

# The Mine Injury and Trauma Seminar: A Way to Save Lives

The author describes his journey to Ecuador for a seminar he was invited to teach for medical personnel working in or around demining sites. Working with the Organization of American States, the author developed a seminar to teach mine-clearance experts what actions to take if someone is injured by a mine, enabling personnel to react to multiple types of stimuli while working in the field. The author explains the details of this seminar and why it is an important part of the mine-action process. He also provides information on Ecuador's own mine problem.

by Adam Kushner, MD, MPH

I am in Ecuador, a Latin American country of 13.3 million people, at the invitation of the Office of Humanitarian Demining of the Organization of American States. The OAS oversees demining projects throughout Latin America. Some of you may remember that two years ago I went to Nicaragua on a similar mission. This time I was asked to conduct trauma-training seminars in Quito and then do a field assessment.

The purpose of my field visit was to evaluate the emergency medical capabilities and evacuation process in the unlikely event of a demining injury. I spent time visiting the worksites and medical facilities, interviewing deminers and medical personnel, and gaining a full understanding of the situation. Overall it was a very productive mission and I received substantial positive feedback.

## A Little Background

Ecuador is one of the smallest countries in South America and sits astride the equator—hence its name. There are four distinct regions: the coast, the Andes highlands, the Oriente (the east) and the Galapagos Islands. Quito, the capital city of 1.4 million people, sits in the Andes at about 9,000 feet (2,743 meters) in a long valley surrounded by mountains and volcanoes. The recently renovated Centro Histórico (historical center) is the old part of town designated as a UNESCO World Heritage site;<sup>1</sup> it is quite impressive. The new part of town is quite modern, and plenty of American chain restaurants are visible on numerous street corners.

With a per-capita gross domestic product of US\$3,700, Ecuador is better off than many of the countries I have visited recently, but it



Sunset over the Rio Coco, the Nicaraguan-Honduran border, in Waspan.  
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still has a long way to go. Interestingly, in September 2000, Ecuador switched its currency and began using the U.S. dollar. Now I don't mean that their currency is pegged to the dollar; they actually only use real U.S. dollars. U.S. coins, including the Sacajawea dollars that have all but disappeared from use in the States, are also in circulation.

Ecuador's history includes colonization by the Incas in the early 15<sup>th</sup> century and later by the Spanish in 1533. The country gained independence in 1822 and soon after, a long border dispute began with Peru. Wars and skirmishes were fought every few years until 1995. A compromise was finally reached and a peace treaty signed in 1998 when Ecuador gained a square kilometer (0.4 square mile) of land that was previously considered Peru's. One of the unfortunate lasting results of the conflict, however, is an estimated 11,000 emplaced landmines.

## Santiago's Situation

Since the humanitarian mine-action programs began in Ecuador in 1999, there have been no demining injuries; however, one civilian death and two injuries have been reported in the region around Santiago. The sites we visited most recently began operations in 2004. Clearing is expected to continue until 2008 or 2009. Although clearing landmines is usually a slow, arduous and dangerous task, working in the jungle presents even more complex problems. Unlike minefields I have seen in Azerbaijan, Kosovo, Bosnia and Sudan, in Ecuador the mountainous terrain mixed with the thick jungle vegetation, humidity and high temperatures present even greater challenges.



Dr. Kushner with Peruvian and Ecuadorian doctors and paramedics in Quito, Ecuador.



Ecuadorian and Peruvian doctors and paramedics practice airway skills.

### MITS Training

My first week in Ecuador was spent teaching the Mine Injury and Trauma Seminar to Ecuadorian, Peruvian and Colombian military paramedics, nurses and physicians. This seminar, which I created from numerous sources, provides a review for medical personnel working in demining units and concentrates on the basics of trauma care, including the "ABCs": Airway, Breathing and Circulation. Airway, breathing and circulation are the cornerstone of the MITS, which is sponsored by the OAS's Office of Humanitarian Mine Action.

During May 2004 in Nicaragua and again in November 2006 in Ecuador, with OAS support, I ran the seminar for military and civilian paramedics, nurses and physicians. The seminar is designed as a short refresher course for medical personnel with specific emphasis on treating mine victims.

MITS is held over two days, with the first day consisting of lectures, videos, and discussions and a second day devoted to skills practice and role-play scenarios. I taught two full sessions, and all the participants stated that they learned a great deal. Apart from the Quito presentations, in Santiago I was able to teach an abbreviated version of MITS to the paramedics, squad leaders and the local civilian doctor and nurse. Although the seminar is designed for military medical personnel working with demining units, I also cover issues relating to all types of

trauma in general. When I am in the field, I eagerly strive to include civilian personnel whenever possible; they are the ones more likely to treat traumatic injuries on a daily basis, unlike the military personnel who are on standby and see few victims.

The goal of the seminar is twofold: to review procedures to keep an injured victim alive and to facilitate transfer to a hospital for definitive care. These goals are accomplished through teaching basic trauma principles, such as the ABCs, which include life-saving maneuvers for getting oxygen to the lungs and stopping bleeding.

The seminar focuses on understanding the principles behind the causes of wounds. As many injury-prevention experts say, injuries are not accidents; there are identifiable and preventable risk factors. Prevention is the optimal therapy, but by understanding the mechanisms of injury, differing patterns of wounds, forces involved, and anatomy and physiology, many injuries can be predicted and efforts made to anticipate the needs of the victims.

According to data from the International Committee of the Red Cross, landmine injuries occur in three distinct patterns. Pattern I injuries result from a person stepping on a blast mine and suffering a traumatic amputation of the foot or leg. Pattern II injuries can affect the entire body, particularly the abdomen and chest, and occur from activation of a fragmentation or bounding mine. Pattern III injuries affect the face and hands (often leading to blindness) and result from handling mines.<sup>2</sup>

Although MITS was designed for military medical personnel working with demining units and specifically for treating landmine victims, the principles which are taught are applicable for all types of traumatic injuries. Students not only learn how to care for mine injuries, but also how to care for injuries resulting from motor-vehicle crashes, gunshot or stab wounds, assaults or falls.

The theory is to provide a framework for medical personnel to assess the entire situation. This includes observing the local environment, determining what

types of mines are emplaced in the area and what safety precautions are in place and then determining what the likely injuries will be and what patient needs will result. Controversial topics such as tourniquet use, needle cricothyroidotomy,<sup>3</sup> needle thoracic decompression,<sup>4</sup> and the use of pneumatic anti-shock trousers<sup>5</sup> are covered. Emphasis is placed on each team deciding its own protocols, assigning team members to undertake these procedures and determining what level of training is required. While these procedures are often life-saving, especially in the remote locations of the demining camps, if undertaken by unskilled personnel, substandard outcomes can result. MITS is not designed to certify personnel in new procedures but to review principles and indications.

Additional issues covered include methods for safe transport, intravenous fluid

administration, antibiotic use, pain relief, data recording and the importance of mental health.

The second day is a practical session in which scenarios are presented and students demonstrate their skills. Student volunteers act as victims and are cared for as they would be in the field. Immediate feedback is given and situations are altered to test responses and knowledge. A mannequin was incorporated during the Ecuador seminar and was very useful for practicing airway skills.

The primary philosophy of the MITS program is to emphasize the principles of airway, breathing and circulation, thereby optimizing immediate survival for mine victims by allowing stabilization and facilitating transport to a hospital for emergency surgery to begin the long road to recovery and rehabilitation. ♦

*See Endnotes, Page*



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