack of Recognition. Paramedics are often “silent heroes” who routinely do what many people feel is worthy of recognition. Continued lack of recognition can be stressful.
- Limited Career Mobility. Many EMS organizations do not provide much opportunity to move up. This deficiency can cause frustration and stress. The limited opportunities for advancement should be considered before entering the profession.
- Abusive Patients and Dangerous Situations. Emergency medical service is dangerous. Verbal and physical abuse by patients complicates the matter. You should never become complacent, but you should also be careful not to overreact to abuse from patients or inherent dangers at the scene.
- Critically Ill or Dying Patients. No matter how well-adapted you become, caring for critically ill and dying patients produces stress. Treating these patients is frustrating, since, all too frequently, medical intervention is too late or death is unpreventable.



EMS work involves a lot of stress.

Managing EMS Job Stress

You must learn to manage stress in order to survive in Emergency Medical Services. You must recognize the early signs of anxiety. Remember that some stress is valuable—it protects an individual and improves performance. Therefore, you need to discover your own optimal stress level and attempt to maintain it.

To monitor your own perception of a stressful event, ask yourself these questions:

- Do you see what is really happening?
- Are you blaming yourself unjustly?
- Are your expectations realistic?
- What do I need to accept for now and plan to change later?
- What can I actually influence or control, and what is outside of my control altogether?

In the heat of the moment, managing stress is about acknowledging the ‘threat’ (rather than denying it or avoiding it) and moving on (rather than dwelling on it while you’re in the middle of doing something). Later, during a time of reflection (which requires discipline), managing stress requires that you find out what was being ‘threatened’ and plan to restore it somehow, or let it go. This is usually an issue around preserving things that matter to you, but not usually about preserving your physical survival. We strive to

maintain our self-respect, sense of competency, justice, usefulness, compassion, sense of being able to control our destiny etc.

Try to sort events into categories of importance, urgency, and degree of actual threat. Another method of coping with stress is to seek and use situational support. Talking with someone, as soon as possible, is a simple and effective way of coping. Particularly stressful situations, involving multiple personnel, may benefit from group discussion. A good example is Critical Incident Stress Debriefing, available in many systems. Other tips for daily living also help manage stress. These include: adequate rest and sleep, “leaving the job at work,” and balancing work and recreation. Physical activity or exercise provides a good release for stress. To balance your personal and professional lives, try to have friends who are both in and out of the EMS field. Remember, you’re more than a paramedic. In addition to your job responsibilities, you have the same personal responsibilities as anyone else. Never neglect one aspect of your life and concentrate solely on the other. Learn to accept that certain things are beyond your control and cannot be changed. Above all, use appropriate coping mechanisms. Determine which defense mechanisms are effective for you and adopt those most likely to reduce stress.

Dealing with Critical Incident Stress

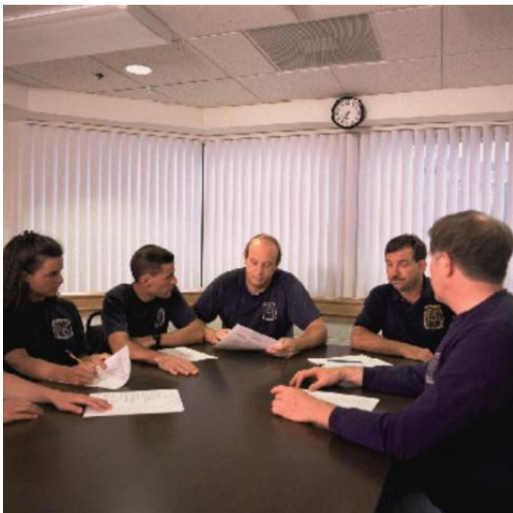
Some assignments may be more stressful than others. Although you may experience pain following a particularly stressful event, remember that it is a normal part of the healing process. Do not label yourself as ‘crazy.’ Instead, try to minimize the harmful effects of stress. There are several things you can do to help cope with particularly severe stress. These include:

- Within the first 24-48 hours, alternate strenuous physical exercise with relaxation. This will help alleviate some of the physical reactions.
- Structure your time to stay busy. This will help keep your mind off the stressful event.
- Keep your life as normal as possible. Don’t make any major life changes during this time.
- Spend time with people and talk to them. Conversation will allow you to express your feelings and is therapeutic.
- Do not overuse drugs or alcohol to “numb” the pain. This only prolongs the stress.
- Help your co-workers as much as possible by sharing feelings and conversation. Realize that they too are under stress.
- Do things that feel good to you.
- Eat balanced meals on a regular basis. Get an adequate amount of sleep. Avoid the use of hypnotic drugs; they decrease the amount of quality sleep time. They also can cause rebound insomnia the following night.
- Keep a journal. Write down your thoughts. This too is therapeutic and makes time pass more quickly.
- Reach out. People do care.

Never be afraid to seek additional help. If necessary, request a contact with the Peer Support Team or your department's Mental Health Professional. Often, an informal session with a trained peer may be all that is required.

Defusings and Critical Incident Stress Debriefings

Defusings and Critical Incident Stress Debriefings are structured group meetings that allow emergency and rescue personnel to discuss their feelings and other reactions after a critical incident. They are not psychotherapy or psychological treatment. They are, however, designed to reduce the impact of a critical event and to accelerate the normal recovery of normal people. They are designed to acknowledge pain, but remind people of their resiliency. Remember that it is normal to suffer painful reactions to an abnormal event. Abnormal reactions occur when such feelings are not shared. Therefore, every system should offer Critical Incident Stress Debriefings or similar programs to personnel who encounter a critical incident.



CISD sessions are conducted in strict confidence with other emergency workers who are trained in CIDSD.

Death and Dying

Death and dying are part of emergency medical services. It is important to develop an appropriate personal attitude about death and the dying patient, as well as about the patient's family.

Grief Process

The family of a dying patient, as well as the patient, goes through a grief process initially described by Dr. Elizabeth Kubler-Ross. The grief process has several identifiable stages.

- Denial and Isolation. This stage is used by most dying patients. It is healthy and acts as a mental buffer between the shock of dying and dealing with it. It happens throughout the illness. It is a temporary stage, often giving way to acceptance.
- Anger. In the anger phase, the patient and the family ask, "Why me?" People are angered at the loss and may project their anger to anything and anyone. It is important to remember that this anger has little to do with the people or things present; they are

often simply “targets.” The anger can be difficult for you to deal with. Try not to take the patient’s or the family’s anger personally. Be tolerant, and don’t be afraid of anger. Don’t become defensive. Listen to the patient and the family.

- Bargaining. Bargaining is a defense mechanism used by the dying patient to formulate some sort of “agreement,” which, in the patient’s mind postpones the inevitable.
- Depression. Depression is common and expected. It is a normal response to the greatest loss. In “reactive depression,” the dying patient reacts to the needs of a life situation. For example, who will care for the children or take care of funeral arrangements? There is also “preparatory depression.” In this state, the patient is often silent and reassurance is not meaningful.
- Acceptance. Acceptance may not be a happy stage. At this point, the patient is without fear and despair. He or she is devoid of feelings. The patient becomes less involved with people as he or she prepares to face death alone. At this stage, the family needs help, understanding, and support more than the patient.

It is important to recognize the needs of individuals when dealing with the dead or dying. The dying patient needs dignity and respect, sharing, communication, hope, privacy, and control. The family has needs, too. They often go through a grief process similar to the patient’s. They may need to express their feelings of rage, anger, and despair. In addition, they need to reduce their feelings of guilt. You may also go through some grief stages. This coping requires a lot of energy to cover feelings. It should be followed by adequate time for reflection and discussion.

Management of the Dead or Dying Patient

How you react to death and the dying patient reflects your own thoughts and beliefs. It is natural to feel uncomfortable. Don’t bring up the subject of death. Let the patient do so. Don’t falsely reassure the patient or the family. Do not be afraid to tell the patient that he or she is dying, if asked. Use non-verbal communications, such as a gentle voice, appropriate facial expression, and a reassuring touch.

If the patient is already dead, the family becomes “the patient.” Comfort the family with kind deeds, such as calling neighbors, family members, or a minister. The family needs to hear the word “dead.” Avoid euphemisms like “expired,” “passed away,” or “moved on.” Always refer to the deceased patient by their name.

Summary

Stress is a part of Emergency Medical Services. You should recognize that a certain level of stress is important. You should also recognize that increasing stress can seriously affect personal health and job performance. As a paramedic you must learn to adapt to stress and deal with it positively. You must also learn to deal with stress in other people.

Transmission of Communicable Disease

Introduction

A call comes in to transport a child with a high fever and a rash. The ambulance responds and transports the young boy to the hospital. Later, the crew hears via the “grapevine” that the child has meningitis. The entire crew goes to the hospital and requests medication for the “exposure”.

A firefighter rescues an injured person from a burning vehicle. He gets blood on his hands because of a tear in his latex gloves. At the hospital, initial blood work identifies the patient as having hepatitis C. The firefighter is never notified. Within five months, the firefighter develops hepatitis C and is denied worker’s compensation since he cannot prove work-related exposure.

Emergency responders may in the course of their duties be exposed to communicable diseases. Within this working environment, it is possible for emergency responders to be exposed to communicable diseases and to be unaware they have been exposed. These scenarios underscore the critical need for emergency responders to practice and understand infection control. Health and safety programs designed to protect workers from exposure can reduce the risk of spreading these diseases. Such programs should be placed in all hazardous workplaces to prevent the spread of infection from patient to patient, patient to staff, staff to patient and staff to their own family.



Emergency personnel need to practice and understand infection control.

Infectious and communicable disease exposure is an occupational health hazard. Infection control is a proactive approach to managing the risks associated with all infectious and communicable diseases through cleaning and personal protection. The purpose of an infection control program is to provide a comprehensive infection control system which maximizes protection against communicable diseases for all members and for the public they serve. It includes member health programs, training, post-exposure follow up and care, documentation and reporting requirements and work station layout.

Other related topics include: identifying and limiting risky practices and the design and use of safer medical devices. It calls for interventions based on occupation-specific hazards and surveillance and analysis of exposures to identify and modify risky procedures (LCDC Dec. 1995). This proactive approach applies to all members providing fire, rescue, and/or emergency medical services. This is an ongoing process that should be continually evaluated and revised based upon the needs and requirements identified.

Modes of Transmission

There are four main modes of transmission:

1) Contact Transmission: Most frequent mode of transmission that includes three subgroups.

a) Direct contact- usually involves direct physical transfer between an infected and a susceptible person (e.g. Dressing changes, handling body secretions, etc.)



b) Indirect contact- involves contact by a susceptible person with a contaminated object (e.g. kidney basins, bed linen etc.)

Contaminated linen should be bagged appropriately and disposed according to your local protocols.



c) Droplet contact- involves contact of the caregiver's eyes, nose or mouth by the patient's respiratory secretions. This can be from handling contaminated items or by spray from coughs, sneezes, etc.



2) Vehicle Route: Diseases transmitted through contaminated items:

food - e.g. Salmonellosis, food poisoning from undercooked chicken
water - e.g. Hepatitis A from drinking contaminated water
drugs - e.g. Hepatitis B or HIV from using contaminated needles
blood - e.g. Hepatitis C from blood transfusion



3) Airborne Transmission: Inhalation of organisms that remain suspended in mid air, or by airborne dust particles containing infectious agents - e.g. Tuberculosis, Chicken Pox.

4) Vectorborne Transmission: Transmitted by the bite of an insect - e.g. malaria or sleeping sickness (Western Equine Encephalitis) from a mosquito bite or Lyme Disease from a tick bite.



Formula for Infection

To understand why and when you are at risk of infection, you should know the following formula:

$$\text{INFECTION} = \frac{\text{DOSE} \times \text{VIRULENCE}}{\text{RESISTANCE OF HOST}}$$

DOSE = the number of viable organisms present to cause infection.

VIRULENCE = the strength or ability of bacteria or virus to infect.

RESISTANCE OF HOST = interruption of the body's normal defense mechanisms which allow the organism to enter the body. For example, an open sore or break in the skin or in mucous membranes.

Each of the above factors must be present for infection to occur. Working out this formula will help you decide whether your risks for infection are actual or imagined. You will not know the amount of bacteria or virus you have been exposed to, but you will know whether you had contact with a small amount or large amount of secretions. Below is an example of how the formula is used:

EXAMPLE: You have transported a child with a fever and a dry cough, complaining of sore eyes. Later, the hospital tells you that the child has developed Red Measles.



Child with Red Measles

DOSE: The causative agent is measles virus. Transmission is airborne by droplet; spread by direct contact with nasal or throat secretions of infected persons and less commonly by articles soiled with nose and throat secretions.

VIRULENCE: Red measles are highly contagious, only 1% of susceptible people fail to contract measles on their first close contact with the patient.

RESISTANCE: How would the virus have been passed on to you? What PPE was used? Have you ever had the Red Measles? All persons who have not had the disease or who have not been successfully immunized are susceptible.

If you were found to have no immunity to measles and therefore, susceptible, what actions would be necessary?

Susceptible persons who are exposed to measles may be protected from the disease if measles vaccine is given within 72 hours of exposure. Immune globulin (IG) given within 6 days of exposure can modify or prevent disease and may be used if vaccine is contraindicated, or more than 72 hours but less than one week has elapsed since exposure. Individuals who receive IG should receive measles vaccine 5 to 6 months later unless contraindicated. If no prophylaxis were done, you would have to remain off work from the 15th through the 21st day after exposure and/or until 7 days after the rash appears.

Avoiding Infection and Preventing Transmission

Initial patient assessment is a valuable tool for limiting the possibility of disease transmission. Taking a history and performing a physical examination will help in assessing what precautions should be taken with a patient. Signs and symptoms such as fever, diarrhea, draining wounds and jaundice may signify that an infection is present. If there are signs indicating infectious state, then it is the responsibility of the attendant to ask pertinent questions of the patient or family. Documentation of ALL INFORMATION regarding the infectious state should be done, including an explanation to the patient of why precautions are being taken.

Blood, body fluids or open lesions may contain organisms that could cause disease even though the individual may not appear to be ill. Recognizing signs and symptoms of infection and implementing protective measures are an important method of preventing unnecessary exposure. The recommended precautions or protective measures include:

- a) Gloves, hand washing
- b) Gloves, hand washing, and safety glasses
- c) Gloves, hand washing, safety glasses, and mask or full face shield
- d) Gloves, hand washing, safety glasses, mask or full face shield, and disposable plastic gown



Infectious and Communicable Diseases

Rash and Fever of Unknown Origin

This patient may have a communicable disease that could be spread through contact with oral or respiratory secretions.

- Use gloves, hand washing, safety glasses and mask or full face shield
- if possible mask patient, if not mask yourself
- air out ambulance for 5 minutes after patient is removed
- contaminated ambulance surfaces must be disinfected

Diarrhea

This patient could have an infection such as Salmonella, Shigella, Giardia, or Campylobacter. These organisms are spread through stools.

- Use gloves and hand washing
- articles contaminated must be discarded or disinfected
- disinfect contaminated ambulance surfaces

Draining Wounds/Weeping Lesions

Draining wounds are a potential source of infection especially if surrounded by a reddened area. The organisms that infect these wounds generally do not spread through the air.

- Use gloves and hand washing
- articles contaminated must be discarded or disinfected
- ambulance surfaces should be disinfected

Jaundice

Patients with jaundice may or may not be infectious. Jaundice does not always mean hepatitis, it is a symptom of several disease processes.

- Use gloves, hand washing and safety glasses

Coughing

This patient may have a communicable disease spread through contact with oral or respiratory secretions.

- Use gloves, hand washing, safety glasses, and mask or full face shield
- air out ambulance for 5 minutes after patient is removed

- disinfect contaminated surfaces

IV Drug Abusers/Hemophilia

These patients should be considered candidates for HIV, Hepatitis B or Hepatitis C. Be careful when handling blood and secretions.

- Use gloves, hand washing, safety glasses, and mask or full face shield and if splashing or splattering is likely use a disposable plastic gown.
- discard or disinfect contaminated articles
- disinfect ambulance surfaces

Dialysis Patients

The patient with a history of renal failure who is on hemodialysis or peritoneal dialysis should be considered a candidate for Hepatitis B or C. Be careful when handling blood and secretions from these patients.

- Use gloves, hand washing, safety glasses, and mask or full face shield and if splashing or splattering likely use a disposable plastic gown.
- discard or disinfect contaminated articles
- disinfect ambulance surfaces

Severe Trauma

The patient with severe trauma represents a high risk to the emergency care worker due to the high probability of blood and body fluids splashing and splattering.

- Use gloves, hand washing, safety glasses, and mask or full face shield and use a disposable plastic gown.
- discard or disinfect contaminated articles
- disinfect ambulance surfaces

The Immunocompromised Patient

Patients with immunosuppressive diseases (e.g. leukemia, cancer, and extensive skin conditions, such as severe burns, or dermatitis), and patients who are receiving certain therapeutic treatment (e.g. patients receiving radiation or steroid therapy etc.) are highly susceptible to infection. These patients are often on special “protective” patient care regimen intended to reduce the risk of infection to themselves from others.

- Use gloves, hand washing, and if provider has a respiratory infection wear a face mask.

Emergency responders should respond to every call wearing gloves and *safety glasses*. Both are easily removed if not needed. Masks and disposable plastic gowns should be stocked in all kits for easy access if needed. When in doubt, use maximum rather than minimum personal protective equipment. Never assume that just this one time it is safe to perform a procedure without the appropriate safety protection.



Gloves, a mask with shield or mask with goggles, and gown (optional) are necessary protection when you believe that the risk of direct exposure to blood or splashes of blood or other body fluids is possible.

Preventing the Transmission of Blood Borne Pathogens in Health Care and Public Service Settings

Canada Communicable Disease Report-Supplement Vol. 23S3 May 1997
Epidemiology of the Transmission of Bloodborne Pathogens

Risk of acquiring a bloodborne infection, i.e., HIV, HBV, or HCV in a public service setting depends on three factors:

- A. *Significant exposure to bloodborne pathogens*
- B. *Prevalence of infection in population*
- C. *Risk of infection due to exposure to bloodborne pathogens*

A. Significant Exposure to Bloodborne Pathogens

The evaluation of a significant exposure to a bloodborne pathogen requires investigation of two criteria, type of body fluid and type of exposure.

1. Types of body fluids capable of transmitting HIV, HBV, and HCV from an infected individual include:
 - blood, serum, plasma and all biologic fluids visibly contaminated with blood
 - laboratory specimens, samples or cultures that contain concentrated HIV, HBV, HCV
 - organ and tissue transplants
 - pleural, amniotic, pericardial, peritoneal, synovial and cerebrospinal fluids
 - uterine/vaginal secretions or semen (unlikely to be able to transmit HCV)
 - saliva (for HCV, HBV, and HIV if a bite is contaminated with blood and for HBV if a bite is not contaminated with blood)

Feces, nasal secretions, sputum, tears, urine and vomitus are not implicated in the transmission of HIV, HBV, and HCV unless visibly contaminated with blood. The risk

of transmission from screened donated blood and manufactured blood products is negligible in Canada.

2. To be considered significant, the type of exposure is one in which one of the infected fluids listed above comes into contact with the HCW's (Health Care Worker's) tissue as follows;

- tissue under the skin (e.g., percutaneous or broken skin following a bite)
- non-intact skin (e.g., cut, chapped or abraded skin)
- mucous membrane (e.g., eyes, nose or mouth)

In summary, if the type of body fluid and the type of exposure is indicative of a significant exposure, further investigation is warranted.

Exposure on intact skin does not represent significant exposure.

Significant sources of blood exposure for patients or clients include inadequately cleaned, disinfected or sterilized equipment used in invasive procedures and in hemodialysis units, and cross-contamination of multi-dose injectable medication vials.

Occupational transmission of HIV, HBV, and HCV in health care and public service settings is most commonly associated with injuries involving needles or other sharp instruments or implements.

Transmission following mucous membrane, i.e., mouth, eyes, or non-intact skin exposures have been reported much less frequently. Airborne transmission of bloodborne pathogens has not been documented.

B. Prevalence of Infection in the Population

Prevalence of infection refers to the number of infected persons in a population at a particular point in time. The prevalence of bloodborne infections varies by disease from one region of Canada to another, from rural to urban areas, and from one city to another. Prevalence data for HIV, HBV, and HCV infections in Canada can be obtained from Health Canada.

C. Risk of Infection Due to Exposure to Bloodborne Pathogens

The risk of infection after exposure to infected blood varies by bloodborne pathogen. The risk of transmission after parenteral exposure to HIV-infected blood is about 0.3% whereas it is estimated to be up to 100 times greater for HBV (30%) and may be between 3-10% for HCV.

Other Bloodborne Pathogens

No data exist to suggest that human T-cell lymphotropic virus (HTLV) type I or II or Epstein-Barr virus are transmitted to HCW's in health care settings. Studies on HTLV-I and II indicate that sexual contact, blood transfusion, and shared injection drug paraphernalia rather than casual contact are risk factors for acquisition.

Protecting Yourself

Immunization

Immunization is available for several communicable diseases. Paramedics would benefit from having primary immunization and booster up to date. Personal physicians or local Public Health Offices can provide the most current information on immunizations.



Mumps, Measles, and Rubella are diseases covered by a primary series and do not require a booster.

Tetanus and Diphtheria are diseases covered by a primary series with a booster suggested at 10 year intervals. Polio is only required once as an adult. Influenza vaccine is recommended every year.

Hepatitis B involves a primary series of three injections at 0, 1, and 6 months. The August 28, 1992 Canada Communicable Disease Report from Health and Welfare Canada revised the guidelines for booster vaccinations (i.e. "follow-up or ongoing vaccinations after the three primary injections) against hepatitis B. As of this report "booster vaccinations for hepatitis B are no longer recommended for immunocompetent people".

The report further states that "immunocompromised people" and those "undergoing hemodialysis" may "need booster doses to avoid significant severe disease or the carrier state that may result from exposure to the hepatitis B virus after vaccination. The optimal timing of booster doses in immunocompromised people who are at continued risk of exposure is unknown; therefore the timing should be based on the severity of the compromised state and the results of regular monitoring (e.g. annual determination of the anti-hepatitis B level)".

Canada Communicable Disease Report from July 15, 1998 states there was a general agreement that mandatory immunization against hepatitis B with follow-up testing and screening for non-responders and people with hepatitis B infection is necessary. However, some concerns were raised by participants about mandatory versus voluntary immunization. This practice may cause some practitioners to refuse to come forward, whether or not they are infected. Some felt that practitioners may want to have patients

tested before surgery and might refuse to perform procedures on those who have bloodborne pathogens.

Recommendations

1. All EMS personnel who are exposed to blood or (manufactured) blood products or at risk for occupational exposure to sharps injuries should be immunized with hepatitis B vaccine for their own protection.
2. The work institution for EMS personnel or the education facility for students of EMS should keep records that document immunization.
3. As stated earlier, a significant part of the infection control process is health maintenance. The National Advisory Committee on Immunization (NACI) recommended immunizations are:
 - A. Diphtheria
 - B. Tetanus
 - C. Measles (Rubeola)
 - D. Mumps
 - E. German Measles
 - F. Hepatitis B
 - G. Poliomyelitis
 - H. Influenza

Additional Preventative Measures

It is important to understand what the hazards of bloodborne and airborne pathogens are and what preventative measures you can take to protect yourself from exposure. The three main areas of protection include Attitude, Personal Protective Equipment (PPE) and Housekeeping.

Attitude

Our attitudes reflect a belief that infectious diseases are only a problem in developing Third World Countries or that we have vaccines that eliminate any serious problem. Our complacency could be fatal to our patients, our families and ourselves if it leads us to ignore proper infection control procedures, which in turn contributes to the spread disease. The right attitude means practicing infection control precautions as described earlier in this manual. This means treating all human blood and body fluids as infectious.

Personal Protective Equipment

At a study conducted by the Department of Emergency Medicine, The John Hopkins University School of Medicine in Baltimore, Maryland and published in the Annals of Emergency Medicine, June 1995. The researchers concluded that because of the unpredictability of procedure needs in unstable patients, full barrier protection should be used for such patients. The study also found significant facial contacts with blood and body fluids during the performance of procedures generally considered to have a low probability of such contacts. Of the blood contacts in the study, 74% were assessed as preventable with additional barrier precautions.

Personal Protective Equipment used in emergency medical care, shall be present on all emergency response department vehicles (NFPA 1581 4-2.4). Personal Protective Equipment includes clothing and equipment worn by an employee during activities which may result in exposure to infectious diseases. PPE always starts with gloves and safety glasses but may also include masks and disposable gowns or aprons. Structural fire fighting gloves shall be worn by employees in any situation where sharp or rough surfaces are likely, such as patient extrication (NFPA 1581 4-2.8). Medical gloves shall not be worn under structural fire fighting gloves while fighting a fire, as gloves may break down or melt when exposed to heat. Medical gloves can be worn under structural fire fighting gloves in an extrication situation.

In general there are three distinct reasons for wearing gloves:

- 1) They reduce the possibility that personnel will become infected with microorganisms that are infecting patients.
- 2) They reduce the likelihood that personnel will transmit their own endogenous microbial flora to patients.
- 3) They reduce the possibility that personnel will become transiently colonized with microorganisms that can be transmitted to other patients.

Precautions

Personal Hygiene

Personal hygiene works both for the protection of the provider and the patient by minimizing the organisms which could be transferred. It includes always wearing a clean uniform while working, and changing out of uniform when finished working shift. This issue becomes especially important for volunteer attendants that are often responding from home or work to calls and need to avoid transferring organisms on their personal clothing. Regular bathing/showering, and frequent hand washing with soap and water should be practiced.

Hand washing

Infection control was born in the mid-1800's in Vienna, Austria when a physician named Ignaz Semmelweis observed that hand washing reduced the incidence of infection in women following childbirth. Semmelweis traveled to other European cities to demonstrate that hand washing could reduce deaths related to infection. Even though he had reduced infection from 18% to 1% in the Vienna hospital, at the time he was not taken seriously by the medical community.

Unfortunately, even in the 1990's, the importance of hand washing is still not taken seriously. Although hand washing remains the most fundamental measure for controlling infection, studies show poor compliance with hand washing protocols. Only 40% of health care providers in the U.S. practice good hand washing techniques (CDC). Failure to wash hands is a complex problem that may be caused by lack of motivation or lack of knowledge about the importance of hand washing. Obstacles such as an unacceptable hand washing product or lack of access to such a product or the presence of dermatitis caused by previous hand washing are also part of the problem. Infection rates in patients, hospital personnel, and emergency responders continue to be a national problem, despite continuing improvements in medical technology.

HANDWASHING IS THE SINGLE MOST IMPORTANT MEANS OF PREVENTING THE SPREAD OF INFECTION

Hand washing causes a significant reduction in the carriage of potential pathogens on the hands. The purpose of hand washing is to remove dirt, organic material, transient microorganisms and dead skin.

Technique

- a) Wet hands with running water. Apply hand washing agent and thoroughly distribute over hands. Vigorously rub hands together for 10-15 seconds, generating friction on all surfaces of the hands and fingers. Bristle brushes should be avoided as the bristles abrade the skin and bring resident skin flora to the surface.
- b) Duration of washing is important, not only for mechanical action but also to allow antimicrobial products sufficient contact time to achieve the desired effect when they are used. Total bacterial counts are higher when rings are worn. Hands should be thoroughly rinsed to remove residual soap and then dried.
- c) Nails may be cleaned with a plastic scraper/stick or by rubbing them against the palm of the opposite hand. Nail polish applied to natural nails seems to have no detrimental influence on microbial load, as long as nails are short. Short nails are probably important because the majority of flora on the hand is found under and around fingernails. Artificial nails may increase microbial load on hands especially gram negative bacteria.

- d) Splashing must be avoided, sleeves must be rolled up and clothing must not touch the sink. Avoid letting water run from an unwashed part of the arm back down to the hands. When the sink does not have foot controls or an automatic shut-off, a paper towel may be used to shut off the faucet to avoid recontamination of the hands.

When hand washing facilities are inaccessible use a waterless alcohol or chlorhexidine-based hand washing product and rub vigorously for 10-15 seconds, e.g. towelettes, liquid gel. Wash hands with soap and water at the next possible opportunity.



Personal Protective Equipment

The public should be reassured that infection control PPE is used as a matter of routine for the protection of all employees and the patients they treat. The use of PPE does not imply that a given patient has a communicable disease. Stress that this is standard procedure.

Gloves

- Employees should don well-fitting, disposable medical gloves for any patient contact. If exposure to blood or other body fluids is not involved, gloves may be removed. Make sure extra pairs are available.
- It is important to note that the volume of blood from a needlestick injury may be reduced by at least 50% when the needle passes through a glove (LCDC Dec. 1995).
- Before putting on gloves, make sure they have no holes, cracks, or tears.
- Change gloves if they become torn or dirty.
- Use fire fighting gloves or safety gloves when working around glass or sharp surfaces. For example, when removing a person from a motor vehicle.
- Change gloves between handling different people.

- Remove gloves by grasping the cuffs and pulling them off inside out.
- **WEARING GLOVES DOES NOT NEGATE THE NEED FOR HANDWASHING**
- Dispose of medical gloves in identifiable medical waste containers.
- Wash hands following glove removal. Studies suggest that health care workers cannot accurately assess when glove leaks occur (LCDC Dec. 1995). Extreme variability in the quality of gloves has been reported, with leakage in 4% to 63% if vinyl gloves and 3% to 52% of latex gloves.
- While wearing medical gloves, avoid handling pens, steering wheel, radio etc., that could become contaminated.
- Gloves that become contaminated should be removed as soon as possible, avoiding skin contact and replaced with a clean pair.
- Cover all areas of abraded, lacerated, chapped, irritated or otherwise damaged skin with waterproof adhesive dressings before putting on gloves i.e. tegaderm.

Masks, Safety Glasses, Gowns

- Employees should wear safety glasses or side shields on prescription glasses (side shields must be present on all glasses to prevent splashed from the side) for initial assessment of all patients. Safety glasses or a face shield is required if you could be splashed with blood or other body fluids. For example, suctioning, ventilating, intubating, starting an intravenous etc. If exposure to, or splattering of blood, respiratory secretions or body fluids is not involved, safety glasses may be removed (Occupational Health and safety, Part 5, Section 86).
- Masks and disposable plastic gowns should be kept in all units. Masks should be worn in all cases where exposure to blood, bloody body fluids or respiratory secretions is involved i.e. suctioning, intubating, severe trauma.
- Where airborne precautions are indicated, a high filtration, well fitting mask is recommended for the uninfected (EMS personnel) so air doesn't go in the sides of the mask
- For the patient a surgical or procedure mask is acceptable
- For other splashing/spraying situations for the uninfected (EMS personnel) the surgical/procedure mask with safety glasses is recommended.
- Change your mask between patients.

- Avoid touching the mask.
- Do not allow masks to dangle from your neck.
- Wear fluid proof gowns whenever large amounts of blood or body fluids are present for example, during emergency deliveries, GI bleeds, etc.
- Keep a change of uniform available in case your clothes get soaked or splashed with blood.
- Cover all cuts and scratches on your skin with waterproof adhesive dressings e.g. tegaderm.
- Mouth to mouth contact during resuscitation should be avoided. Use mechanical ventilation equipment i.e. BVM or pocket resuscitation masks. Devices with a one-way valve are preferred.

Housekeeping

Housekeeping refers to methods for cleaning and decontaminating contaminated surfaces and the disposal of blood and body fluids. All decontamination must include the use of an appropriate disinfecting solution and proper PPE.

Gloves will be worn for all contact with contaminated equipment or materials. Other PPE will be used depending on splash or spill potential. Heavy duty utility gloves may be used for cleaning, disinfection, or decontamination of equipment. If a gown is used it should be water repellent.

Eating, drinking, smoking, handling contact lenses, or applying cosmetics or lip balm should not be done during cleaning or decontamination procedures.

Disinfection will be performed with a commercially available chemical germicide i.e. Hydrox or with 1:100 solution of bleach in water, prepared daily. If using bleach for cleanup of blood spills, or if blood and/or other body fluids are present on surface to be cleaned and disinfected use a 1:10 concentration of bleach mixture (1 part bleach to 9 parts tap water).

Any damaged equipment will be cleaned and disinfected before being sent out for repair.

Needles and Syringes

Parenteral or percutaneous exposure to used needle, sharp instrument or other sharp objects (e.g. bent metal, broken glass) contaminated with the blood of an infected person presents the greatest potential risk for transmission of HBV, HCV, HIV and other

bloodborne pathogens to the health care worker. The risk of acquiring HIV infection from needlestick exposure is considerably less than that of acquiring HBV infection (0.37% for HIV compared to 2-40% for HBV). The risk of acquiring HCV is 3-10%. Since many incidents of needlestick injury involve recapping of needles, guidelines recommend that needles not be recapped, bent, or cut, but disposed of directly into puncture-proof containers (NFPA 1581 4-3.3). It is also recommended that sharps containers be replaced when two thirds to three quarters full. Sharps containers will be present in the units and in the medical kits.

In a recent study of needlestick injuries, health care workers gave the following reasons for continuing to recap needles:

1. To protect themselves during the disassembling of a device with an exposed contaminated needle.
2. To protect themselves from exposed needles when several items have to be carried to a disposal box on a single trip.
3. To store a syringe safely when the contents are to be administered in two or more doses.
4. To protect others whom the worker has to pass in a confined space on the way to the disposal box.



Any of the above hazards were considered by these workers to pose a greater risk than recapping. Manual single-handed recapping procedures are safe when the sheath or cap is fixed in a device or laid on a flat surface and the free hand is kept away from the sheath and well behind the exposed needle.

Scene Safety

Approaching the Scene

Determining personal safety is an integral part of analyzing the scene. It begins before arrival at the scene with information provided by a dispatching center. A key point in ensuring personal safety is to identify and respond to dangers before they threaten. Information that may be available from a dispatching center that should alert the EMS crew to possible dangers include known locations of unsafe scenes (e.g., through computer aided dispatch systems) and/or the presence of the following:

- Large crowds
- People under the influence of alcohol and other drugs
- On-scene violence
- Weapons

Other information can sometimes be gathered en route to the scene from crew members and other emergency responders monitoring the call who have had previous experience with a particular area or address. The paramedic also should be aware of additional

inherent hazards that may exist at the scene. Examples include downed power lines, busy roadways, toxic substances, the potential for fire, dangerous pets, and vehicle hazards and dangers. If the scene cannot be rendered safe, the EMS crew should retreat and stage at a safe location to await the arrival of law enforcement and/or other rescuers.

When responding to a scene with a potential for danger, the EMS crew should begin observation several blocks from the scene and use audible and visual warning devices appropriate for the call. For example, responding with audio and visual warning (AVW) devices to an urban scene may draw a crowd of bystanders; lights generally are required for safety at highway scenes.

Scene safety considerations for all forms of danger must continue throughout the EMS response. A scene that has been made safe can become unsafe (even in the presence of police) if violence resumes, crowds gather or turn violent, or additional persons enter the scene. Violence against EMS personnel also may arise when they are mistaken for police because of uniform colors or badges, or when they exit an emergency vehicle that has AVW devices. The EMS crew must be familiar with local protocols when intervening in violent situations and have a strategic escape plan ready in case it is needed.

Known Violent Scenes

If the scene is known to be violent, the EMS crew should remain at a safe and out-of-sight distance from the area until it has been secured (“out of site-out of scene”). Remaining at a safe staging area away from a violent scene is important for several reasons:

- If you can be seen, people will come to you
- Entering an unsafe scene adds another potential victim(s)
- You may be injured or killed
- You may become a hostage
- You may become another patient in a scene that is already a multiple-casualty incident



The Dangerous Residence

An emergency response to a residence is an every-day occurrence for most EMS providers. However, even calls that appear “routine” require a size-up that begins before exiting the emergency vehicle. Warning signs of danger in residential calls include the following:

- Past history of problems or violence
- Known drug or gang area
- Loud noises (e.g., screams, items breaking, possible gunshots)
- Seeing or hearing acts of violence
- The presence of alcohol or other drug use

- Evidence of dangerous pets (e.g., vicious breeds of dogs)
- Unusual silence or darkened residence

If any of these or other warning signs of danger are present, the EMS crew should retreat from the scene and call for law enforcement assistance.

During an approach to a suspicious residence, the EMS crew should choose tactics that match the threat or situation. For example, avoiding the use of AVW devices, using unconventional pathways (versus a sidewalk, for example) and avoiding a position between the ambulance lights and residence (back lighting) are safety measures that should be considered. In addition, paramedics should listen for signs of danger before announcing their presence or before entering the home, and stand on the side of the entry door opposite the hinges (doorknob side). When actual danger becomes evident, paramedics should immediately retreat from the scene.

Dangerous Highway Encounters

Like calls to residences, an emergency response to a traffic incident should never be considered routine. In addition to the inherent dangers associated with traffic flow, emergency vehicle positioning, and extrication, a danger of violence may exist. For example, occupants may be armed, wanted, or fleeing felons, intoxicated or drugged, or violent and abusive from an altered mental state.

When approaching a vehicle, a one-person approach is recommended. This allows the partner who remains in the ambulance (which is elevated and provides greater visibility), to notify dispatch of the situation, location, license plate number, of suspicious vehicles. At night-time, ambulance lights should be used to illuminate the interior of the vehicle and surrounding area.

The paramedic who approaches the car should do so from the passenger side of the vehicle. This provides protection from vehicular traffic and usually is the opposite approach that a driver would expect from law enforcement personnel. Another safety precaution is not to walk between the ambulance and other vehicle (to avoid being trapped and injured if the vehicle backs up) and walking round the rear of the ambulance and then to the passenger side of the vehicle.

Car posts A, B, and C may provide the best ballistic protection. The paramedic should observe for unusual activity in the rear seat and not move forward of post nearest the threat unless no threats exist in these areas. The paramedic should observe the front seat from behind post B and move forward only after ensuring safety. If warning signs of danger are present (e.g., weapons, suspicious behavior or movements in the vehicle, arguing or fighting among passengers), the paramedic should immediately retreat to a safe staging area and request law enforcement assistance.

Violent Street Incidents

Murder, assault, and robbery are all crimes involving dangerous weapons. Violence may be directed toward EMS personnel from perpetrators at the scene (or who return to the scene), and even from injured and distraught patients. In addition, dangerous crowds and bystanders quickly can become large in number and volatile, directing violence toward everyone and everything in the surrounding area. Warning signs of potential danger in violent street incidents include the following:

- Voices that become louder
- Pushing or shoving
- Hostility toward people at the scene (e.g., perpetrator, police, victim)
- A rapid increase in the size of crowds
- The inability of law enforcement personnel to control crowds



Paramedic crews should constantly monitor crowds and retreat from the scene if necessary. When possible and when safe to do so, the patient should be removed from the scene as the crew retreats. (This may eliminate the need to return to the scene).

Tactics for Safety

Tactics for safety include avoidance, tactical retreat, cover and concealment, and distraction and evasive maneuvers. Numerous training programs specialize in teaching tactical considerations for safety and patient care. A brief description of these safety tactics is provided in the following sections.

Avoidance

Avoidance is always preferable to confrontation. To practice avoidance, paramedics must continually be aware of the scene by being observant and knowledgeable of warning signs that may indicate a dangerous situation. In addition, they must be knowledgeable of tactical responses to avoid danger or to deal with danger that cannot be avoided. An example of avoidance is staging, whereby the dispatching center learns of danger and advises the EMS crew not to approach the scene until the danger is handled and the scene is secured by appropriate authorities.

Tactical Retreat

Tactical retreat describes leaving the scene when danger is observed or when violence or indicators of violence are displayed. Tactical retreat requires immediate and decisive action. Retreat on foot or by vehicle (in a calm and safe manner) is possible by choosing the mode and route of retreat that provides the least exposure for danger. During tactical retreat, the EMS crew should be aware that the risks they faced are now located behind

them and must stay alert for associated dangers. The required distance from danger for a safe tactical retreat will, of course, be guided by the nature of the incident. In general, a safe distance must accomplish the following:

- Protect the crew from any potential danger
- Keep the crew out of immediate line of sight
- Protect the crew from gunfire (cover)
- Keep the crew far enough away to react if danger reappears

Once tactical retreat has been achieved, the EMS crew must notify other responding units and agencies of the danger per interagency EMS /law enforcement standard operating procedures and agreements. (Interagency procedures regarding violent situations should be established in preplanning so that each agency is aware of specific duties and responsibilities.)

Documentation also is essential to reducing liability if injuries or deaths occur. Thorough documentation should include observations of danger at the scene; who was notified of the danger; actions at the scene; and accurate times that retreat or return to the scene occurred.

Cover and Concealment

Cover and concealment are means to provide protection from injury. Cover provides ballistic protection by “hiding your body” behind large and heavy structures such as large trees, telephone poles, and the vehicle’s engine block. Although concealment also hides the body, it offers little or no ballistic protection. Examples of concealment include hiding behind bushes, wallboards, and vehicle doors.

Cover and concealment should be integrated in tactical retreat or when the EMS crew is “pinned down” (e.g., by gunfire) or in other dangerous environments. When the need for cover or concealment arises, the paramedic should:

- Constantly be aware of surroundings
- Place as much of the body as possible behind adequate cover
- Constantly look for ways to improve protection and location
- Be aware of reflective clothing (e.g., trim, badges that may draw attention or serve as a target)

Distraction and Evasive Maneuvers

Distraction and evasive tactics can be used as self-defense measures during retreat, or when retreat and cover and concealment are not available options. For example, using equipment such as wedging a stretcher in a doorway to block an aggressor or throwing equipment to trip or slow an aggressor may provide distraction and enable the EMS crew to make a safe retreat or to gain adequate cover and concealment. Evasive tactics include anticipating moves of the aggressor and using unconventional pathways during retreat.

Restraining Patients

Despite all efforts to remain at a safe distance or to avoid becoming involved in a violent situation, there may be times when EMS personnel find themselves confronted by a violent non-competent patient while attending the patient.

- If necessary EMS personnel should leave the scene until the police arrive.
- If they cannot leave the scene then protective actions should be taken.
- To protect themselves, the patient's family, friends, and the patient from harm it may be necessary for the EMS personnel to temporarily physically restrain the patient.
 - Though restraint of a non-competent patient is normally a police function, the police may be delayed or not immediately available to undertake the immediate restraint of the suddenly violent patient.
- EMS personnel should use only the minimum amount of physical restraint required to prevent injury to all involved.

Procedure for Managing a Restrained Patient

- Explain restraining actions to the patient, family, and others at the scene.
- Use all reasonable precautions to safeguard the welfare of the patient and others.
 - Ensure the patient is not injured in the restraining process or by the restraints.
- Ensure the airway is maintained.
- Position the patient in the recovery position if possible.
- Document the indication(s) for restraint and action(s) taken.
- Record examinations at regular, frequent intervals while the patient is restrained.
- Police assisting in patient restraint must accompany the patient in the ambulance in case the restraints need to be removed.