

DECEMBER 2009 NEWSLETTER

Our web site is: www.oregon.gov/osp/sme

RETIREMENT FOR EUGENE JACOBUS:

Please join us with great honor for the distinguished career achievement of Eugene Jacobus of Washington County Medical Examiner's Office who has announced his retirement. Eugene Jacobus has dedicated almost 40 years of service to the citizens of Oregon as a Deputy Medical Examiner and Chief Deputy Medical Examiner for Washington County. This dedication to service is unsurpassed. We humbly thank him for his many years of service and wish he and his family many years of leisure.

BLOOD ALCOHOLS OF TRAFFIC FATALITIES:

State law mandates that all victims over 13 years of age dying as a result of a motor vehicle related accident have blood tested for the alcohol content. It makes no difference whether the decedent is the driver, passenger, pedestrian or bicyclist. In cases of delayed deaths at the hospital, the physician/medical examiner or his designee should check with the hospital laboratory to see if an alcohol level was run and if so, obtain the results. If hospital admission blood is still available, it should be submitted to the Medical Examiner's Toxicology Laboratory, which will run the test. The importance of these results to both the victim and others involved in the accident often exceeds that of information obtained on any other aspect of the accident investigation.

Oregon receives federal dollars for meeting a minimum standard for testing. In 2009, Oregon barely met this standard and only with the last minute efforts from our clerical staff making phone calls to County Medical Examiners. This would have meant the loss of over \$1,000,000 to Oregon. Please help us out for 2010.

40-HOUR OREGON CERTIFIED MEDICOLEGAL DEATH INVESTIGATOR COURSE:

*****CANCELLED*****

Our class scheduled for February 8th through the 12th, 2010 has been cancelled due to a low response for applications. This would have concluded our 5 year plan with the current structure. This summer we will start a new curriculum and priority will be given to those who did apply for the February class.

OCMLDI RECERT HOURS:

Please use the recertification form supplied to you when you received your certificate. Make copies as needed. Make sure you document your class name and the hours. You DO NOT need to send in the supporting class papers, agenda, certificates etc. Only send them to us if you are asked to do so. We will do a select number of audits throughout the year. Please keep the supporting documents for this purpose. As we gain more certified investigators, we may go to a bi-annual recertification process which will make it easier for all.

**Please have a safe rewarding holiday,
From all of us at the State Medical Examiner's Office.**

December 2009
ACCIDENTAL HYPOTHERMIA
Larry V Lewman, MD

A 58-year-old lady was found dead on a clear winter morning in a field by children on their way to school. The partially-clad body was face down in a bush, almost covered by snow. Her blouse and coat were found several feet away. One shoe and sock had been removed. There were numerous scratches and bruises evident on her face and extremities. Foul play was suspected because of the injuries and partial removal of her clothing.

Police investigation at the scene showed only the victim's footprints in the snow and these suggested that she staggered around for a while prior to collapse. An autopsy failed to demonstrate fatal injuries or evidence of sexual assault. Background investigation by the deputy medical examiner involved questioning the deceased's friends and neighbors. This disclosed that the evening prior to death the deceased had visited a friend and the two had imbibed alcohol until approximately 2 a.m. She was described as intoxicated and staggering when she left. She had ambulated about one-half mile toward home, apparently became disoriented and collapsed. The temperature during the night ranged from 29 to 35 degrees Fahrenheit.

QUESTIONS:

1. What autopsy findings suggest a diagnosis of hypothermia?
2. Explain the partial removal of clothing.
3. What role did alcohol likely play in the death?
4. What other factors affect susceptibility to hypothermia?
5. Hypothermia victims may lie motionless or unconscious for hours only to succumb suddenly and unexpectedly during transportation to an emergency facility. Explain this unnecessary tragedy.

ANSWERS:

1. There are no diagnostic autopsy findings in a hypothermia victim, although several nonspecific findings should suggest this diagnosis. The pathologist must base this diagnosis upon the circumstances of death, suggestive autopsy findings and exclusion of other causes. For this reason, it is paramount that the medical examiner discuss the circumstances of death with the pathologist prior to autopsy. The following pathologic findings suggest the diagnosis of hypothermia.
 - A. Lividity is usually reddish in color and may suggest the possibility of carbon monoxide in a closed environment. Cyanosis may be minimal or absent due to impaired dissociation of oxyhemoglobin. Cold shifts the oxygen dissociation curve and as the temperature falls there is a decreased release of oxygen at the tissue level.
 - B. There are usually areas of skin pallor and erythema or purple discoloration, the latter due to packing of red cells in the superficial skin capillaries. Erythema, skin slip and subcutaneous edema constitute early "frostbite," and are best seen in the distal extremities.
 - C. The viscera are acutely congested. The lungs may be either congested or well expanded and congested. Areas of focal intraalveolar pulmonary hemorrhage are usually present. The physiologic response of the heat regulatory mechanism when exposed to cold is peripheral vasoconstriction with shunting of blood volume to the viscera. For this reason, the skin is pale and the viscera congested.
 - D. Small mucosal hemorrhages and ulcerations are frequently identified in the stomach and duodenum. In delayed deaths from hypothermia, hemorrhagic pancreatitis, pancreatic fat necrosis, disseminated intravascular coagulation and perivascular hemorrhages in the cerebral white matter may be demonstrated.
 - E. Minor nonspecific abrasions and contusions are usually present as the hypothermic individual is confused, disoriented and staggering about prior to collapse.

December 2009
Accidental Hypothermia
Page 3

2. Hypothermia victims will sometimes remove part or all of their clothing prior to death. This phenomenon is described in mountain climbers who become lost and is likely a reaction to a paradoxical warming sensation after the central heat control mechanism breaks down. In addition, hypothermia victims are known to manifest abnormal behavior, lethargy and delirium prior to collapse.
3. The victim's blood alcohol level was 0.26%. Alcohol potentiates the effects of cold. The body conserves heat by cutaneous vasoconstriction. Since alcohol is a vasodilator, it accelerates the loss of body core temperature. The fact that common sense and judgment are soluble in alcohol needs no additional emphasis here.
4. Age, injury, physical condition and the presence of natural disease or drugs may alter the ability to tolerate cold. High humidity and wind increase effects of cold. A person warmly dressed is obviously more able to cope with cold than someone scantily clad. An obese individual retains body core temperature longer than a slender individual. Immersion in cold water increases the effects of hypothermia by a factor of several times (immersion hypothermia).
5. The body reacts physiologically to cold by shunting blood from the peripheral circulation to the more vital viscera. Blood in the extremities and peripheral circulation is, therefore, considerably colder than blood in the body core. Movement of the extremities may suddenly introduce this cold blood into the systemic circulation. The heart is sensitive to cold and a sudden bolus of cold blood can precipitate ventricular fibrillation. For this reason, the hypothermia victim should be encouraged to remain as motionless as possible and care should be taken to minimize movement during transportation.

A tragic example of this mechanism occurred in Oregon recently. A teenage boy became lost in the snowy mountains during the winter and sought shelter during the night huddling under a tree. The following morning, he spotted his rescuers and collapsed dead in the snow while running to greet them.