Primary Care of Landmine Injuries in Africa

A Basic Text for Health Workers

Produced by International Physicians for the Prevention of Nuclear War
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Introduction

Anti-personnel (AP) landmines, a pandemic of the second half of the 20th century, have caused mutilation and death on a global scale. Africa is the most heavily mined continent in the world today, with 18 of its nations plagued by 18-30 million anti-personnel landmines. No African countries are now listed as manufacturers or exporters of landmines (South Africa, Uganda, and Zimbabwe are reported to have ceased production). The rural populations of Africa are, however, among those most affected by the indiscriminate distribution of this weapon.

In the year up to March 1999, new use of AP mines was reported in Angola, Djibouti, Guinea-Bissau, Somalia, and Uganda. Though several of those countries have signed the treaty banning use, factional groups may continue to employ landmines.

A study of one province (Monica) in Mozambique estimated that there were 16.7 landmine injuries per 1,000 living persons. Of the injured, approximately 51% died as a result of the injury; of these deaths, 75% of deaths occurred before the victim reached a hospital.

Two-thirds of the victims were civilians; of these many were children or adults under 45 years of age. The effect on families of the loss of a spouse or a child is profound.

Effective first aid, rapid transport, and skilled primary care are vital to manage landmine injuries better. Africa does not have adequate medical resources and facilities or the professional knowledge and expertise of health care staff in the rural areas where landmines are most prevalent to provide the necessary care and support for the continent's many landmine victims.

This handbook has been prepared as a specific contribution to the management of sudden severe injuries caused by landmine explosions by increasing the understanding and confidence of those African health workers in rural areas. We hope that it may also contribute to general trauma management at the rural level. The text is based on discussions conducted by 19 African and international contributors who met for six days in Nyeri, Kenya, in November 1998. The meeting was sponsored by International Physicians for the Prevention of Nuclear War (IPPNW) and received generous assistance from The Royal Danish Ministry of Foreign Affairs (Danida).

Ian Maddocks
Coordinating Editor
DEFINITION

A mine is a weapon made of a small packet of high explosives contained in a plastic or metal casing of various shapes, sizes, and colours. It is designed to be easily hidden in such a way that a person does not see it. Direct or indirect contact with the mine triggers the weapon's explosion and causes serious injury.

When used by soldiers against each other, or scattered to cause injury, a mine usually is hidden just under the surface of the soil or in vegetation beside a path where an attached trip-wire catches the leg of a passing person.

The mine is made to explode either by the pull on a trip-wire or by the pressure of the weight of a person or animal stepping on the soil surface above the mine. Most anti-personnel mines explode under a weight of about 5-10 kg. A small dog will usually be too light; a walking child, however, has sufficient weight.

The pull or pressure may make an electrical contact so that a small battery sets off the explosive charge, or it may bring two chemicals into contact to do the same. Most mines have metal in their casings or as part of the internal mechanism; some are made of plastic or ceramic and have so little metal that they are hard to detect with metal detectors. Most of the mines laid in Africa are detectable.

MINE TYPES

Mines are of two main types — blast mines and fragmentation mines — and their actions are illustrated in the diagram below.
TYPES OF INJURY

Blast Mines

Two major mechanisms for the common injury caused by stepping on a blast mine have been identified:

- The effect of the shock wave which travels up the leg, and leads to fractures of bone;
- The effect of blast of released gases on soft tissue which strips flesh away from bone, destroys vascular and nerve attachments, and drives fragments from the soil and the mine casing deep into the flesh.

From the clinical point of view, three patterns of injury are recognized:

Pattern 1 Injuries are inflicted when a victim stands on a buried mine. The blast explosion most often injures the lower limbs. The injury usually causes loss of the foot or part of the leg which has stepped on the mine. Amputation may be required to save life. The blast may strip skin away from underlying muscle; and it may burst tissues where fluid and air are alongside each other within the body — the eardrums, the bowel, and within the lungs.

Pattern 3 Injuries result from picking up a blast mine which explodes in the air, causing severe upper limb, eye, and facial injuries.

Fragmentation Mines

Fragmentation mines usually cause Pattern 2 injuries. They contain many small metal balls or fragments and the explosion drives them out for some distance, penetrating parts of the body not immediately close to the point of explosion. At first sight there may be little obvious injury apart from multiple small puncture wounds, but because metal and plastic fragments penetrate the body in many places — eyes, face, chest, or abdomen, and because they tear the internal tissues, there may be heavy internal bleeding and great risk of infection.

One study of 757 injuries found that more than one half were Pattern 2 injuries (multiple fragment wounds), more than one quarter were Pattern 1 injuries of the lower limbs, and Pattern 3 injuries were less than 10% (Coupland RM Korver A. BMJ 1991; 303:1509-1513)
MINE AWARENESS

Suspect Mines

The presence of mines should be suspected in areas of conflict, often near food gardens or water sources, along major roads, or along routes being used by soldiers.

Signs which indicate that a mine may have been laid:

- Freshly disturbed soil or grass;
- Suspicious or unfamiliar object;
- Areas where animals or people have been injured before;
- Areas where combat has occurred.

What to Do If You Suspect a Mine

Once aware of any suspicious object:

- Do not touch it;
- Warn others nearby;
- Mark the place in a recognizable way - crossed sticks, half-break a tree branch;
- Retrace your steps the way you came, treading in the footprints;
- Inform the community and report your suspicion to the authorities.

It is important to watch for unusual activity or suspicious persons. Encourage "Neighbourhood-watch" groups in local communities so that people report any strange person or activity.

Share knowledge about where mines may be laid

As part of mine awareness education and discussion in rural communities, emphasis should be given to sharing of knowledge and suspicion about where mines may be laid, what signs have been recognised which could indicate the presence of mines, what warning signs are understood (for example, crossed upright sticks).

Clearing mines is very dangerous

There needs to be an emphasis on the danger of trying to clear mines. A study of mines in 4 countries, including Mozambique, showed that 22% of victims were injured when endeavouring to remove mines.
Everyone should know some first aid

In all mine areas there should be some training in simple first aid, with shared knowledge about what can be used for a pressure bandage and for a splint, and knowledge of the best persons to call for assistance in the immediate care of an injured person.

Transport

Thought should also be given to transport. What options are there in the community? Where can the nearest truck or tractor be obtained, the nearest cart in which a victim might lie? How much will it cost to obtain a suitable transport? How long will it take to obtain it? How long will it take to get to the nearest health centre or hospital?

TEACHING MINE AWARENESS

Most mines have been randomly laid — to no pattern. So they can be found anywhere — in fields, in urban areas, along rivers, in gardens, on paths and along transport routes. Local awareness of the location of mines is often quite poor. Regular community discussions about the threat of mines are very helpful. One person can be asked to teach mine awareness to families. This should be a respected person with good education — someone with position such as a school teacher, a minister, a politician, or a leader in a farmer’s group or a women’s group or a mine clearance group.

The local clinical officer or doctor is an appropriate resource for this education. He can gather key persons and encourage them to teach others, and can usually have access to appropriate literature, or possibly attend a mine education workshop.

What is to be taught? People must learn to recognize mines from diagrams that indicate size, appearance, and nature of common mines. Know why mines are laid and what determines where they are laid; what will activate them? Diagrams and pictures will be helpful. The injuries need to be illustrated graphically and, if possible, in colour! It is also important to discuss what to do when an individual is injured by a mine — getting that person back to a safe area, administering first aid, arranging transport to a centre where further care can be given.

The actual number of mines in a locality is less important than one would think. A community of 10,000 persons left their village in Mozambique because of mines, and after three months of careful demining work, only four mines were located. Four mines were enough to deny those people use of their land. The desirable number is none.
The wider effects of landmine injuries on the families of victims and on the communities of victims must also be recognized and discussed. Survivors are often unable to resume the roles they previously had as breadwinners and managers of the home. The community needs to help provide for such families, and this is an added burden on a community already badly affected by conflict. Some outside aid may become available, but usually the long-term survival and well being of affected victims, their families and their community will depend upon what can be achieved within the community itself.

Local communities can also assist in the reporting of information. Data are lacking and, without statistics and facts, priorities cannot be established, policy articulated, and programmes planned. The International Committee of the Red Cross has a mines information system as a tool for promoting synergy among the various political, military, and administrative authorities, non-governmental organisations, United Nations agencies, the International Committee of the Red Cross, and Red Crescent societies who are concerned with the global problem of landmines.

Reporting will allow authorities to determine such matters as:

1) Population density compared to density of mines laid;
2) Security concerns: who has laid mines; are mines still being laid;
3) The method used to lay mines;
4) How mined areas affect civilians: residential, agricultural, industrial;
5) What public or community activities are disrupted because of mines;
6) What transportation systems are affected: roads, bridges, tracks;
7) What is the indigenous mine-clearing capacity;
8) What the health system needs to deal with injuries and other health consequences.