MEDICAL PEACE WORK

MPW Course 3:

War, weapons and conflict strategies

General objectives

This course describes the health effects of war, weapons and strategies of violent conflict. Beginning with weapons of mass destruction it then moves on to other weapons and strategies of war such as the use of landmines and mass rape.

The course concludes with a number of lessons which give an historical and practical analysis of the response of health professional groups to war and militarisation.

Education and Culture
Leonardo da Vinci

Course 3: War, weapons and conflict strategies

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⇨ Course 1 ⇨ Course 2 ⇨ Course 4 ⇨ Course 5 ⇨ Course 6 ⇨ Course 7

Contents

Go to Contents

Go to Glossary

Go to Previous View

Chapter 1: Weapons of mass destruction

Intermediate objectives

By the end of this chapter you will be able to:

- describe the health effects of nuclear, radiological, biological and chemical weapons
- assess how effectively the threat posed by these weapons is being dealt with by the international community.

Lesson 1.1: Nuclear weapons

Author: Xanthe Hall

The subject of nuclear weapons and their effects is so large that this lesson can only cover a small part of the available information. There are links throughout to sources of further information: you can use them if you have time or a particular interest, but you do not need to read them to understand this lesson.

Learning objectives

By the end of this lesson you will be able to:

- describe the characteristics of nuclear weapons
- explain the dangers they pose to human health and the environment
- describe the situations in which they might be used and their possible effects.

Target X action: A medical student explains to a passer-by in Amritsar, India, the medical effects of the use of nuclear weapons (Credit IDPD)

Health professionals have worked for over 30 years to inform the public and world leaders about the health consequences of the use, testing and production of nuclear weapons, in order to convince people that they need to be abolished. The International Physicians for the Prevention of Nuclear War (IPPNW) won the Nobel Peace Prize in 1985 for this educational work.

Weapons are generally divided into the categories 'conventional' and 'non-conventional'; all the weapons described here fall into the latter category. Nuclear, biological, chemical and radiological weapons are classified as 'weapons of mass destruction' (WMD) because of their capacity to kill large numbers of living beings indiscriminately. Radiological weapons are a relatively new addition to the WMD category. Nuclear weapons should be seen as being in a class of their own, however, because their destructive power is much greater than other WMD.

What are nuclear weapons?

Nuclear weapons, the ultimate weapons of mass destruction, exist to threaten to kill massive numbers of people. Their destructive power– even relatively small ones like those used to bomb Hiroshima and Nagasaki – is many times greater than that of 'conventional' weapons.

Box 1: Hiroshima and Nagasaki

The ruins around the Industrial Promotion Hall, now known as the Atomic Bomb Dome. Photo: US National Archives

'Hiroshima, Monday 6 August 1945. A few seconds after 8.15am, a flash of light, brighter than a thousand suns, shredded the space over the city's centre. A gigantic sphere of fire, a prodigious blast, a formidable pillar of smoke and debris rose into the sky: an entire city annihilated as it was going to work, almost vapourised at the blast's point zero, irradiated to death, crushed and swept away. Its thousands of wooden houses were splintered and soon ablaze, its few stone and brick buildings smashed, its ancient temples destroyed, its schools and barracks incinerated just as classes and drills were beginning, its crowded streetcars upended, their passengers buried under the wreckage of streets and alleys crowded with people going about their daily business. A city of 300,000 inhabitants – more, if its large military population was counted, for Hiroshima was headquarters for the southern Japan command. In a flash, much of its population, especially in the centre, was reduced to a mash of burned and bleeding bodies, crawling, writhing on the ground in their death agonies, expiring under the ruins of their houses or, soon, roasted in the fire that was spreading throughout the city – or fleeing, half-mad, with the sudden torrent of nightmare-haunted humanity staggering toward the hills, bodies naked and blackened, flayed alive, with charcoal faces and blind eyes'. (Guillain 1980)

Three days later, the US dropped another bomb on Nagasaki in Japan.

According to the Radiation Effects Research Foundation (RERF), there were between 90 000 and 140 000 acute deaths (within two to four months) in Hiroshima and between 60 000 and 80 000 in Nagasaki.

More information on the atomic bombings of Hiroshima and Nagasaki: http://www.slmk.org/larom/ENG/Dokument/History/Hiroshima_nagasaki%20ADVANCED.pdf

This destructive power and the attendant radiation effects put nuclear weapons in a class of their own. Even the WMD description, which is also used to describe biological, chemical and radiological weapons, is misleading, since a nuclear war involving the many thousands of nuclear weapons in existence would jeopardize life itself. The latest studies show that even a limited use of smaller nuclear weapons could result in climate changes that would lead to mass starvation.

Some of today's nuclear weapons make the Hiroshima bomb (12.5 kilotons) seem tiny. A modern submarine like that used for the US Trident nuclear weapons system carries 24 missiles with up to 4 multiple independently targeted warheads, each warhead with between 100 kt and 455 kt destructive power.

One such submarine possesses an explosive power of between 700 and 3500 times greater than the bomb that destroyed Hiroshima. That bomb killed 136,000 people in the first four months, severely injured many thousands more and caused long-term damage to the health of survivors and their children (see Box 1).

The destructive force of a nuclear explosion

A nuclear explosion is triggered through the splitting of an atom that causes a chain reaction. This in turn results in the release of an immense amount of energy in the form of an explosion many times greater than that of conventional explosives. The size of the area affected depends on the 'yield' (explosive force) of the bomb, measured in kilotons or megatons. Most modern nuclear weapons have a yield of between 100 and 300 KT, smaller than the enormous hydrogen bombs of the Cold War, but much larger than the first bombs to be exploded in 1945. More information on nuclear fission and how it works: *http://www.atomicarchive.com/Fission/Fission1.shtml*

The fireball

When a nuclear weapon explodes, there is a blinding light followed by an intense wave of heat comparable to that of the interior of the sun. An extremely hot and highly luminous spherical mass forms, which is the fireball. The fireball from a one-megaton nuclear weapon would appear many times more brilliant than the sun at noon to an observer 50 miles away. The heat wave travels at the speed of light, vaporizing everything within a certain distance, melting solid materials at greater distances, and starting fires further away.

Nuclear explosion at the Nevada Test Site, USA, on April 15, 1953. Photo: US Department of Energy

Firestorms

The heat wave initiates firestorms: oxygen is depleted and hurricane-like winds are created, attracting debris and feeding the storm itself, spreading the fire at high speeds and creating super-infernos. High levels of radiation are released from the explosion. An electromagnetic pulse (EMP) releases tens of thousands of volts per metre in a fraction of a second, destroying communication, electronic and power systems. Many hospitals would barely be able to function as their equipment would be out of order. The pulse also affects motor vehicles and transporting patients would therefore be a problem. Pacemakers may cease to function, causing widespread heart failure.

The blast

The effects of a blast wave on a wooden frame house 1,100 meters from the centre of the explosion. The photos were taken during a nuclear test on the Nevada Test Site in 1953. Blast pressure 5 psi, surface winds of 257 kpm were created.

Photos: US Department of Energy

Nearly half of the energy from a nuclear explosion forms a blast wave that travels at supersonic speed, levelling reinforced concrete structures and reducing all buildings to debris. The blast destroys buildings and turns bricks, lumber, furniture, cars and people into missiles. High pressures will turn a window into a thousand particles of glass travelling in excess of 150 km per hour.

Fallout

As the fireball cools, the vapours condense to form a cloud in the shape of a mushroom. The mushroom cloud attains a height of approximately five kilometres in 30 seconds and eight kilometres in about a minute. The average rate of rise during the first minute or so is nearly 300 km per hour. There is a strong updraft that causes material to be sucked up from the ground and mixed with the radiation in the fireball. When this eventually falls back down to the ground – often carried by high winds much further away – the material is contaminated and is known as 'fall-out'. More information on what a nuclear explosion is like: *http://www.cddc.vt.edu/host/atomic/nukeffct/enw77a.html*

The effects on health of the use of nuclear weapons

Burns

Photo: US National Archives

The pattern of these flash burns corresponds to the dark areas of the kimono this woman wore at the time of the explosion.
The heat wave from the nuclear explosion and firestorms cause third-degree burns. Anyone as far away as 20–30 km who glanced at the fireball would suffer retinal burning and potential blindness. The flash of thermal radiation from the fireball causes direct or 'flash' burns. Those beneath the burst are burnt to death. Indirect or 'flame burns' are the same as skin burns caused by fire, which penetrate deeper than flash burns, and many people will receive both types. The frequency of burn injuries is exceptionally high and they are the major cause of death within the first day.

People injured by the blast also die in the fires that follow because they cannot escape. Burn injuries are, by themselves, a massive burden for health services (see Box 2).

Mechanical (traumatic) injuries

The blast causes crush injuries, ruptured organs, lacerations, compound fractures and haemorrhage from flying and collapsing missiles. Eardrums will be ruptured by the blast, causing temporary and permanent deafness. The most common injury is laceration by small glass fragments from windows. Treatment is complicated by the lowering of white blood cell counts (leukopenia) due to ionizing radiation; normally minor lacerations and abrasions may result in severe infections.

Box 2: The burden of burn injuries

One patient with severe burns may need hospital care for six weeks or more, including:

- operations: 8–10 times
- blood erythrocytes: 6 litres
- blood plasma: 5 litres
- intravenous salt and sugar solutions: 80 litres
- amino and lipid acids: 30–40 litres
- antibiotics
- dressings

Radiation injuries

Radiation exposure poses a particular problem. There is no way of knowing whether a person has received a 100 rem exposure and might survive with adequate care, or has received a 1000 rem exposure and will die regardless of what treatment is offered, so all patients must be treated. Radiation lowers resistance to infections, damaging or destroying the immune system, so normally minor infections may become fatal (see Box 3).

The symptoms of acute radiation sickness are nausea, vomiting, loss of appetite (anorexia), loss of hair (epilation), bleeding from gums, haemorrhaging into skin or internal organs (purpura), sores in the throat (oropharyngeal ulceration), infection and diarrhoea. The earliest manifestations appear after one or more days and are mostly gastrointestinal

symptoms. They may be followed by a period of relative wellbeing whose length depends on the exposure. After three to seven days there follows a feverish period of several weeks characterized by all the above symptoms, particularly severe diarrhoea, and ending in death or a long recovery period. Severely exposed patients die within two weeks. Less exposed patients may begin the feverish phase with epilation about two weeks after exposure. More information on radiation sickness: *http://www.nuclearfiles.org/menu/key-issues/nuclear-weapons/basics/weapons-basics.htm#effects*

Box 3: Radiation exposure

Acute radiation exposure can cause:

- central nervous system dysfunction
- gastrointestinal damage
- uncontrolled internal bleeding
- life-threatening infections
- bleeding from gums or within the skin
- death

Long-term effects

People are still dying today from the long-term effects of exposure to radiation in Hiroshima and Nagasaki in 1945. Little is known about these victims and their illnesses because the statistics are limited and the epidemiology was not well advanced in the period after the explosions. Most people died in the first five years and did not have an autopsy, but in autopsies that did take place it was noted that the blood did not clot and the bone marrow was damaged.

Exposure

It is difficult to reach definitive conclusions about the long-term effects because of a mistake in the dose model used at the time to define groups of exposed patients. At the end of the 1970s it became clear that fewer people had been severely exposed than originally thought. A significantly increased incidence of cancer was found in this group and in the less exposed cohorts, suggesting that it was not necessary to be exposed to high doses to get cancer. In fact, contrary to many statements, it is not possible to extrapolate from these statistics how high the dose needs to be to cause cancer. Furthermore, the so-called control group was probably also exposed to fallout and the comparison was therefore faulty.

Cancer

Radiation-induced cancer often has a long latency period, sometimes emerging over 40 years after exposure. The first cancers to emerge are usually thyroid cancer and acute and chronic leukaemia, followed by breast and lung cancer and later by stomach and intestinal cancer.

Genetic damage

RERF, the official agency observing the victims of Hiroshima and Nagasaki (Hibakusha), has not recorded damage to genetic material, but scientists researching the effects of ionizing radiation on genetic material think significant damage is caused even by quite low doses.

There was certainly a rise in the number of miscarriages and stillbirths after Hiroshima and Nagasaki. Children in the womb at the time of the bombings often later had physical and mental development problems and many of them were or are severely disabled. Atmospheric nuclear testing and the reactor disaster at Chernobyl provided more information on the effects of ionizing radiation on genetic material, but the scientific community is bitterly divided over the conclusions that can be drawn.

Other long-term effects

Blood disorders, including anaemia and low blood counts, can last for up to 10 years after a nuclear bombing. Many people develop cataracts later on. Keloids – mounds of raised and twisted flesh – were found in 50–60% of those burned by direct exposure to the heat rays within 1.2 miles of the hypocentre in Hiroshima and Nagasaki. Keloids are believed to be related to the effects of radiation.

The medical response and disaster management

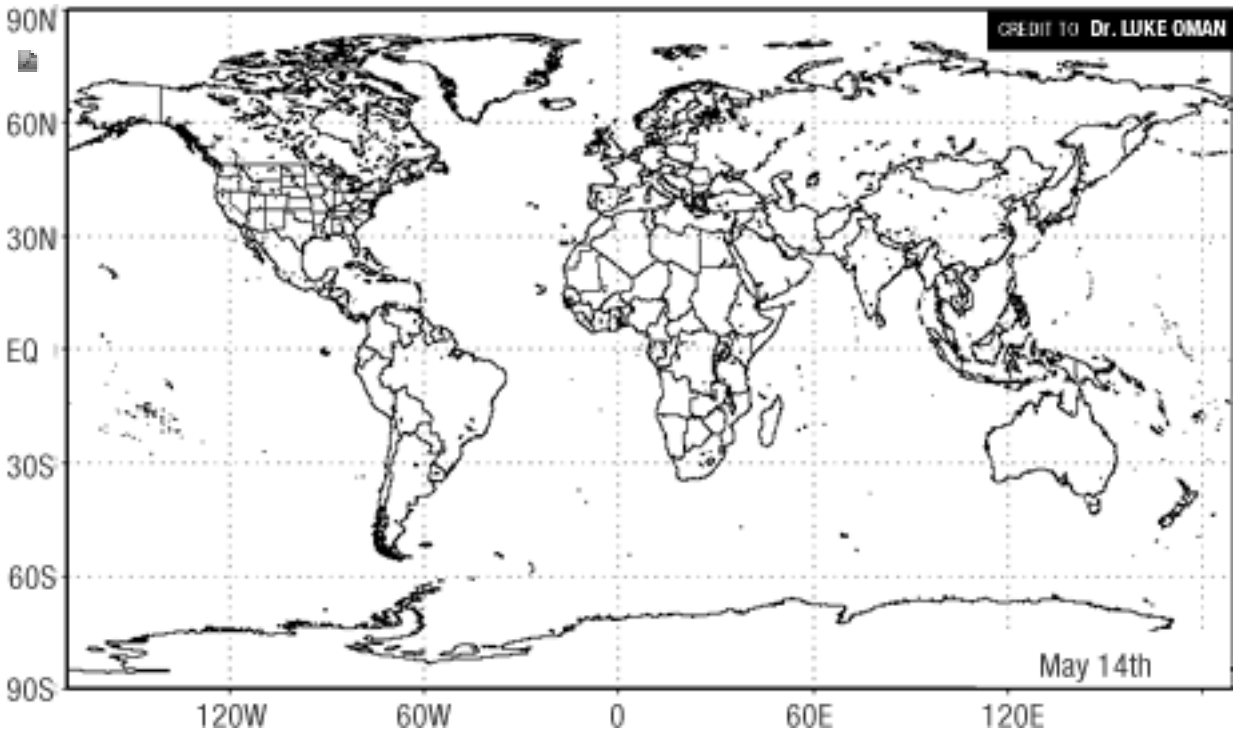
An adequate medical response to nuclear attack is extremely difficult given that health workers will themselves be victims, facilities may be destroyed, much equipment will no longer work, and there will be shortages of many supplies such as blood, plasma, antibiotics and anaesthetics. Health systems will be unable to cope with a disaster on this scale. It is impossible to provide adequate care for the vast numbers of people who would need treatment in a nuclear war, or even for a single nuclear explosion.

The health workers that survive will nevertheless try to help. People with injuries would be divided into the three categories already mentioned: burns, trauma and radiation injuries. In cases of trauma, plasma and antibiotics would be given and haemorrhaging patients prepared for immediate surgery. Multiple lacerations would be cleaned and sutured, and tetanus vaccinations administered. All this would be difficult because of the lack of facilities and supplies.

Burns present the greatest burden on health workers. The British Army Operational Research Group estimated an average time of 52 minutes for three people to dress a burned hand. The peacetime requirement for treating 34 000 serious burn cases is 170 000 health workers and 8000 tons of supplies. Everyone with radiation sickness must be treated, though many have no chance of survival, but without knowing the dose received, it is impossible to perform triage.

Other medical, environmental and social effects

Climate change and nuclear war



Even a limited nuclear exchange could affect the climate through the absorption of sunlight when large amounts of soot are injected into the atmosphere by the widespread burning of cities. Similar events on a smaller scale are observed when large volcanic eruptions inject dust into the atmosphere. The climate would be disrupted worldwide, with a reduction in global temperature, especially over land, causing crops to fail and leading to mass starvation. Ozone depletion causes further problems. Here you can read more on nuclear war and climate change: *http://www.nucleardarkness.org/*

Nuclear tests

VIP observers watch the Operation Greenhouse nuclear test at Enewetak Atoll, 1951. Photo: US government

Between 1945 and 2010, 2059 nuclear weapons were detonated. These included 528 tests above ground that released massive amounts of strontium-90, caesium-137, carbon-14 and plutonium into the environment. The worst affected people, called 'downwinders', were living in areas of heaviest fall-out.

The German radiobiologist Roland Scholz estimated that by the year 2000, three million cancer deaths could have been caused by nuclear testing, excluding the cancers caused by incorporated radiation – radiation from particles taken into the body through inhalation or ingestion that have stayed there. If these were included, the number could be 30 million or more (Scholz 1997). We will probably never know how many cancer deaths are caused by nuclear fallout, as the cause of cancer cannot always be reliably identified and there is often more than one causative agent.

Exposure to strontium-90 has been confirmed by measuring strontium in children's milk teeth over a long period. After the Partial Test Ban Treaty, which banned testing above ground in 1963, the amount decreased to almost nothing in 1986, when it suddenly shot up again – this time due to the reactor accident at Chernobyl.

More information on the health effects of nuclear testing: *http://canterbury.cyberplace.org.nz/peace/nukenviro.html*

Production of weapons and the nuclear fuel cycle

Fissile material has to be produced to make nuclear weapons – including uranium, plutonium and tritium. The production processes overlap with those in the civilian nuclear fuel cycle: uranium mining, uranium conversion and enrichment, nuclear reactors, reprocessing plants, nuclear waste repositories and so on. Because radioactive material is handled, all these processes inevitably create significant health hazards.

The nuclear fuel cycle, as it is termed, is a large topic that cannot be fully addressed here. It touches on the whole question of how radiation affects health, even in low doses. It was thought for many years that the body can tolerate very low doses of radiation, but this is no longer held to be true in all cases (see Box 4).

Box 4 : Cancer risk of low-dose radiation

'The preponderance of information indicates that there will be some risk [of cancer], even at low doses', says the Committee to Assess the Health Risks from Exposure to Low Levels of Ionising Radiation of the US National Academy, Biological Effects of Ionising Radiation (BEIR) VII. In its recent report, the committee 'judges it unlikely that a threshold exists for the induction of cancers but notes that the occurrence of radiation-induced cancers at low doses will be small' (National Research Council 2006:10).

Costs of nuclear weapons

The indirect effects on health of the production and possession of nuclear weapons are most clearly seen when looking at the huge government spending on them – money that could be spent on health, education, social welfare and alleviation of poverty. The costs of the US nuclear weapons programme alone are enormous: from 1940 to 1998, the US spent an estimated US$5.5 trillion (€3.85 trillion) on nuclear weapons and weapons-related programmes (Schwartz 1998).

This does not include the future costs of storing and disposing of more than 50 years' worth of accumulated toxic and radioactive waste, dismantling nuclear weapons systems and disposing of surplus materials, estimated in 1998 to be another US$340 billion (€238 billion). Spending government funds on nuclear weapons programmes in countries like India and Pakistan, where many people live on less than a dollar a day, effectively deprives them of money that could save their lives and educate their children.

Scenarios

We will now look at various scenarios when nuclear weapons might be used. In principle, any war involving states that possess nuclear weapons could escalate to nuclear war. The decision to use nuclear weapons becomes easier when countries are already embroiled in a conflict that seems insoluble or face defeat in a conventional war. In today's world the instability of an arms race involving new nuclear states or non-state actors makes the risk of their use much greater. The further threat of accidental nuclear war still remains because so many weapons are on 'hair trigger alert' in the USA and the Russian Federation (Table 1).

Table 1: Arsenals of the nuclear states (Bulletin of Atomic Scientists, NRDC Nuclear Notebook 2001–2010)

State	Deployed weapons	Reserve	Highest estimate
China (2006)	240*		240
France (2008)	300		300
India (2008)	60	20	80
Israel (2002)	80–100		100
North Korea (2005)	0	0–10?	10?
Pakistan (2001)	70–90		90
Russia (2009)	4850	8150	13 000
UK (2010)	160	65	225
USA (2010)	2468	7100**	9568
		Total	**23 360**

* not mounted on delivery systems
**2600 warheads in store and 4500 warheads marked for disarmament

Scenario 1: Accidental nuclear war

Most people assume that the risk of full-scale nuclear war is over now that the Cold War has ended. But the risk of accidental nuclear war is still high. With an estimated 2000 nuclear weapons still on high alert, the USA and Russia could have a nuclear exchange by accident, triggered by a false computer alarm. There have been many such false alarms, but luckily nuclear war was averted by a correct decision not to act on what appeared on the computer screens. The time in which this decision has to be made is extremely short, however, and leaves no room for indecision. If the attack is real, there can be no chance of retaliation after the missiles hit their targets, which is why the policy of 'launch-on-warning' remains.

Read more about launch-on-warning: *http://www.nucleardarkness.org/highalert/launchonwarning/*

Scenario 2: Large-scale nuclear attack

This scenario assumes a direct attack on 250 US cities, with a total yield of 7800 megatons. The most immediate effects would be the loss of millions of human lives, accompanied by similarly catastrophic levels of injury, and the physical destruction of much American economic and industrial capacity. An estimated 100–165 million people would die.

Scenario 3: 'Limited' nuclear exchange

A hypothetical nuclear detonation over the Indian city of Mumbai with a 15 kiloton explosion would cause up to 866 000 deaths, and a 150 kt explosion up to 8 million. A 'limited' nuclear exchange between India and Pakistan with 10 small nuclear weapons (15 kt each) exploding on the main cities in both countries would result in 2.6 million deaths in India and 1.8 million in Pakistan, with a further 1.5 million injured.

The indirect effects resulting from the destruction of the infrastructure and the health service, or long-term effects such as cancer, were not included in this estimate (Ramana 1999; Ramana et al. 2001). The Natural Defense Council estimated the number of victims in a nuclear war between the two countries to be 10 times higher, while a report by the US secret services gave a figure of 12 million, not including the victims of firestorms (Shanker 2002).

To get an idea of the effect of one nuclear bomb on a city, try using the Nuclear Weapons Effects Calculator (see Box 5). Here you can see the effect of a 300 kiloton nuclear attack on the Pentagon: *http://www.nucleardarkness.org/warconsequences/effectof300kiloton/*

Scenario 4: Attack on hardened underground target

The use of a robust nuclear earth penetrator, known as a 'nuclear bunker buster', against targets, hardened against attack by being buried and cased in concrete. In Iran or North Korea, such an attack could cause millions of deaths, and lead to millions more acute and long-term health problems for civilians and military personnel. In one scenario – using the bunker buster against Isfahan, Iran – up to 20 000 US military personnel stationed in Afghanistan and 35 million civilians in Iran, Afghanistan, Pakistan and India could receive enough radiation to cause a significant health impact, including up to three million deaths. These factors should weigh heavily against proceeding with the programme (Wilk et al. 2005:1).

Box 5: Effects of nuclear weapons: an interactive tool

The Nuclear Weapons Effects Calculator aims to indicate the devastating blast effects of ground-level, shallow subsurface and low-altitude nuclear weapon detonations. It is relevant to traditional nuclear weapons, potential terrorist attacks, and next generation nuclear weapons such as robust nuclear earth penetrators.

Go to: www.fas.org/programs/ssp/nukes/nuclear_weapon_effects/nuclearwpneffctcalc.html?formAction=297&contentId=367

Scenario 5: 'Unauthorized' use

The use of nuclear weapons by unauthorized persons covers the use of nuclear weapons by military personnel without proper authority, and the use of stolen nuclear weapons. There is also the problem of primitive nuclear weapons built by non-state actors (usually referred to as 'terrorists'). The size of the weapon can vary according to the type of warhead diverted or built, but for the purposes of this scenario, taken from the report Crude Nuclear Weapons (Mutalik and Barnaby 1996), we use a so-called crude nuclear device built by an insurgent group using stolen materials.

It was calculated in 1996 that a crude low-yield bomb of half a kiloton placed on the front steps of the World Trade Centre would knock the twin towers into the Hudson River. 'It would take only a dozen kilos of plutonium oxide powder [...] to kill 50 000 people' (Mutalik and Barnaby 1996:43). The effects would be devastating. Public panic would ensue; a major part of a metropolitan centre would need to be evacuated; and health and emergency services would be overwhelmed by the huge numbers of people with burns, other injuries and shock. The consequences would extend far wider by destroying the world's central financial district and undermining the trust and sense of security of American citizens.

Nuclear victims

There are seven main groups of people who are or have been exposed to health and environmental dangers through the manufacture, deployment and use of nuclear weapons:

- people living in Hiroshima and Nagasaki in 1945 and their descendants
- armed forces participants in atmospheric nuclear testing
- people living 'downwind' of nuclear sites
- workers in uranium mines, nuclear weapons production facilities and enrichment and reprocessing plants
- the subjects of human experimentation
- people exposed during deployment, transport or other handling and maintenance of nuclear weapons
- the world's inhabitants for centuries to come

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Links

International Physicians for the Prevention of Nuclear War

Nuclear Darkness

The Nuclear Files

Atomic Archive

The nuclear weapons archive: a guide to nuclear weapons

The Bulletin of Atomic Scientists

Hiroshima Peace Memorial Museum

Learn about nuclear weapons

Lesson 1.2: Biological weapons

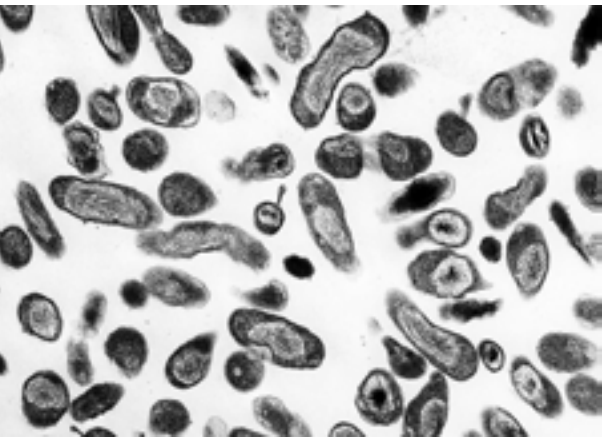
Author: Xanthe Hall

Learning objectives

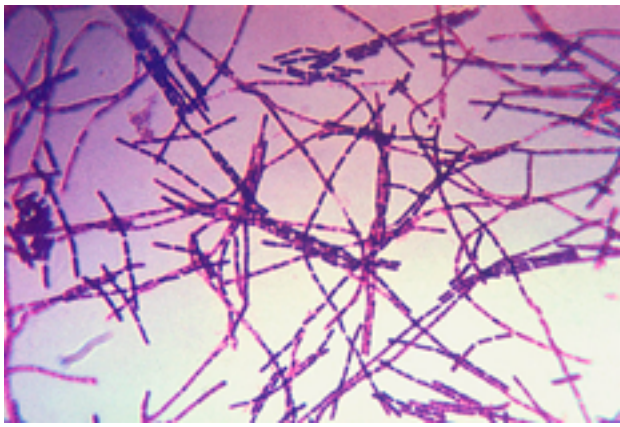
By the end of this lesson you will be able to:

- describe the characteristics of a range of biological weapons and their health effects
- explain the legal status of these weapons.

Biological warfare uses living organisms to cause disease or death in large numbers of people, animals or plants. It is intended that these organisms should live and multiply in the target, and that infection will take hold and spread to others. As well as disease agents, the term also covers poisons that are made by living things, such as toxins from plants or animals. Agents that multiply only need to be used in small quantities, whereas biological toxins (e.g. botulinal toxin and staphylococcal enterotoxin) are produced outside the target and must be applied in larger quantities to be effective in warfare. Biological weapons can be lethal, but a great many are 'non-lethal' or are not intended to kill. Foot and mouth disease (Aphthovirus spp.) is a good example of an agent that takes up the resources of the enemy, thus weakening him, as are Q fever (Coxiella burnetti), dengue (Flavivirus spp.) and brucellosis (Brucella spp.), all of which have a low fatality rate compared with other agents. Attacks on plants to spoil harvests without killing the plants are another example. Most agents are microorganisms, the best known being anthrax bacteria and the smallpox virus. Other types of microorganisms include fungi, rickettsia and toxin-producing microbes (for example, algae that produce saxitoxin, a deadly non-protein substance). Insect pests can also be used as biological weapons, such as thrips (Thrips palmi) to devastate crops. The US is currently involved in research in the use of such weapons against coca, opium poppy and cannabis.



Coxiella burnetti or Q fever (Photo: Rocky Mountain Laboratories, NIAID, NIH)



Bacillus anthracis (Photo: CDC Public Health Image Library)

History of their use

'Accidental' or 'unintended' spread of disease to areas where indigenous peoples live has sometimes been discovered later to be biological warfare. For example, in the 17th century the British Army distributed blankets that were infected with smallpox to native Indians in North America.

In 1928, the USSR established a full-scale biowarfare programme to transform diseases into battlefield weapons. Tests were carried out in the 1930s in the Solovetsky Island prison camp with typhus, Q fever, glanders and meliodosis. The heaviest use of biological warfare was during the Second World War, when Japan killed thousands of prisoners and civilians using biological weapons (see Box 1).

By the end of the war, the USSR had weaponized the agents referred to as the golden triangle: plague, anthrax and cholera. They seized much from the Japanese biological weapons headquarters in Manchuria.

Box 1: The Japanese biological weapons programme

Japan cultivated deadly bacteria and carried out large-scale open-air testing of live pathogens, including anthrax as bacterial slurry in bombs. Japan also tested pathogens on prisoners of war. The precise death toll is not known but was in the thousands, and perhaps more if various epidemics are included. Japanese aircraft also dropped ceramic bombs containing plague-infested fleas, and grain to attract rats, in a series of field tests of biological bombs on 11 Chinese cities in 1940. (Hoffmann 2009)

During the Cold War both superpowers – the USA and the USSR – built large arsenals of biological weapons (Hoffmann 2009) (see Box 2). Advances in molecular biology in the 1970s enabled genetic material from one species to be inserted in another, allowing the transfer of militarily useful characteristics and thereby enhancing the military capability of existing agents or creating new weapons. Genetic engineering took off in the 1980s, and it became obvious that it could be used to make biological weapons more useful for military purposes.

Microorganisms can be changed to become resistant to vaccines or antibiotics, and to become more lethal, easier to handle, harder to detect, and more stable in the environment (Sunshine Project 2002:5).

Biotechnology and biosafety

Modern biotechnology can pose risks for biodiversity and human health through the development of an ever-increasing variety of new organisms. Its major new concern is the use of genetic engineering to develop new types of biowarfare agents, or the weaponization of biochemical compounds, known as bioregulators, that control basic human functions from thought to action. The terms biosafety and biosecurity relate to protection against large-scale loss of biological integrity – the possible effects on ecology and human health of new genetic techniques and the release of living organisms into the environment (see Box 3). The World Health Organization biosafety programme works to reduce the spread of disease caused by accidents and inappropriate handling or use of pathogenic microorganisms. The hostile exploitation of biotechnology must be prevented through prohibition and precautionary biosafety approaches.

Box 2: The 8-Ball

Building 527 at Fort Detrick, Maryland, USA housed the '8-Ball', a four-storey steel sphere completed in 1950 inside which biological bombs could be exploded. Laboratory animals could then be exposed to the results via airlocks and ports located round the periphery, and autopsied.

Project Whitecoat began in 1952. Hundreds of army volunteers allowed themselves to be exposed to biological agents. Some took part in tests at Fort Detrick where they would be exposed to the contents of the 8-Ball via breathing masks attached to the chamber ports. They would then be quarantined for observation and any required medical treatment. As a reward, they could choose the site of their next duty station. (Alibek 1999)

Box 3: An example of a biosafety problem

A recent experiment with mousepox in Australia created an extremely lethal genetic engineered virus when they added a gene believed to be "harmless". The gene, which codes for an immune system protein, actually suppressed the immune systems of mice exposed to the virus. The effect was so strong that half the mice vaccinated against mousepox died from the disease. Other studies suggest that a similar approach may have similar effects with human smallpox and other related viruses (Sunshine Project 2002).

Health and environmental effects of biological weapons

The effects of biological weapons depend on what type is used. Toxins cannot reproduce within their targets as microorganisms can, but are generally more lethal. Toxins can kill within minutes or hours, whereas microorganisms can be present for days or weeks before the symptoms appear. This means a biological attack may not be observed at the time or could be mistaken for a natural outbreak of disease. It may have an impact much later. It also depends on what form such an attack takes. Biological weapons can be delivered in a missile warhead or in the form of a bomb, but the most effective way is probably through aerosol dispersal, such as a crop sprayer.

The effects of a biological weapon depend on how it enters the body (see Box 4). To have the desired effect most biological agents have to be breathed in or ingested. In the case of anthrax, contact with the skin is likely to cause infection (cutaneous anthrax).

US official estimates showed that 100 kg of anthrax spores delivered in optimal conditions would result in one to three million deaths, and in less optimal conditions – for example, in sunny or windy conditions or in bright light – the same amount could kill between 130 000 and 1.4 million people (Office of Technology Assessment 1993).

Box 4: Some different types of biological weapon

Anthrax: a bacterial agent that, although not contagious, is lethal if inhaled.

Smallpox: a highly contagious viral agent that has a very high death rate and travels easily through air.

Plague: a highly contagious bacterial agent with an incubation period of 1–5 days, causing a type of pneumonia that is lethal if not caught early.

Ebola: fever caused by a viral agent that is extremely lethal without cure or treatment, and leads to bleeding from all orifices.

Botulinum: a toxin that causes muscular paralysis resulting in death

Through a deeper understanding of the genetic structures of organisms, scientists are learning how to change them to make different organisms with new properties. An example is the influenza virus. Japanese scientists were able to change the genetic structure of a virulent turkey virus in order to make its effects less severe. The reverse is also possible. An agent can be engineered to make it resistant to therapeutic drugs, so that the usual treatments will

no longer work. Toxins can be isolated and inserted into bacteria that can be grown in fermenters, quickly producing large amounts of toxin. The toxin gene could also be directly engineered into antibiotic-resistant bacteria that readily colonize the human gut or respiratory tract, producing a new and deadly bacterium that cannot be treated using known antibiotics (Barnaby 1997).

Boy with smallpox. Photo: CDC

The most serious threat is that smallpox might be used in a biological weapon. Smallpox was eradicated by 1980, but two cultures remain in storage in Atlanta, US, and Moscow, Russia, and there are fears that other countries have obtained cultures. If released they would cause a worldwide pandemic. The usual incubation period is about 12 days but the Russian strains had a much shorter incubation. Abrupt onset of fever and headache may initially be mistaken for influenza, but a rash develops after two or three days, sometimes the only indication before the illness rapidly progresses to multisystem failure and death, although it usually evolves into pocks concentrated on the face and limbs. There is no treatment and over 30% of patients die.

Health system responses

Vaccination before the event is the only effective response. Smallpox immunization carries risks for some people, sometimes of life-threatening proportions, and should be used with caution. Vaccination in the first four days after exposure is moderately effective. International stocks of the vaccine are regarded as inadequate (Ashford and Dauncey 2006, PSR 2003).

Simulations of a release of agents such as smallpox or anthrax in an urban setting have shown that local infrastructures would rapidly become overwhelmed. Actual incidents, hoaxes and false alarms have shown that there are logistic weaknesses and false assumptions in treatment and prevention strategies. Vaccine stockpiles need to be considered to allow rapid distribution to large numbers of people in an attack. A further difficulty is that recognizing the disease requires a high state of awareness and reporting, especially when clusters of cases appear in otherwise healthy adults. This should be followed by rapid epidemiological investigation.

Psychological implications

The use of biological weapons could have major psychological implications, particularly when a false alarm is triggered through fear or heightened sensitivity, as happened after the 2001 terrorist attack in the US. On 29 September 2001, harmless paint fumes set off a bioterrorism scare in a school in Washington state, resulting in 16 students and a teacher being sent to hospital for medical evaluation (Wessely et al. 2001).

Other similar instances were reported at that time. The resulting 'mass sociogenic illness' could overwhelm health facilities with people reporting symptoms attributable to a possible bioterrorism attack. In a real attack there would be widespread panic, fear, confusion and uncertainty, and health service delivery would be hindered by large numbers of people seeking treatment for unrelated illnesses (Alexander 2003). After the 1994 outbreak of suspected pneumonic plague in Surat, India, widespread panic led 600 000 people, including health workers, to flee the region (Ramalingaswami 2001).

A general level of anxiety can remain high for years, exacerbating pre-existing psychiatric disorders and heightening the risk of mass sociogenic illness. An incident in South Wales, UK in 2001, involving suspicious packages that were removed and tested only to find inert substances in them, was followed up by a symptom check of the local population that showed a significantly higher level of anxiety and depression (Mason and Lyons 2003).

Read more about mass sociogenic illness: *http://bjp.rcpsych.org/cgi/content/full/180/4/300*

The prohibition of biological weapons

Biological weapons are outlawed by treaty, leading to a stigmatisation of countries found possessing them (an important lesson for the abolition of other kinds of weapons). The Biological and Toxins Weapons Convention (BTWC), opened for signature in 1972, outlaws all development or production of biological weapons. It has contributed significantly to disarmament and to preventing a biological arms race, but there are two big problems: advances in bioscience, and the lack of a verification system.

A further concern is the right of states to retain biological agents and toxins for prophylactic, protective or 'other peaceful purposes', effectively a loophole in the treaty. Without effective verification it is impossible to determine conclusively whether a country's 'defensive' programme does in fact have an offensive military purpose. Facilities undertaking research or producing biological agents are also hard to detect.

The international norm against biological weapons came under pressure after US opposition caused negotiations over a verification protocol to break down in 2001, meaning that a verification body could not be established. Since then, countries have relied on goodwill to keep the treaty alive, using national means

of implementation and confidence-building measures. This allows a state to keep programmes secret without great fear of discovery, however – the USSR was able to violate the convention for many years.

Conclusion

This lesson has examined the evolving problem of biological weapons, and highlighted how the international community finds it difficult to match advances in bioscience. In the next lesson we will look at chemical and radiological weapons, and whether attempts to control them have fared any better.

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Links

Centers for Disease Control and Prevention (CDC)

Federation of American Scientists: Introduction to Biological Weapons

The Sunshine Project

WHO: Health aspects of biological, chemical and radionuclear threats

Lesson 1.3: Chemical weapons

Author: Xanthe Hall

Introduction

A chemical weapon is any chemical that can cause death, temporary incapacitation or permanent harm to humans or animals through its chemical action on life processes. Box 1 lists the main types of chemical weapons.

Learning objectives

By the end of this lesson you will be able to:

- describe some of the different types of chemical weapons
- evaluate the efficacy of the international chemical weapons control regime.

Box 1: The main types of chemical weapons

Nerve agent: highly lethal, kills in very small dosages (e.g. sarin, soman, VX).

Blistering agent: causes burns and blisters on the body, damages eyes. If inhaled it severely damages the lungs, which often leads to death (e.g. mustard sulphurous gas, lewisite).

Asphyxiating agent: causes damage to the lungs (e.g. phosgene, mustard gas).

Psychotomimetic agent: causes a hallucinatory effect similar to LSD (e.g. BZ).

Incapacitating agent: relies on irritants and toxic effects to incapacitate a person temporarily. Depending on its purpose, it may be allowed under the Chemical Weapons Convention (e.g. tear gas, CS gas)

Possible new agents: ways of affecting the human brain to cause aggressiveness, sleepiness, fear or other emotions (e.g. bioregulators).

Use of chemical weapons

Some 125 000 tons of toxic chemicals were used by Germany, the UK, France and the US in the First World War, causing 1.3 million casualties of whom over 90 000 died. Poison gas, in particular mustard gas, was used extensively and was banned in 1925. Chemical weapons killed many thousands of people in Japanese attacks on China between 1936 and 1945.

There are many more examples of the use of chemical weapons. Spain used them in Morocco (1922–27), and Italy in Abyssinia (1935). The UK used chemical weapons against Kurdish rebels in north Iraq in the 1920s 'as an experiment'. Germany used poison gas to kill millions of people in Nazi concentration camps during World War II. The USA used defoliants and CS gas in the war on Vietnam (1962–70). Phosgene and mustard were used by Egypt in North Yemen (1963–67). Mustard and tabun were used in the Iraq-Iran war (1983–84) and by the Iraqi regime against its Kurdish population in 1988 (see Box 2).

Box 2: Halabja

Halabja poison gas attack, 1988. Photo: Sayeed Janbozorgi

In 1988, over 4000 men, women and children were killed during an Iraqi chemical attack on the Kurdish city of Halabja in northern Iraq. The attack, which took place during the Iran-Iraq war, used nerve agents and the body positions of the victims illustrated how suddenly they died. This tragic event demonstrated to the world the need to prohibit chemical weapons as a weapon of mass destruction.

Toxic chemical agents can be relatively easily acquired or produced by non-state actors, although the effective delivery of toxic agents in order to kill is quite difficult. The most notorious case of terrorism using a chemical agent was in 1995, when Aum Shinrikyo attacked a Tokyo subway with the nerve gas sarin, killing 12 people and injuring thousands. Another possibility is that targets such as production plants could be attacked, releasing chemical agents.

Health and environmental effects

Chemical weapons can have horrific effects, but are not as potentially lethal as biological weapons. One thousand kg of sarin gas, delivered in optimal conditions, could kill up to 8000 people, whereas only 100 kg of anthrax spores could kill up to 3 million (OTA 1993).

The tremendous toxicity of modern chemical weapons can be difficult to comprehend. The amount of some nerve agents needed to kill an adult man can be as little as 10mg (1/25th of the weight of a typical antibiotic capsule). Some toxins of biological origin are even more toxic. We will now look at the health and environmental impact of different types of weapons.

1 Mustard or blister agents

Mustard is usually weaponized in the form of an oily liquid, but modern delivery systems transform it into a cloud of aerosolized droplets that vaporize on dissemination. The initial effects are delayed, sometimes appearing hours after exposure.

Characteristic skin blistering 48 hours after exposure to sulphur mustard vapour. Photo: Dr. Steen Christensen/OPCW

The person's skin and clothes become contaminated. The symptoms are red, itchy and swollen skin, developing into large fluid-filled blisters (death in the early phases may be due to shock from fluid loss). The respiratory system also absorbs the mustard, causing systemic effects and damage to the lining of the lungs. The person has breathing difficulties and may suffer complications due to severe lung infections. Resulting chronic airways disease may cause severe, lifelong distress and even death. Severe conjunctival irritation develops, potentially damaging the cornea.

Mustard also reduces the body's ability to defend itself against infection because of its systemic effects on bone marrow and cellular regeneration, thus delaying the healing of damaged tissues. Mustard is not particularly lethal but it is severely debilitating and therefore puts a large strain on health system resources (Davey undated).

2 Nerve agents

Nerve agents are meant to cause rapid incapacitation and death. They interfere with the processes of nerve impulse transmission, causing overactivity of certain nerves. The symptoms include constricted pupils, spasm of the airways and severe breathing difficulties, increased secretions, intestinal spasm and convulsions. Eventually the nerves become paralysed and death results from respiratory failure, sometimes within minutes of exposure.

3 Blood agents

These chemical compounds, including the cyanide group, prevent the body from utilizing oxygen. The term 'blood agents' is a misnomer, however, because they do not actually affect the blood in any way. Rather, they exert their toxic effect at the cellular level, by interrupting the electron transport chain in the inner membranes of the mitochondria. Zyklon B was a blood agent used by the Nazis in the systematic murder of Jews and other perceived enemies of the Third Reich.

4 Pulmonary or choking agents

These agents are used to impede the ability to breathe, resulting in suffocation. Examples are chlorine gas, chloropicrin, diphosgene and phosgene, all used as killing agents during the First World War.

5 Incapacitating agents

These are defined by the US Department of Defense as 'an agent that produces temporary physiological or mental effects, or both, which will render individuals incapable of concerted effort in the performance of their assigned duties'. They come into the category of 'non-lethal' weapons (see **Lesson 2.2**) and are not intended to kill, but often result in death.

Health system responses to chemical injuries

The successful management of exposure to chemical agents relies on early recognition. Unfortunately, many of the symptoms resemble common conditions such as respiratory disease and epilepsy. Although the features of severe nerve agent poisoning are dramatic, exposure at a lower level is harder to detect.

When treating a patient in a hostile environment, health workers should wear protective clothing. The patient should be moved to a well-ventilated area before removal and safe disposal of clothing. Then the skin should be decontaminated using water in large amounts or, when available, sodium hypochlorite solution. The eyes should be irrigated with copious amounts of water or saline solution. Nerve agent poisoning is a serious medical emergency and frequently requires endotracheal intubation and immediate intravenous treatment with atropine (Evison et al. 2002).

Protection against chemical warfare

The ill-considered use of chemical protective equipment can bring problems of its own. It enables health workers to continue working in a toxic environment for a limited period, but has a high cost in terms of human functioning.

For instance, extensive use of chemical protective clothing in hot and humid climates may be almost impossible due to the severe physiological and psychological stress on the wearer.

Tests showed that in temperatures of 28–30 °C, on average only 40 minutes wearing an impermeable decontamination suit was tolerable, during which the wearer sweated 1.8–2 l and had rectal temperatures of up to 40 °C. Heat stress can cause a fatal heat stroke within less than an hour. The clothing hampers the performance of otherwise relatively simple tasks.

Thick gloves hinder manual ability and bulky clothes hamper movement in restricted spaces. Health workers are unable to carry out many basic procedures, such as cardiopulmonary resuscitation and airways management, in these conditions (Davey undated).

Apart from the physiological stress, wearers experience great psychological discomfort when sent into a toxic environment, albeit in protective clothing. The claustrophobic effects of the clothing and mask, general discomfort, perception of rising physiological stress, and the perception of reduced ability to perform enhance the fear of the chemical environment.

During the 1991 Gulf War, 119 civilian deaths in Israel were directly attributed to the incorrect use of masks in sealed rooms. It takes several years to train a civilian population in the correct use of masks; people have to make an extra effort to breathe against the resistance of the filter canister (Barach et al. 1998).

A Swedish soldier wearing a chemical agent protective suit. Photo: Johan Elisson

Psychological implications

The terrorist use of chemical agents does not need to cause massive casualties to fulfil the goal of causing terror. The attacks using the nerve agent sarin in Matsumoto, 1994 and Tokyo, 1995 caused only 19 deaths, but the psychological, social and economic effects were enormous. Individual and community reactions to an attack include being stunned and numb, anxiety and fear, lack of ability to cope, horror and disgust, anger and blaming the authorities for failure to provide protection, paranoia of the unseen and unpredictable enemy, feelings of persecution, possibly xenophobia, loss of trust, feelings of extreme vulnerability, hopelessness, helplessness and 'survivor' guilt (Alexander 2003).

Simply witnessing the use of protective suits also adds to the psychological trauma associated with an incident, even when the agents turn out to be harmless and the incident is a false alarm. The response to seeing people in protective suits is enough to trigger anxiety (Mason and Lyons 2003).

The prohibition of chemical weapons

Investigation into alleged use of chemical weapons in the Czech Republic, 1999. Photo: OPCW Image Gallery

The Chemical Weapons Convention, which came into effect in 1997, is in good shape compared with the biological weapons convention. As of 21 May 2009 there were 188 state parties to the treaty, although some suspected possessors have not signed, including Egypt, Israel, North Korea and Syria.

The major problem that besets this treaty is the pace of destruction. All chemical weapon stockpiles should have been destroyed by 2010, but only just over half was destroyed by February 2010, leaving about 30 000 tons. Only about half of the member countries have passed the required legislation to outlaw participation in chemical weapons production. The Russian Federation had a huge stockpile to destroy (about 36 000 metric tons), of which it had destroyed nearly half by December 2009. The US has destroyed about 70% of its original stockpile of over 30 000 tons, but probably will not be free of chemical weapons until 2023 (Arnaudo 2007).

Another concern is the deterioration of verification, which has not been taken seriously up until now. Only routine inspections take place, covering only part of the list of toxins. No challenge inspections are made to uncover violations, nor are visits made to civil chemical facilities.

Chemical weapons need to have a direct toxic effect in order to be prohibited. For instance, a white phosphorus bomb is not considered to be a chemical weapon, although it contains chemicals, because it has its effect via prior ignition, causing thermal or burn injuries but no direct toxic or poisoning effect. The intention of use is also important for the definition of a prohibited chemical weapon. For instance, smoke grenades are intended for use as signalling devices or to cause smoke screens and reduced visibility – but exposure to the smoke in high concentrations is toxic, and deaths have resulted (Davey undated).

Some chemicals are not prohibited if they are used for the following specific purposes:

- industrial, agricultural, research, medical, pharmaceutical and other peaceful purposes
- protective purposes, namely those directly related to protection against toxic chemicals and to protection against chemical weapons
- military purposes not connected with the use of chemical weapons and not dependent on the use of the toxic properties of chemicals as a method of warfare
- law enforcement, including domestic riot control.

Non-lethal chemical incapacitants fall into a grey area under the convention. It allows their use for law enforcement, while Article I (5) states that 'each state party undertakes not to use riot control agents as a method of warfare'. The question arises: when does law enforcement end and a method of warfare begin (Dando 2002)?

Chemical incapacitants are a case in point, such as the gas used against Chechen rebels in a Moscow theatre (see **Lesson 2.2** on new types of weapon). With such incapacitants, whether they are lethal depends largely on the dose. States want to be able to use them for law enforcement, riot control and counter-terrorism, however. Chemical agents are also used in the US and elsewhere for capital punishment through lethal injection.

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Links

Organisation for the Prevention of Chemical Weapons
ICRC: Chemical Weapons and International Law
US National Library of Medicine: Chemical Warfare Agents

Lesson 1.4: Radiological weapons

Author: Xanthe Hall

Learning objectives

By the end of this lesson, you will be able to:

- explain the different forms that radiological weapons take
- outline the measures taken to deal with the threat they pose.

Radiological weapons

We will begin by looking at the different forms that radiological weapons take. They are usually understood to be synonymous with radiological dispersion weapons or 'dirty bombs'.

There has been to date no known use of this type of weapon. Uranium weapons, usually containing depleted uranium, are also a form of radiological weapon, however, and have often been used. It is also possible that nuclear installations could be turned into radiological weapons by bombing them or crashing an airplane into them.

'Dirty bombs'

Radiological dispersion weapons, often referred to as 'dirty bombs', disperse radioactivity by detonating conventional explosives surrounded by nuclear material, such as spent nuclear fuel or diverted material from a research laboratory or hospital. Such weapons are much easier to make than nuclear weapons, and non-state actors who wish to use a non-conventional weapon may be more attracted to them (IPPNW 2004).

An attack on Manhattan with a weapon containing a cask of spent fuel rods could cause more than 2000 immediate and long-term deaths, billions of dollars in damage (Finley et al. 1980), and have major psychological effects.

Nuclear facilities

Nuclear reactors, nuclear transports and waste storage, though not regarded as a weapon as such, can be turned into weapons through deliberate attack, causing a release of nuclear radiation. An official US study in 1982 predicted that if a jet aircraft crashed into a nuclear reactor and only 1% of its fuel ignited after impact, the resulting explosion could compromise the integrity of the containment building, with possible release of radioactive material (Solomon 2001). This was confirmed by the IAEA in 2001: '[Reactors] are built to withstand

impacts, but not that of a wide-bodied passenger jet full of fuel [...] These are vulnerable targets, and the consequences of a direct hit could be catastrophic' (cited in Helfand et al. 2002).

Spent fuel pools are another vulnerable target. They contain on average five times as much radioactive material as the reactor core, and are often inadequately protected in simple corrugated steel buildings. During the 1990s, in simulations of terrorist attacks on US reactors, 47% failed to withstand an attack (Orrick 1999). The results of an attack on a nuclear reactor or spent fuel pool could equal or exceed the effects of the 1986 Chernobyl disaster (Muirhead 2001).

Health effects of radiation incidents

The main acute effect on health of a radiation incident, whether caused by a dirty bomb or radioactivity from a nuclear installation, would be radiation sickness and radiation injury. A major problem is that the person may be unaware of exposure. Within hours or days, depending on the level of exposure, typical clinical symptoms are nausea, vomiting, weakness and fatigue, but these can be mistaken for other illnesses. A latent phase follows, succeeded by more obvious symptoms including infection, bleeding and gastrointestinal problems. For more information on radiation sickness, see **Lesson 1.1**.

One study used a computer model to assess the effects of a crude plutonium dispersal weapon detonated in a major population centre the size of London (IPPNW 2004). The main effects were not acute radiation sickness, but were long term, primarily cancers of the lung, bone and liver.

Uranium weapons

Uranium weapons usually contain depleted uranium (U-238), but some may contain natural uranium (U-235) or be contaminated with plutonium (Pu-239) or spent nuclear fuel (U-236). Uranium weapons are specifically designed to penetrate armoured vehicles such as tanks.

The core of the munition, the penetrator, is made of depleted uranium (DU) metal. On impact, the uranium penetrator tip melts and partially vaporizes. The generated metal particles start burning spontaneously (pyrophoricity) to form particles of uranium oxide. When the round has entered its target, fuel tanks are often set on fire and ammunition stored in vehicles detonates, usually leading to large explosions. As a result the remains of the penetrator may also partly burn into dust (uranium oxide particles). The resulting very fine, radioactive, toxic dust can cause harm when inhaled or ingested.

Apart from on testing ranges, uranium weapons are known to have been used in the 1991 Gulf War, Bosnia in 1994–5, Kosovo in 1999, Iraq in 2003 and

Afghanistan. In 2003 the US Navy admitted routinely firing DU from its Phalanx guns in prime fishing waters off the coast of Washington state since 1977. Around 30 tonnes of DU rounds have been fired into the Solway Firth at the Dundrennan test site in Scotland. Other test sites such as the island of Vieques have been badly polluted by live DU firing (ICBUW 2006).

Health effects of uranium weapons

DU is an alpha emitter, which has led to claims that it is more or less harmless because the radioactivity it emits cannot travel through the skin. It is, however, harmful when particles are inhaled, ingested or enter the body through a wound, although the extent of the harm is hotly debated and overlaps with the debate on low-level radiation. What makes these weapons doubly problematic is that the dust caused by the explosion can be easily inhaled or enter the food chain.

Moreover, as a heavy metal DU is highly toxic. Although slightly less radioactive than natural uranium, it behaves identically in terms of its chemistry. It is widely accepted that uranium, inhaled as insoluble particles, is carcinogenic to the lung through its radioactive emissions; and that if soluble it will cross the blood-air barrier of the lung to become systemic and be physiologically toxic to the kidney. Uranium may also be genotoxic, meaning that it is capable of damaging the genetic material of humans and thus potentially lead to cancer (Baverstock 2006).

Significant increases in illness occurred in US veterans of the 1991 Gulf War and German and Italian veterans of the 1999 war on Yugoslavia, many of whom tested positive when examined for DU in their urine. In southern Iraq there has also been a reported 1.4-fold increase in the incidence rate of solid cancers over 13 years (Al-Ali 2006). It is not possible to attribute all illnesses found in these war zones entirely to the use of uranium weapons, but it is generally thought to be a major contributing factor to the level of environmental contamination. The radiation effects of DU cannot be separated out from the chemical toxicity, and may even work synergetically.

Legal status of radiological weapons

Uranium weapons are not specifically banned, but are considered by many to be illegal under present international law, much in the same way as nuclear weapons are. This illegality argument is often used in legal cases in national courts where affected persons are claiming compensation for their health problems. The International Campaign to Ban Uranium Weapons, a coalition of nongovernmental organizations, has drafted a model treaty for their prohibition (Mohr and Samsel 2006).

In 2006 the UN General Assembly adopted the International Convention for the Suppression of Acts of Nuclear Terrorism. This provides for the domestic criminalization of acts of nuclear terrorism, and commits its parties to cooperation to prevent, investigate and prosecute such acts.

Physical protection

The most important protection against radiological dispersion weapons is prevention, which means that the materials necessary to make such weapons are better guarded against theft and controlled (see Box 1). The multilateral Convention on the Physical Protection of Nuclear Material of 1980 attempts to provide controls over the transfer and export of such materials. In 2003 the IAEA approved a revised Code of Conduct on the Safety and Security of Radioactive Sources, and in 2004 the UN Security Council adopted Resolution 1540, which requires all states to develop and maintain appropriate effective physical protection measures.

Confirmed incidents involving unauthorised possession and related criminal activities, 1993–2008

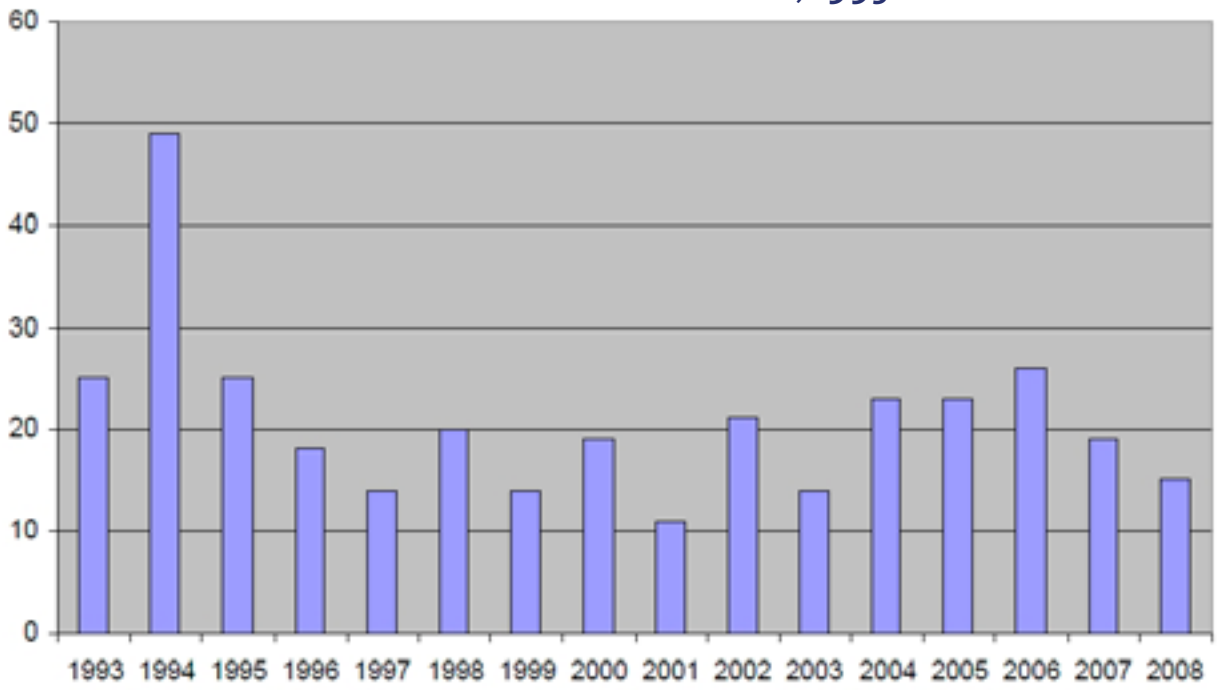

Figure 1: Confirmed incidents of theft or disposal of nuclear material 1993–2008 (IAEA 2009)

Nevertheless, there will always be a large measure of risk of material diversion or attack on nuclear installations while states continue to rely on the civilian use of nuclear energy. Illicit trafficking in radioactive materials is growing, as well as chronic security problems at nuclear facilities in the former republics of the USSR. Since 1993 the IAEA has maintained an illicit trafficking database that contains 827 confirmed incidents of theft or disposal of nuclear material (see Figure 1).

International cooperation on prevention and detection is hampered by concerns about national security and sovereignty, and by lack of funding. Nuclear reactors should be protected against any form of sabotage, including attack by aeroplane. Many reactors could not withstand a civilian aeroplane crash and it is questionable whether, as a target for terrorists, they should remain in operation.

Box 1: Tackling radiological terrorism (Weapons of Mass Destruction Commission 2006:87)

The Commission recommended that states must prevent terrorists from gaining access to nuclear weapons or fissile material. To achieve this, they must:

- maintain fully effective accounting and control of all stocks of fissile and radioactive material and other radiological sources on their territories;
- ensure that there is personal legal responsibility for any acts of nuclear terrorism or activities in support of such terrorism;
- expand their cooperation through inter alia the sharing of information, including intelligence on illicit nuclear commerce;
- promote universal adherence to the International Convention for the Suppression of Acts of Nuclear Terrorism and to the Convention on the Physical Protection of Nuclear Material and implementation of UN Security Council Resolution 1540.

Conclusion

Radiological weapons encompass several types of weapon with different health effects. There are also different levels of perception of the dangers they pose, with the highest threat level perceived as being that posed by the use of a 'dirty bomb' by a terrorist group. The radiological weapon most commonly used is the uranium weapon, perceived by most governments as being relatively harmless; this supposition is unsubstantiated, with much evidence that the contrary is true. The most lethal effects would probably be caused by an attack on a nuclear installation by crashing a plane into it. The effects of low-level radiation are at the centre of all debates about radiological weapons, especially the issue of the effects of internal emitters.

The best health response to radiological weapons is primary prevention, e.g. supporting bans on the use of radiological materials in weapons, and on specific weapons such as uranium munitions. The protection and control of radioactive materials is paramount to prevention of unauthorized use.

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Links

Committee Examining Radiation Risks of Internal Emitters (CERRIE)

International Campaign for a Ban on Uranium Weapons

Low Level Radiation Campaign

Chapter 2: The health effects of other weapons and conflict strategies

Intermediate objective

By the end of this chapter you will be able to:

- describe the impact of landmines, small arms and light weapons, non-lethal weapons, rape and war in general on health
- describe and evaluate different strategies to deal with these problems.

Lesson 2.1: Landmines

Authors: Marie Müller and Ute Watermann

Learning objectives

By the end of this lesson you will be able to:

- describe the forms and functions of landmines
- outline the problems their victims face
- suggest how the many different problems caused by landmines can be solved.

Introduction

In Cambodia in 2005, three young boys playing near their village found four small steel objects that they used to play an impromptu game of marbles. Their new-found toys, however, were actually 'bomblets' left from a cluster bomb that had been dropped years before. In the middle of their game one of the balls was struck by another, triggering an explosion. One boy died from massive abdominal wounds, and the other two survived with serious injuries.

Figure 1: A victim of a landmine. Photo: medico international

In Kosovo in 1999, a teenage boy going for a swim in a lake near his home found a small yellow canister. When he showed it off to his family, the bomblet fell to the ground and exploded. It killed his older brother and father and left him permanently injured. Several months later, his sister stepped on another cluster bomb and was killed.

These incidents are all too common in war-torn areas around the world. Tens of thousands of men, women and children have been killed or maimed by these indiscriminate and deadly weapons (Figure 1). They were used in many conflicts including Laos in the 1970s and 1980s, Eritrea and Ethiopia in 1998, Serbia and Montenegro in 1999, Afghanistan in 2001, Iraq in 2003, and by both sides during the conflict between Israel and Lebanon in 2006.

Cluster bombs in effect become landmines after a war, but they are not internationally banned. Only anti-personnel landmines in their proper sense, which are designed to kill or halt adversary combatants, are banned by the Convention on the

Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on Their Destruction (often referred to as the Ottawa Convention or Mine Ban Treaty, it came into force in 1999).

This lesson will tell you what landmines are, where they are used and their impact on civilians. We will also examine what is being done internationally to ban landmines, and how you can help to reduce the suffering they cause.

What are landmines?

Landmines are conventional weapons used in wars to stop military opponents from encroaching into territory. There are 600–700 different types of landmine produced in 60 countries, including blast mines and fragmentation mines (see Figure 2 and Box 1).

Figure 2: PFM-1, an anti-personnel mine also called a butterfly mine because children mistake it for a toy. Height 61 mm, thickness 20 mm, weight 75 g. Photo: one step beyond

Box 1: How landmines work

Blast mines are mostly pressure-operated, and are designed to cause serious injury rather than kill. Their upwards-directed detonation mangles the lower part of the body and leads to amputations. Fragmentation mines, mostly tripwire-operated, are designed to shatter or shoot hundreds of pieces of shrapnel over a range of 25–100 m. They normally cause death and fatal injuries. Modern fragmentation mines, like the American BLU 42B and the German MUSPA mine, are equipped with mechanisms for self-destruction or neutralization and are scatterable, which means they can be transferred with dispenser weapons (stand-off weapons). They are therefore often defined as submunitions.

In terms of their effects two types of landmines can be distinguished. Anti-personnel mines are directed against people and activated by human contact, proximity or presence. Anti-vehicle mines are directed against any kind of vehicle. Depending on their construction they are activated by passing over them or through sensors. They kill as indiscriminately as other mines as they are activated by civilian as well as military vehicles.

Link: www.landmine.de/en.titel/en.mineninfos/en.glossar/index.html

Landmines have become an important humanitarian problem around the world for two reasons. First, their persistence: mines are the only conventional weapons that when functioning as designed are lethal for a period after activation. Their military purpose, says US landmine policy, is 'to hinder or influence adversary movement or manoeuvre for a period of time' (US Department of State 2004).

Yet if their lethal effects persist after combat has ended, they cause humanitarian disasters – and most landmine types remain lethal for an indefinite period. Second, many are hard to detect because of their non-metallic or low-metallic construction, which immensely compounds the post-combat hazard to civilians, and makes mine clearance far more expensive, time-consuming and dangerous.

Mine-like weapons

Other conventional weapons like bombs, mortars, grenades or missiles that remain unexploded after war, and hence become in effect landmines, are another major source of suffering. This unexploded ordnance (UXO) and explosive remnants of war (ERW) pose an equal or greater threat to civilians today than traditional landmines. Cluster bombs are among the main sources of UXO (see Box 2).

Box 2: Cluster bombs – weapons like mines

Cluster bombs are intended for attacking large-scale enemy troop formations. They come apart in the air before making contact, dispersing 200–400 bomblets that can saturate a radius of 250 m. The changing nature of warfare, though, means they are used against enemies in or near highly populated areas, so all too often they critically injure or kill civilians instead of their intended military targets. There is a further danger: up to 40% of the bomblets fail to detonate immediately, and leave a trail of unexploded munitions in war-torn areas.

Link: www.landmine.de/fix/docs/cluster.pdf

How many mines?

The UN says around 110 million landmines are scattered in about 70 countries, with an equal number of stockpiled mines worldwide. Later estimates from the US State Department put the number at about 70 million. To the people affected the exact number does not matter: they cannot cultivate their fields or play outside because of the presence of mines, whether there are 10 or 100 dispersed there.

An estimated US$33 billion (€23 billion) would be needed to clear all the mines planted worldwide. Removing just one can cost up to US $1000 (€700), but lifelong support for a victim can cost five times that. There are far too few financial resources spent on mine-clearing operations and mine action programmes.

Countries affected

The countries most threatened by landmines include Afghanistan, Angola (see Figure 3 for a mine map of one town), Cambodia, Columbia, Egypt, Eritrea, Ethiopia, Iran, Iraq, Mozambique and Somalia (Landmine Monitor 2006). Mines cause many incidents and the danger they pose shapes everyday life there.

No mine-clearance activities have been recorded in 16 of the affected countries, and no mine risk education is undertaken in 25 countries. For maps of countries with landmines and more statistics, see the links section at the end of this lesson.

Mine producers and exporters

Figure 3 Handmade mine-map from Luena, Angola. Photo: one step beyond

European and American landmine manufacturers have always been the technological leaders in the field. Companies from France, Germany and the United Kingdom are at the forefront of the European mine trade – including the multinational concerns Daimler Benz Aerospace (Germany), GIAT (France) and British Aerospace (see Box 3).

Box 3: European producers and export strategies

Europe is the birthplace of the landmine. Landmines were commonly used during the First World War; their progress through the massed armies of the industrialized nations occurred at the same time as the advance of tanks and modern infantry. Landmines were until recently an automatic component of army weaponry in all European Union member states. Larger countries like Germany had millions of them in their depositories, and smaller nations like Belgium hundreds of thousands. The main focus of European mine exports will continue to be countries belonging to NATO, the EU and South-East Asia and countries considered to be neutral. In the future the European armaments industry will probably try to increase their share of the Asian markets.

Mass exports of modern high-tech mines from Europe to developing countries are unlikely in the short term as they are simply too expensive. Nevertheless, hand-laid versions of the modern, remotely-laid mines are nearly always available.

Victims and their problems

Figure 4: Landmine victim in Afghanistan. Photo: Andreas Zierhut

More than half of all landmines miss their intended target, and 90% of landmine victims are civilians. Between 15–20 000 people (ICBL undated) are killed or mutilated by landmines each year on their way to town or school, doing farm work or collecting firewood. Landmines also destroy infrastructure, cause agricultural damage by making fields useless, and intensify refugee problems by preventing return.

As well as death and physical injury, landmines cause a range of damage including widespread disability, demoralization, unemployment, social stigmatization and additional economic hardship for families and communities. They set in motion a series of events that lead to environmental damage in the form of soil degradation, deforestation, and pollution of water resources with heavy metals. They affect animals by degrading their habitats and altering food chains. Many more resources are therefore needed to assist landmine-affected communities.

Gender-specific problems

Landmines affect both men and women, but studies show that women suffer more when they become victims. Fewer women and girls receive mobility aids, such as artificial limbs, and they may receive less attention immediately after the blast, so the death rate is higher for females (43%) than for males (29%).
A disproportionate number of victims are children, because they are not educated about the dangers, and because their small size makes them more vulnerable to a landmine explosion. UNICEF estimates that mines kill and mutilate 8000–10 000 children a year.

International action against landmines

The international mine-ban treaty, the Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on Their Destruction (Ottawa Convention), was signed in 1997 and entered into force in 1999. It bans the use, development, production, stockpiling and transfer of anti-personnel landmines. Over 1400 nongovernmental organizations had been pushing governments to take action through the International Campaign to Ban Landmines network. The ICBL and its coordinator, Jody Williams, won the Nobel Peace Prize in 1997.

There were 122 signatories in 1997, and as of April 2010 there were 156 states parties to the treaty. Two states have signed but not yet ratified, while 37 states are non-signatories, making a total of 39 states not party.

The Ottawa Convention process has been a success so far because anti-personnel landmines are outlawed and states are eager to denounce them in public. Huge stockpiles have been destroyed, the number of producers has dropped and international trade in anti-personnel mines has stopped. Since the early 1990s US $2 billion (€1.4 billion) has been spent on mine clearance programmes and Costa Rica, Djibouti, El Salvador, Kosovo and Moldova were declared mine safe in 2004.

Unresolved issues

Despite this success the convention fails to address the major challenges posed by:

- new high-technology weapons that blur the distinction between anti-personnel and anti-vehicle mines
- unexploded ordnance like cluster bombs that in effect become mines

This is due to the narrow scope of the landmine ban, which extends only to anti-personnel landmines in a technical sense, i.e. those 'designed to be exploded by the presence, proximity or contact of a person' (Article 2).

An international movement to prohibit anti-vehicle landmines and to limit the use of cluster munitions has recently gained momentum, but so far many countries, among them the UK, USA and Russia, are blocking negotiations. See the links section at the end of the lesson for further information about advocacy. Box 4 describes the history of international action against landmines.

Box 4: Chronology of international action against landmines

- 1991: medico international and Vietnam Veterans of America Foundation (VVAF) establish a campaign to ban landmines, and invite other NGOs to participate.
- 1993: 40 NGOs launch the International Campaign to Ban Landmines at a conference in London.
- 1996: ICBL initiates a meeting of all states to declare a prohibition of landmines.
- 1997: the self-obligating treaty Ottawa Convention is signed by more than 120 states; ICBL and its coordinator Jody Williams win the Nobel Peace Prize.
- 1999: the Ottawa Convention enters into force after the 40th state, Burkina Faso, ratifies it. Never before.has an international treaty come into force so fast.
- 2001: US military forces use landmines in Afghanistan; according to the New York Times cluster bombs are dropped of type CBU-89, containing 75 anti-vehicle and 22 anti-personnel landmines.
- 2002: Afghanistan accedes to the Ottawa Convention; in 23 years of war landmines have killed or wounded 200 000 of its people.
- 2004: the US Administration announces that it will not join the Ottawa Convention 'because its terms would have required us to give up a needed military capability'.
- 2006: Protocol V on explosive remnants of war (ERW) of the Convention on Conventional Weapons (CCW) enters into force; it contains measures to neutralize duds in post-war situations. The States Parties to the CCW fail to agree to enter into negotiations on the prohibition of cluster munitions and anti-vehicle landmines, owing to persistent refusal by the P5 nations (permanent members of the UN Security Council: China, France, UK, USA and Russia).
- 2006: 152 states have acceded to the Ottawa Convention but major mine producers like the US, Russia and China have yet to sign it.
- 2009: Rwanda declared free of landmines, as announced at the Cartagena Summit on a Mine-Free World, Colombia.
- April 2010: as of this date there were 156 States Parties to the convention, and 37 countries have not signed, including a majority of the permanent members of the UN Security Council (China, US and Russia), India, Israel and North and South Korea, where landmines remain active in the demilitarized zone.

What can be done?

Mine clearance

Mine clearance is one of the core components of mine action. In its broad sense, as well as the actual clearance of mines from the ground it includes technical surveys, mapping and marking unsafe areas, and documenting areas that have been cleared. This range of activities is also sometimes referred to as 'demining'. The primary tool for mine detection has long been a metal detector similar to that used by beachcombers.

Figure 5: Good training, strict safety measures and the best equipment are needed to clear mines. Photo: MGM – People Against Landmines

Mine-risk education

Figure 6: Mine-risk education in Afghanistan. Photo: one step beyond

Mine-risk education along with mine clearance contributes to mine-risk reduction, or limiting the risk of physical injury from mines and unexploded ordnance that already contaminate the land. It refers to educational activities to reduce the risk of injury from mines and UXO by raising awareness and promoting behavioural change through public information campaigns, education and training, and liaison with communities.

Victim assistance

Victim assistance activities range from emergency health care to physical rehabilitation, psychological support, and social and economic reintegration. The Centre for Assistance of Community Support and Community Development, initiated by medico international in Angola in 1996, is a good example of how to address the comprehensive needs of mine victims.

Figure 7: Prosthesis factory for landmine victims in San Salvador. Photo: medico international, El Salvador

The first step is to enable survivors to regain mobility through prostheses, made in a workshop by local technicians. Adapting to a prosthesis entails physical and psychological problems – victims need to be supported to use them and to overcome psychological traumas linked to the incident. Single and group dialogues at the centre, in hospitals and at home offer psychological support.

As landmines destroy not only people's lives, but also social networks, the project aims to improve the social environment through employment in the prostheses workshop, agricultural projects, micro-credit for women and sporting activities.

Participation in mine action programmes

There are numerous mine action programmes undertaken by UN agencies and various national and international governmental and nongovernmental organizations. Mine action encompasses mine clearance, mine-risk education and victim assistance programmes. Much of the work in the field is carried out by NGOs, which need help to assist victims, remove landmines and teach mine-affected communities how to stay out of harm's way (see links below for further details).

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Links

The Ottawa Convention

Maps and statistics

http://www.landmine.de/fileadmin/user_upload/pdf/1a.pdf
www.mineaction.org/country_map.asp
http://www.landmine.de/fileadmin/user_upload/pdf/1b.pdf

The UN's electronic mine information network offers a useful list of contacts

www.mineaction.org/contacts.asp

Other links to NGOs engaged in mine action programmes

www.landmines.org
www.mgm.org
www.landmineaction.org/involved.asp

International coalitions against landmines

www.medico-international.de
www.landmine.de
www.genevacall.org/home.htm
www.landmineaction.org
www.stopclustermunitions.org
www.icbl.org/campaign/

Lesson 2.2: New types of weapons

Author: Xanthe Hall

Most new weapons being used by modern armed forces are intended to reduce 'collateral damage', i.e. civilian casualties and infrastructure damage. Most are in the category of 'non-lethal' weapons (NLW). Some of them, because of the addition of substances not usually found in conventional weapons, could also be defined as 'inhumane' weapons owing to their severe health effects and/or toxicity.

Some new and inhumane weapons have been identified as such and banned, such as blinding laser weapons, cluster munitions, genetic weapons and some chemical weapons. The main problem, however, lies in the area of NLWs because international humanitarian law bans inhumane or indiscriminate use by intention, but not the side-effects of that use (see the example in Box 1).

Learning objectives

By the end of this lesson you will be able to:

- understand the range of new types of weapons in use
- summarize the characteristics of a 'non-lethal' weapon
- define an 'inhumane' weapon
- outline the ethical and legal problems that arise through the use of non-lethal weapons
- outline some of the specific health impacts of these types of weapons.
- Overview of new types of weapons

Box 1: Unintended effects of a non-lethal weapon

White phosphorus (WP) is an incendiary weapon principally used to create a smokescreen. It burns fiercely and can set combustibles on fire easily. When used on a person it can cause severe thermal and chemical burns. These weapons are not really new but have recently received more attention, mostly because the attack on Falluja, Iraq in 2004, where WP rounds were fired to flush out enemy fighters so that they could then be killed with high explosive rounds (Cobb et al. 2005). Soldiers reported in the film Fallujah, The Hidden Massacre that WP was deliberately and directly fired at civilians. Israel also used WP bombs against Lebanon in 2006 (Rappaport 2006) and against Gaza in 2008–2009, reportedly in densely populated areas (Human Rights Watch 2009).

WP has been described as a chemical weapon, but it has also been argued that it is not because its intended use is incendiary purposes. If it is not, it would also not be illegal under the Chemical Weapons Convention (CCW), which prohibits the use on civilian populations of incendiary weapons meant to cause burn injuries. However, it excludes 'munitions which may have incidental effects, such as illuminants, tracers, smoke or signaling systems'. The International Red Cross believes the use of WP should be banned.

The term NLW has also been increasingly criticized: some see it as a kind of marketing term for these new 'humanitarian' weapons, while others classify it as a euphemism or even an oxymoron (Lewer 2002) because their effects are frequently fatal.

New lethal weapons are also being brought to market, such as the thermobaric bomb, with greater destructive power than conventional weapons.

International humanitarian law

The choice of weapon in conflict is not left to the judgement of combatants, but is governed by international humanitarian law. States have an obligation under the Geneva Conventions to review the legality of the weapons they intend to use according to three criteria: proportionality, discrimination and existing international law (Sautenet 2000). The following questions need to be asked before use:

1. Proportionality: Would the weapon cause suffering that is needless, superfluous or disproportionate to the military advantage reasonably expected from their use?

The International Committee of the Red Cross (ICRC) has proposed that the legality of a weapon can be measured by establishing whether it would cause any of the following effects:

- disease other than that resulting from physical trauma from explosions or projectiles
- abnormal physiological or psychological states (other than expected response to trauma from explosions or projectiles)
- permanent disability specific to the kind of weapon
- disfigurement specific to the kind of weapon
- inevitable or virtually inevitable death in the field or a high hospital mortality rate
- grade three wounds among those who survive to hospital
- effects for which there is no well recognized and proven medical treatment which can be applied in a well-equipped field hospital (Coupland and Herby 1999:1).

2. Discrimination: Can the weapons be controlled so as to strike only a lawful military target and avoid civilian casualties, thus being discriminate in their effect?

If the weapon strikes combatants and non-combatants without distinction, it is unlawful. This was an argument for banning landmines and cluster munitions, because combatants and civilians alike might stand on them. All weapons can be used indiscriminately but some are incapable of being directed at military targets alone, including many bacteriological and chemical NLWs (Lewer 2002).

3. The Martens Clause: Do other norms prohibit the use of the weapon?

The so-called Martens Clause of the 1899 Hague Convention states that because a significant part of the law of war is in the form of customary principles, the rights and parties in conflict to use any means of injuring the enemy are not unlimited (Lewer 2002). Accordingly, the parties to any armed conflict must act 'in accordance with the principles of the law of nations derived from the usages established among civilised peoples, from the laws of humanity and the dictates of public conscience'.

No ban exists for kinetic, acoustic, electrical, microwave and electromagnetic weapon technologies, nor do they face the international legal scrutiny that is applied to chemical or biological agents. Arms control has failed to keep up with the developments in the field of new weaponry.

Non-lethal weapons

Proponents of NLWs claim that the term correctly reflects the intention neither to kill nor to permanently harm. It is not meant to imply that 'non-lethal' weapons will never produce fatalities (Alexander 2001) but that, compared to lethal weapons, NLWs could significantly reduce the number of deaths during violent conflict. NLWs have already been used for years, but those now being developed are far more advanced.

Opponents of this new generation of NLWs therefore fear that calling them 'non-lethal' hides the fact that they can have devastating effects on their targets and that they have great potential to injure and kill. The current trend towards NLWs that combine one or more technologies and have variable settings has led the ICRC to argue that there should be no 'non-lethal' or 'less-lethal' labels whatsoever, as all are simply weapons.

In this lesson we are not making a judgement on whether NLWs are 'good' or 'bad', but pointing out their potential dangers and health effects.

Defining NLWs is difficult, but the following criteria are generally accepted:

- NLWs are specifically designed and primarily employed to incapacitate people or disable equipment, with minimal collateral damage to property and the environment
- they should be discriminate and not cause unnecessary suffering
- their effects on people should be temporary and reversible
- they should provide alternatives to, or raise the threshold for, use of lethal force (Lewer and Davison 2005:37).

The idea of 'bloodless wars' has captured the imagination of politicians and public, and there is growing opposition to deaths in war operations (Lewer and Davison 2005). The NLWs now emerging appear to respect public opinion by promoting the concept of 'just wars', in particular for the protection of human rights, where only necessary force is used.

The ideal NLW envisioned by researchers is a single system that can deliver effects ranging from a warning tap to a stunning lethal blow – a 'tuneable' weapon like the fictional Star Trek 'phaser'. This could lead, however, to the use of violence earlier in a conflict than if only lethal weapons were available. NLWs may also be used for torture.

Here you can find an overview of the types of non-lethal weapons: *http://www.unidir.org/pdf/articles/pdf-art2217.pdf*

Lethal weapons

New weapons that are intended to kill more efficiently or destroy more effectively or more precisely are less numerous than NLWs. Thermobaric weapons, for instance, increase the explosive yield of a bomb (see Box 2).

Low collateral damage (LCD) weapons, such as small diameter bombs (SDB) or focused lethality munitions (FLM), are able to kill more precisely without killing too many civilians at the same time. These types of weapons are designed for use in insurgency conflicts, where combatants and civilians are hard to distinguish. Dense inert metal explosive (DIME) weapons, for example, were reportedly used by Israel in the Gaza conflict (see Box 4).

Box 2: The mother of all bombs

Thermobaric weapons, or fuel air explosives (FAE), have been described as achieving the equivalent blast and heat of low nuclear yields without the accompanying radiation. This has earned them titles like 'Mother of All Bombs' (a word-play on the acronym MOAB, which stands for massive ordnance air blast) and 'Father of all bombs', describing the largest vacuum bomb tested by Russia in 2007 which levelled a multi-storey apartment block. In 2008 the UK revealed it had used thermobaric weapons in Afghanistan, as have US armed forces.

A thermobaric weapon works by dispersing a cloud of powder or liquid explosive using a small charge, and then igniting it with a second charge. The rapidly expanding wave front due to overpressure flattens all objects near the epicentre of the aerosol fuel cloud, and produces debilitating damage well beyond the area. The main destructive force of FAE is high pressure, which is maintained for longer than conventional explosives. They also create very high temperatures. For this reason the effects are similar to those of small nuclear weapons, but without the radiation effects.

Categorization of technologies

Active Denial System (ADS) mounted on top of a Humvee. Photo: US military

Generally speaking, beyond the categorization of lethal or non-lethal weapons, new types of weapons can be categorized into different technologies. Not all can be listed but here are a few examples:

Sonic or acoustic weapons: The long-range acoustic device (LRAD) is an example of an NLW that uses sound to injure, incapacitate or kill an opponent. It is a crowd-control and combatant-deterrent device that was tested in several regions of Iraq. Vortex generator devices project air at high speed ('acoustic projectile') and may also carry other substances like chemical agents. Infrasound resonates in the human body cavities, causing effects that range from disorientation, nausea, vomiting, uncontrollable defecation and bowel spasms to death, depending on the intensity of the sound. Most acoustic weapons are powerful enough to cause permanent auditory damage.

Directed energy weapons: These use microwaves, taser guns (see Box 3) or lasers. For instance, the so-called active denial system (ADS) developed by the US military is a 'non-lethal', directed energy weapon system.

It transmits a strong millimetre wave as a tight, focused beam of energy that flash-heats its target from a distance, causing an intensely painful burning sensation. It does not, however, burn flesh. Directed energy weapons use biomedical research to maximize pain, and their radio frequency beams/waves can cause nausea, vomiting, abdominal pains, depression and convulsions.

At their highest setting, they can make targets' bones resonate, which is extremely painful and may cause bones to explode. If aimed at the head, the resonating skull bones can cause those affected to hear voices. Microwave weapons can induce confusion, stupefaction or coma. Designed and calibrated to disrupt enemy communication, they could 'cook' (superheat) the internal organs of human targets.

Kinetic energy weapons: These use kinetic energy to function and do not contain an explosive charge, such as a simple bullet, a rock or a water cannon. Newer forms of kinetic weapons include missiles used to avoid collateral damage. In Operation Enduring Freedom in Afghanistan, bombs have been filled with concrete and fitted with a guidance system to attack targets too close to civilian structures to use high explosives. Anti-missile interceptors (kill vehicles) and anti-satellite weapons are usually kinetic energy weapons.

Electrical weapons: These create electrical incapacitation using electrodes, stun guns or electrical batons for crowd and riot control. They are designed to knock people down, and can cause skin contusions, eye damage and loss of bladder and bowel control.

Box 3: Health effects of electric shock weapons

Taser weapons have increasingly become a compliance tool rather than a weapon used to prevent injury or death. They may also be misused for torture.

The electric current causes involuntary muscle contraction and extreme pain. The victim completely loses control over their body and falls to the floor until the current stops. Secondary injuries to the head and other parts of the body often occur. The barbs of the taser can leave small cuts and burn marks on the skin. Worse injuries can result if they hit sensitive areas such as the eyes, mouth, neck or groin.

The electric shock does not affect everyone equally. Those with smaller bodies and lower weight, those with existing heart problems and those under the influence of drugs and alcohol are more susceptible to potential adverse effects. Increased risk of heart failure among these groups following taser use cannot be excluded. The muscle spasms caused by the taser may also impair breathing, particularly if a person receives multiple shocks. This may contribute to a lowering of pH in the body, creating a potentially life-threatening chemical imbalance (Lewer and Davison 2006).

Non-lethal chemical weapons: These include riot control agents, incapacitants, adhesives, foams and malodorants. They must act almost instantly to be effective in combat or violent riots, so high doses have to be used. The effects may be terminal on children and anyone of small stature or in poor health. All gaseous weapons are hard to control once they are released, and are dependent on prevailing weather conditions (humidity, temperature and wind direction) – variations can cause collateral damage in bystanders.

Box 4: A lethal weapon for insurgencies

A Palestinian woman with severe facial injuries from a Dime bomb. Photo: Independent

Dense inert metal explosive (DIME) weapons are toxic and carcinogenic. They consist of a carbon fibre casing filled with a mixture of explosive and very dense microshrapnel, consisting of very small particles (1–2 mm) or powder of a heavy metal, commonly a tungsten alloy. This microshrapnel is lethal at close range (within about 4 m of the explosion) but has less effect further away. Reports of such injuries during the 2006 Israeli offensive in Gaza led to the hypothesis that DIME weapons were used (McCarthy 2006). Similar injuries found in Gaza in 2008–2009 conflict added to this debate (Fouché 2009). Israel denies using these weapons.

Use of non-lethal weapons

NLWs are mostly used in politically sensitive, low intensity and insurgency conflicts and for riot and crowd control. Military leaders think they have great potential for use in new conflict scenarios in which it is increasingly difficult to keep combatants and non-combatants apart. Lethal weapons such as LCD are also designed to fight against a hidden enemy sheltering in a civilian area.

It is argued that NLWs have some beneficial uses: they can protect armed forces while minimizing civilian injuries and deaths; to discourage, delay and prevent hostile actions; to limit conflict escalation; and to provide a means of acting when the use of lethal weapons would break the rules of engagement. It is said that using NLWs before a war could cause an enemy's system to collapse or be so weakened that prolonged armed conflict would no longer be feasible, thus helping to prevent aggressive actions or war (Sautenet 2000).

The 2002 Moscow theatre hostage crisis was a well-known example of the use of NLWs to counter terrorism or for hostage rescue (see Box 5). Using incapacitants before shooting disoriented or unconscious people raises serious ethical questions.

Box 5: The Moscow theatre hostage crisis

Former Russian President Vladimir Putin visiting the Sklifosovsky Emergency Medicine Institute to meet hostages rescued from the theatre. Photo: Kremlin

On 23 October 2002, armed Chechens seized control of a crowded Moscow theatre and took 850 hostages, demanding the withdrawal of Russian forces from Chechnya and an end to the second Chechen War. Two and a half days later, Russian special forces raided the building, using a 'knockout gas' later identified as a fentanyl derivative. All 42 terrorists were killed, and at least 129 hostages. Whereas the Chechen terrorists were killed by shots in the head during the raid, despite already having lost consciousness from the gas, all but one of the hostages killed in the raid died of the effects of the gas. Efforts to treat them were further complicated because the Russian government initially refused to tell doctors what gas had been used. All the official requests of foreign embassies in Moscow for more information on the gas were publicly ignored. The Moscow hostage crisis marked the first time this type of weapon was known to have been used for an anti-terrorist action.

Health system responses

International vigilance on new types of weapons should be greatly increased, and injuries that indicate new weapons have been used should be documented and reported. Health workers have a key role in these areas, and in helping to set standards for the use of these new weapons before they are widely deployed.

We cannot explore here the appropriate health system responses to all the many types of new weapons we have identified, but we will now look at some selected examples.

The use of new types of weapons, especially NLWs, has considerable health risks. More health workers will be required to look after those affected (Lewer 1999).

In this context we should consider what the treatment of people wounded in future wars will entail. Health workers may have to treat people suffering from the effects of both conventional and new weapons (Coupland 1997). Additionally, many NLWs have the distinctive feature of aiming at the human

brain and nervous system, thus causing less obvious injuries than conventional weapons. The difficulty of determining proper treatment increases because the precise effects of these new weapons are unknown. There is inadequate research on the potential biomedical and psychological effects of NLWs, leading to widespread calls for long-term evaluation of their health and social implications.

Many NLWs share the potential to cause unintended results, including prolonged suffering, slow death and long-term psychological effects. The lack of independent research fuels controversy about the methods for testing NLWs and evaluating their safety. Reports on testing methods suggest that they often fail to take account of the effects of NLWs on population groups who may be more susceptible to certain weapons, such as children, malnourished civilians, people with heart disease and drug users.

There are also indirect implications linked to the use of NLWs, such as the destruction of Baghdad's electrical system by 'non-lethal' carbon-fibre bombs during the Gulf War. As a result of their use, hospitals, water pumps and sewage treatment facilities no longer functioned properly, resulting in disease and death among civilians long after the war ended. The potential of NLWs to destroy civilian electronic infrastructure starkly contravenes international humanitarian law.

Medical ethics

The health professions play a crucial role in limiting the suffering caused by weapons. Sadly, the developers of new weapons are increasingly abusing their expert knowledge. For example, attempts by the US military to develop an energy weapon that can deliver bolts of excruciating pain from a distance of up to 2 km are based on pain research by medical scientists (Hambling 2005).

The health professions have been urged to guard against the use of their knowledge for the purposes of weapon development (Coupland 1997). Their role in banning weapons – such as poison gas, exploding bullets, blinding laser weapons and landmines – serves as a model for handling emerging NLW technologies. Demand is growing for a respected, independent entity to commission a study on the emerging challenges that NLWs pose to medical ethics (Moreno 2004).

Conclusion

NLWs are likely to play a role in future conflicts, whether we like it or not. Their effects could in many cases constitute preventable global health problems. Many people therefore think it is very important that the health professions recognize and fulfil their responsibility to use health-related data to help the international community define objectively which weapons cause superfluous injury and suffering. The key to the regulation of NLWs, according to medical and legal standards, will be the legal setting where they are deployed.

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Links

European Working Group Non-Lethal Weapons
Bradford Non-Lethal Weapons Research Project
ICRC: Weapons and international humanitarian law

Lesson 2.3: Rape as a military strategy

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Health workers are often confronted with the survivors of sexualized violence, mostly women and girls, during and after conflicts. To try to prevent this and provide good care, it is important to know about sexualized violence, its root causes, its consequences and how survivors should be treated.

Learning objectives

By the end of this lesson you will be able to:

- outline the definition and root causes of sexualized violence in war
- describe the psychological and physical consequences of sexualized violence in war
- describe the appropriate treatment of survivors of sexualized violence in war

This lesson is based on the experience of medica mondiale, an international women's organization that founded the first Women's Therapy Centre for survivors of war-related sexualized violence in Zenica, Bosnia-Herzegovina in 1993. Today it develops local projects and training programmes in the Balkans, Afghanistan, Democratic Republic of Congo, Iraq, Liberia, Sudan, Uganda and elsewhere.

Introduction

Sexualized violence has always existed in every war everywhere (see Box 1). Women and girls and occasionally men and boys were abducted or raped on the spot in the medieval crusades, the Peasant Wars in Germany, the Spanish conquistadors' invasion of America and many more conflicts. Throughout history, combatants have perceived women and girls to be legitimate spoils of war. These acts seem so natural that they are barely mentioned in official war histories, and have often been regarded as minor offences by military commanders.

Attitudes are gradually changing. A report that hundreds of thousands of people were raped in the Congo wars said that in one province alone, South Kivu, about 42 000 woman were treated for serious sexual assaults in one year (McGreal 2006).

Box 1: A long history of sexualized violence in war

Rapes and abductions of women run through the whole of Greek and Roman mythology. Think of the Trojan women taken as booty by the Greeks in Homer's Iliad, or read the Bible, where the ancient Hebrews considered the capture of women as legitimate (Deuteronomy 20.14) and used them to ensure the reproduction of their own people.

In modern wars rape serves as an instrument of terror and has thus helped leaders achieve their strategic goals. During the Second World War rapes were carried out by all sides. Mass rapes of German women and girls by Red Army soldiers were shrouded in secrecy until 1990, when the women first began to talk about their experiences. Also well known now is the Rape of Nanking, when 50 000 Japanese soldiers marched into the former Chinese capital in 1937 and killed and raped Chinese women and men with utmost brutality.

Some military leaders feared that rapes might threaten military discipline and spread sexually transmitted diseases. For both these reasons there was prohibition of rape and punishment in different times and contexts. Military brothels were sometimes set up as a supposed solution, but they did not prevent rape during conquest and were also an instrument of terror and humiliation. The German Wehrmacht, for example, set up brothels systematically in the countries they occupied during the Second World War; Jewish and local girls and women were brought in by force, especially in Eastern Europe. At the same time Japanese commanders developed a unique system of sexual enslavement under which 200 000 Asian woman suffered. After the war the US Army installed 'sexual recreation zones' for US soldiers in the Asia-Pacific area, a practice which lasted until the 1970s.

Sexualized torture and prosecution is also a common element of state repression and civil wars, for example during the dictatorships that proliferated across South and Central America in the 1970s and 1980s, in South Africa under apartheid and in other dictatorships. Sexualized violence has played a big role in the wars in Eastern Europe and Africa since the early 1990s – characterized by a blurring of the distinctions between war, organized crime and human rights violations. Women and girls are at high risk of being raped. Trafficking of women and children for sexual enslavement is a lucrative business conducted by organized criminal groups, and refugee camps provide an inexhaustible reservoir of women and girls.

'While rape has been a product of many conflicts, its scale and systematic nature in eastern Congo has led some human rights groups to describe it as a "weapon of war" used to punish communities for their political loyalties or as a form of ethnic cleansing,' the author said. Such articles have helped raise public awareness of the dramatic impact of sexualized violence in war, leading to the following questions: is rape a weapon of war, perhaps even a military strategy? How can women and girls be protected and treated? How can the perpetrators be punished?

The history of the film Grbavica (2006) shows how difficult it is to talk about these issues. It tells the story of a raped Bosnian women and her daughter Sara (Lormand 2007) (see Box 2 and Figures 1–3). Sara was conceived through rape in the prisoner-of-war camp to which her mother was sent during the war. Her mother was continually raped there, as were around 20,000 other women. Organized sexual enslavement was widespread in the Bosnian war and still is today, with criminal gangs still trafficking women and girls. Grbavica won an international film award, but its female director was anonymously threatened and many cinemas in Bosnia boycotted it.

Figure 1: Sara in the film Grbaviva. Picture: Ventura Film Berlin

Figure 2: Sara. Picture: Ventura Film Berlin

Box 2: Grbavica – the film that broke the taboo

Grbavica tells the story of single mother Esma, who lives with her 12-year-old daughter Sara in Sarajevo's Grbavica neighbourhood, where life is still being rebuilt after the 1990s Yugoslav wars. Unable to make ends meet with meagre government aid, she takes a job as a nightclub cocktail waitress. Working all night is difficult physically and forces her to spend less time with her daughter. Haunted by violent events in her past, she attends group therapy sessions at the local women's centre. As well as her best friend Sabina, she finds a kindred spirit in Pelda, a compassionate male co-worker from the nightclub. Feisty tomboy Sara begins to put soccer aside as she develops a close friendship with classmate Samir. The two sensitive young teenagers feel a strong bond because both lost their fathers in the war. But Samir is surprised to hear that Sara doesn't know the details of her father's noble death.

Sara's father becomes an issue when she needs a certificate proving that he died a shaheed (martyr) to receive a discount for a school trip. Esma claims that acquiring the certificate is difficult since his body has not been found, and searches desperately for a loan to pay for Sara's trip.

Confused Sara becomes violently upset when classmates tease her for not being on the list of martyrs' children. Realizing her mother has paid full price for the trip, she aggressively demands the truth. Esma breaks down and brutally explains how the girl was conceived through rape in a prison camp. Painful as their confrontation is, it is Esma's first real step toward overcoming her deep trauma. Despite Sara's hurt, there is the possibility of a renewed relationship between mother and daughter.

Sexualized violence in war – a definition

Sexualized violence is 'not an aggressive expression of sexuality but rather a sexual expression of aggression' (Seifert 1993:82). For that reason we should not refer to sexual violence, but to sexualized violence. 'The term sexualized violence shifts the emphasis from the sexual aspect to the violent act. Sexualized violence is a form of violence intentionally directed against a person's most intimate parts [...] It aims to demonstrate power and superiority by humiliating and debasing the other person' (Mischkowski 2004a:16).

All forms of sexualized violence are torture (see Box 3). Torture consciously and systematically aims to destroy a person's identity. Rape as a form of torture causes humiliation, loss of dignity and a profound sense of shame. Sexualized violence is a massive violation of human rights.

Box 3: Forms of sexualized violence

Sexualized violence includes not only rapes but also unauthorized touching of body parts, forced undressing, humiliating medical examination, blows aimed at breasts and genitals and targeted injuries of these body parts, infecting people with sexually transmitted diseases, forced prostitution, trafficking in women and child pornography. Other forms of sexualized violence include interference with reproduction and attacks on the right to self-determination over a person's body, for example forced pregnancy, coerced abortions, forced sterilizations, genital mutilations and medical experiments. These abuses are used in war to attack the body in order to break the spirit, and tend to be gender-specific: in the case of women they are mostly sexualized.

Root causes of sexualized violence

Early feminist thinking linked rape to men's supposedly innate biological aggression: as men have the anatomical capacity and physical strength to rape, they use it as an instrument of power. Contemporary gender studies now locate, in modern societies, the causes of male violence in structural inequality between men and women (Mischkowski 2004a:30).

Such inequality fosters both 'male' aggression and 'female' submissiveness. Persistent inequalities in access to political and economic power put women in a vulnerable and marginal position. This is reinforced by the way men are portrayed in many cultures as active, aggressive, powerful, rational and sexually potent, while women are seen as passive, gentle, helpless, emotional and sexually abstemious.

Raping women confirms men in their identity as powerful, active and in control. During war, when soldiers are constantly plagued by 'unmanly' fear and situations out of their control, the violent humiliation of female bodies can affirm that one still is a man and still alive. Military training is often sexualized – the language of trainers, for example, is often steeped in misogyny. Coarse sexist jokes and stories are used to celebrate true masculinity. All this contributes to a loss of inhibitions concerning sexualized violence. Furthermore, in many societies the female body is styled as a symbol of the people or the nation. Raping women on the opposing side in a conflict targets the entire nation and demonstrates superiority.

Physical and psychological consequences

Figure 3: Esma in Grbavica. Picture: Ventura Film Berlin

Sexualized violence is an attack on the victim's innermost self and personality. Women and girls who survive sexualized violence are usually seriously traumatized, with feelings of fear, threat and helplessness. What they suffer during hours, days or months of sexual exploitation, humiliation and torture may cause long-lasting, serious psychological and physical damage. Affected women often find themselves unable to cope with the demands of everyday life. Further insult occurs when women are perceived to be morally responsible for what happened and thus are forced to deny the crime and its consequences. They may become social outcasts, stigmatized and living in poverty. Health workers are often the first and only people to whom survivors turn for help. Most women do not speak out about what really happened, so health workers must understand the medical, psychological and social consequences of sexualized violence.

Physical consequences

Many women suffer severe physical injuries with irreversible secondary injuries and functional losses. Furthermore, numerous functional disturbances occur in the hormonal and the autonomic nervous system. Physical and psychological exhaustion predisposes her to infection, while during rape women may acquire sexually transmitted infections including HIV. Injuries and functional impairment of the genital organs may lead to complications during pregnancy and childbirth and cause infertility. A fuller list of physical consequences, based on the work of medica mondiale, is outlined in Box 4.

The time at which examination after rape is made is relevant, since findings can serve as legal evidence. Forensic findings provide official confirmation that an act of violence has occurred, an assessment that is important for claims for compensation, care and pensions and which counteracts the tendency for women to blame themselves.

Box 4: Physical consequences of rape

This list is based on documented case studies from medica mondiale projects in Albania, Bosnia and Kossovo (Joachim 2004a:74).

It highlights the diversity of possible physical consequences, which are mostly connected with rape:

- acute rectal and genital injuries
- functional disturbances in the sphincter muscle (bladder and intestine)
- haemorrhoids (after untreated genital injuries)
- fistulization after untreated injuries or after primary or secondary infections
- bladder disorders and urinary incontinence
- genital injuries with long-term consequences such as bladder and rectum insufficiency
- sexually transmitted diseases with acute and long-term and/or chronic consequences; infectious processes such as adnexitis, cervicitis, colpitis, vulvovaginitis and urinary tract infections
- hormonal dysfunction: menometorrhagia (increased and/or extremely lengthy menstruation and bleeding outside menstruation), hypermenorrhoea (excessive menstruation), primary and secondary amenorrhoea (menstruation stops), dysmenorrhoea (painful menstruation)
- ovarian cysts
- dyspareunia (pain during sexual intercourse)
- chronic pelvic pain
- high-risk and difficult pregnancies and teenage pregnancies

continues next page

Box 4: Physical consequences of rape *(continued)*

- reproductive health problems including infertility, habitual miscarriages, cervical weaknesses, increased gestational pathology such as cervical insufficiency (weakness of the uterine orifice), premature labour and premature rapture of the amnion, placenta praevia (atypical position of the placenta, with the risk of mother and child bleeding to death), bleeding, pathology in delivery, difficult labour
- alterations in the cervix: leukoplakia (benign cytomorphosis)
- precancerous and/or cervical carcinoma
- carcinoma of the inner genitals, breast cancer. Among the wide range of general injuries incurred during rape, particular mention should be made of:
- hearing impairment, damage to the middle ear (acute)
- self-inflicted injuries (as a consequence of post-traumatic stress disorders).

Psychosomatic disorders:

- gastrointestinal symptoms such as stomach ulcers, gastritis, diarrhoea, chronic obstipation, digestive and bilious complaints
- high blood pressure, pressure in the chest, globus hystericus
- cardiodynia; tachycardia
- bronchial asthma
- sleep disturbances
- dizziness
- tinnitus
- dermatological complaints such as psoriasis, neurodermitis, eczema of unclear origin
- general exhaustion with susceptibility to illness and infections
- sensory disturbances and sensory losses (pain/cold/heat)
- reduction in pain threshold: headaches, back pain, psychogenic pains, persistent muscle tension, joint pain.

Psychological and social consequences

Survivors of sexualized violence show symptoms of many psychological disorders. They are also affected by society's negative interpretation of their experiences, especially where the subject is taboo. How can women regain hope for the future under circumstances such as a post-war situation, exile, extreme poverty or isolation that offer them few alternatives? How can they overcome their powerlessness and get in touch with their strength?

The pychological and psychosomatic problems observed in victims include:

- post-traumatic stress disorder
- fears and phobias
- depression and depressive dysfunction
- suicidal tendencies
- psychosomatic symptoms, psychogenic pain, and conversion symptoms like headaches, back pain, fainting, abdominal pain, high blood pressure and heart trouble
- substance abuse
- psychosis
- self-harming behaviour
- relational and sexual disturbances
- altered relationship to own body
- altered self-image and view of the world.

This overview reveals the very wide-ranging psychosocial consequences of sexualized violence. It demonstrates that survivors are significantly affected and undergo major changes in their relationship to themselves and others (Joachim 2004a:84).

Post-traumatic stress disorder

Trauma literally means a wound or an injury. A traumatic experience is a deep wound at the psychological level, based on the experience of an extremely threatening situation with which it is difficult to come to terms.

In the 1980s different syndromes describing various experiences of violence were incorporated in the diagnosis of post-traumatic stress disorder (PTSD). PTSD describes the connection between the traumatic event and its long-term effects. In a completely overwhelming situation in which it is not possible to fight or flee, the body can 'freeze' and the psyche, switching to 'function' in order to survive, splits off certain aspects of the experience.

The split-off memory continues to return in fragments or manifests itself in physical disorders.

Figure 4: Photo: medica mondiale

Not everyone experiences PTSD. Research has identified predisposing factors for pre- and post-traumatic vulnerability, such as age at the time of traumatization and the level of direct support available. The chance of lasting PTSD is especially likely in cases of rape, however.

The symptoms in Table 1 may occur directly after the violence or weeks or months later. PTSD is diagnosed only if they last more than four weeks; otherwise the diagnosis is an acute stress disorder. There is a strong danger of being retraumatized, an experience that can be triggered by how survivors are dealt with. Three groups of symptoms of PTSD following trauma such as rape have been outlined (Table 1).

Table 1: Groups of symptoms of PTSD

Intrusive symptoms	Aversive symptoms	Hyperarousal
May appear immediately and cannot be controlled by the survivor. Triggered by sounds, smells or situations associated with the traumatic experience or symbolizing parts of it: • flashbacks (sudden fragmented memories or images of the traumatic experience) • nightmares • panic attacks.	Include all reactions and all behaviour used by the survivor to avoid being reminded of the traumatic incident and/or to weaken response: • avoidance of thoughts, feelings, discussions • isolation • withdrawal from certain activities and people • negative future expectations • restricted emotional responses.	Also called over-agitation, this state includes: • sleep disturbances • excessive wakefulness • irritability • angry outbursts • lack of concentration • over-alertness • overreacting to frightening situations.

Treatment

Figure 5: Graceland Counselling Services in Lumley, Sierra Leone. Photo: medica mondiale

There is no absolute standard, i.e. no single way, for helping the survivors of rape, but medica mondiale has developed a four-pronged approach that aims to assist traumatized women and girls and uphold their rights.

The four interlinked approaches focus on:

- gynaecological care
- psychosocial work
- legal advice
- political work for human rights, and especially advocacy for women's rights.

Health care

The basic prerequisite for offering help is the health worker's recognition of profound suffering and impotence in the face of war and post-war situations characterized by high levels of direct and structural violence, denial and taboo. Health professionals should work towards the following objectives:

- ensure easy access to health care
- recognize and document signs of sexualized violence and trauma
- guarantee trauma-sensitive examinations and treatments
- deal with retraumatization
- enable self-reflection and further professional development.

A trauma-sensitive examination is one that takes place in a 'safe space'. Family members should never be present or act as translators. Female health workers are more likely to be trusted by the survivor.

Health workers should never aim to 'discover' something and should not work in a confrontational manner, but show that they are knowledgeable and empathetic. They should not appear shocked, and should show awareness of the survivor's feelings, verbally and non-verbally.

Health workers should be aware that examination can trigger retraumatization. Triggers may include having to get undressed, the examination position in the

gynaecological chair, applying gel for a sonogram (association with sperm), and having an ECG (association with torture). Survivors often react to traumatic memories in a very controlled way during examination – the pain comes later. Talking to the woman before and during the examination, and making sure that she is not left alone afterwards, are important.

Figure 6: Marta 1, a mobile gynaecology ambulance in Bosnia. Photo: medica zenica.

More information about working with traumatized women, including guidelines for all professional groups, trauma-sensitive treatment and assistance, psychosocial and psychotherapeutic support, rights, protection and counselling of victims can be found in medica mondiale (2004).

Psychotherapeutic work

Therapy can initiate the process of psychological stabilization, and facilitate confrontation with the trauma as well as coming to terms with it. Months or years may pass before the trauma can be integrated into the survivor's personal history and recognized as an injustice. Sometimes the first step is simply to become stable and to learn to live with the physical and psychological results of the act.

Psychotherapy often has four stages:

- safety
- stability
- confrontation
- integration.

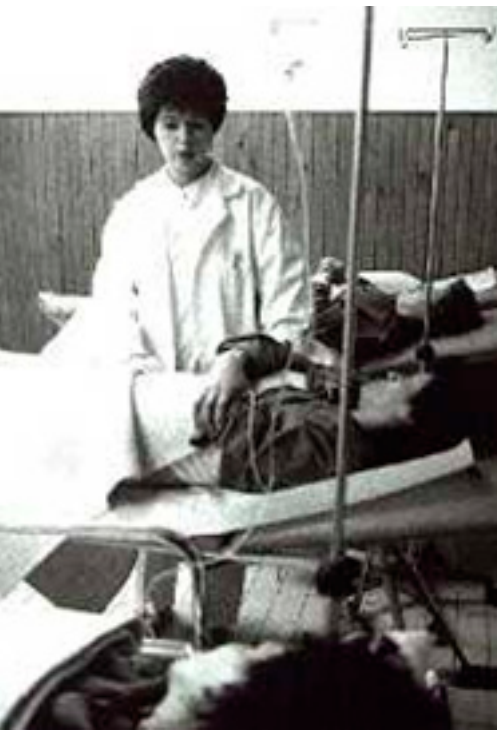
In the relationship between therapist and client, the first step is to build mutual trust, so that the client can eventually rebuild trust with others. Step by step, she learns to live with the results of the violence, to pick up the threads, and to begin life anew. Once external living conditions promise security and she has regained control over her self and her life, it may be possible to work on bringing her deeply shaken view of her self and the world into a functional balance (see Box 5).

Box 5: Psychotherapeutic work

Psychotherapy should activate the power of self-healing with a resource-oriented approach that addresses the inner powers of self-healing and the survivor's hidden sources of strength. Elements of Gestalt therapy, psychodrama, body work and family therapy support this holistic approach. Many find therapy groups with other survivors helpful (medica mondiale 2007).

Body-oriented and imaginative methods such as eye movement desensitization and reprocessing may help the survivor to face the traumatic experience stored deep within her body and psyche. In a protective therapeutic setting, the traumatic experience can be examined, and injuries and losses can be fittingly mourned and integrated in her personal history. The traumatic experience itself can then be identified as something that belongs to the past and can no longer overwhelm her.

Burnout and vicarious traumatization



Working with survivors of sexualized violence is an enormous challenge that can develop the health worker's own inner strength. Yet they are exposed to the dynamic of the trauma of sexualized violence; being confronted with denial, avoidance and taboo may upset the helper's psychological balance. They may become physically or psychologically ill, a syndrome often called burnout, and should be alert to the wide range of possible signs (Box 6) (Joachim 2004b:194). Helpers must pay attention to their own inner state and seek self-empowerment.

Figure 7: Photo: medica zenica

Box 6: Burnout

Caregivers are often so busy caring for others that they neglect their own emotional, physical and spiritual health. The demands on their body, mind and emotions can seem overwhelming, leading to fatigue and hopelessness – and ultimately burnout. Other contributory factors include role confusion, unrealistic expectations, lack of control and unreasonable demands.

Caregiver burnout is a state of physical, emotional and mental exhaustion that may be accompanied by a change in attitude, from positive and caring, to negative and unconcerned. Burnout can occur when caregivers do not get the help they need, or try to do more than they are able, physically, mentally or financially. Caregivers who are burned out may experience fatigue, stress, anxiety, and depression, and feel guilty when they spend time on themselves. The symptoms are similar to those of stress and depression.

They include:

- withdrawal from friends, family and other loved ones
- loss of interest in activities previously enjoyed
- feeling sad, irritable, hopeless and helpless
- changes in appetite, weight or both
- changes in sleep patterns
- becoming ill more often
- feelings of wanting to hurt yourself or the person for whom you are caring
- emotional and physical exhaustion and irritability.

Establishing the truth and criminal prosecution

Humanitarian international law is the legal basis of international criminal law. The extended 1907 Hague convention on 'The laws and customs of war' indirectly prohibits rape in international armed conflicts. Only after the Second World War was rape explicitly incorporated in the Geneva Conventions, which also cover internal armed conflicts. Yet neither the Hague nor the Geneva Conventions set down penalties or punishments for rape, let alone raise the prospect of international criminal prosecution (Mischkowski 2004b).

The prosecution of perpetrators of sexualized war violence moved slowly during the first initiatives to hold individuals responsible for war crimes.

- Despite much evidence there were no rape charges at the Nuremberg Tribunal 1945–6; the Military Tribunal in Tokyo ignored the sexual enslavement of the so-called comfort women but did prosecute for the mass rapes in Nanking.
- The UN ad hoc Tribunals for the former Yugoslavia (1993) and for Rwanda (1994) set a precedent in prosecuting sexualized violence as war crimes, crimes against humanity and an instrument of genocide.
- The treaty-based International Criminal Court (ICC), established in 2002, lists rape, sexual slavery, enforced prostitution, forced pregnancy, enforced sterilization and any other form of sexualized violence of comparable gravity as war crimes and crimes against humanity. The statute prohibits any discrimination based on gender.
- Hybrid courts (domestic courts with international involvement, for example those in East Timor, Sierra Leone, and Bosnia and Herzegovina) have incorporated this new international standard.
- The UN Security Council declared in 2008 that sexualized violence is a strategy of war and the perpetrators should be prosecuted.

The increased awareness of gender-based war crimes during the last 15 years is reflected in international criminal law, and can also be found in other mechanisms for establishing truth and accountability in post-war or post-authoritarian states, such as the truth and reconciliation commissions in South Africa, Chile, Peru and Guatemala.

This progress would not have occurred without the commitment and determination of many women in and outside these institutions. Experience shows that without continued struggle and watchfulness, justice will be denied to the victims and survivors of gender-based war crimes (Nowrojee 2005).

Advocacy for women's rights

Figure 8: Three women from the medica mondiale women's group in Fishtown, Liberia. Photo: medica mondiale

Work against sexualized violence must include advocacy for women's rights at local, national and international levels – including publicity against the patriarchal code of silence. For example: sexualized violence and the gender perspective would not have played such an important role in the ICC without the work of the Women's Caucus for Gender Justice. Protecting women and girls from sexualized violence requires a real change in human rights policies, and many women and women's organizations are working towards this goal (see the links on the following page).

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Links

Women's Initiatives (formerly Caucus) for Gender Justice
1000 women for Nobel Peace Prize
Peacewomen
medica mondiale
Women's International League for Peace and Freedom
Women in Black
Feminist Peace
Polaris Project: Combating Trafficking in Women and Children
UN Development Fund For Women
The Coalition to Work With Psychotrauma and Peace

Lesson 2.4: The public health effects of war

Author: Marion Birch

In this lesson we will think about war and public health. The health effects of specific weapons, particularly chemical, biological and nuclear ones, are considered in **Chapter 1**. Here we will consider the public health effects of war and violent conflict.

Learning objectives

By the end of this lesson you will be able to:

- describe the major immediate and longer-term public health effects of war
- understand the role of health professionals in documenting and responding to these effects.

Background

Public health is concerned with the health of the community as a whole. 'Health care is vital to all of us some of the time, but public health is vital to all of us all of the time,' as former US Surgeon General Dr C Everett Koop once said. Violent conflict, the disruption to infrastructure and society it causes and the threats to security it creates, is clearly a threat to the health of whole communities. We will now explore the different pathways through which violent conflict affects health.

Immediate effects – death

The most immediate effects of violent conflict are death and injury.

> ***Take a moment to think about the different problems that may arise. Write them down now, and compare you or list as you read on.***

There will be dead bodies to deal with, in a situation where normal procedures may be disrupted. You may have thought of the spread of disease, but this is often exaggerated, particularly by the media: except in certain diseases such as cholera, dead bodies are not very dangerous.

You may also have thought of important cultural and religious issues relating to dead bodies that it may be difficult to observe during conflict. In some cases a fear of disease transmission has meant that the wishes of the community have

been overridden unnecessarily. It may also mean that attention and resources are dedicated to disposing of bodies that could be more effectively used to look after the injured or on other public health measures.

Health professionals have a clear role in trying to ensure that:

- the wishes of the community are respected as far as possible in relation to the disposal of dead bodies
- the disposal of dead bodies is not given priority over other activities that would be of more benefit to the public health of the community.

Immediate effects – injuries

Trauma is still a significant cause of morbidity even in peacetime: for example, car accidents, machete injuries sustained during agricultural work, and burns from kitchen fires. When people are displaced by conflict some of these causes of injury may increase, as they live in more crowded conditions and have to survive in ways they are not used to. Fires in refugee or displaced persons camps, for example, are a great risk in some situations, and burns from makeshift cooking fires are a particular risk for children.

> ***What do you think health professionals can do about this sort of injury?***

Health workers can highlight the extent of the problem through a good health information system – even in temporary camp health posts – that quantifies and draws attention to it. They can communicate with those who can implement effective preventive solutions, for example, slow wood-burning stoves that also use less wood. Health professionals can also ensure that primary care services can cope with burns and treat them effectively to avoid restrictive scarring and long-term effects.

> ***Apart from an increase in injuries that also occur in peacetime, think about injuries specific to violent conflict; take a few minutes to make a list of them.***

You may have identified:

- gunshot wounds
- knife and machete wounds
- blast injuries
- heat injuries from explosive ordnance
- injuries from landmines and cluster munitions, including loss of limbs.

All these have immediate effects which put great demands on health services if they are to be treated effectively, but they also have long-term effects, in terms of ongoing treatment, disability and consequences for lifestyle. A child that stands on a landmine, for example, will need an average of five different prostheses as she grows, with related fittings and physiotherapy. Losing a limb can be particularly difficult in resource-poor settings. Soldiers who lost a leg in the war in Angola preferred to stay in the capital city Luanda, where they could make a living by begging; they feared being a burden on their families if they returned to their villages, because they could no longer work in the fields effectively.

The role of a health professional in relation to these longer-term effects is not only curative but also preventive. In **Lesson 2.1** you read about the international campaign to ban landmines which brought about the Mine Ban Treaty (often called the Ottawa Convention).

The documentation of the terrible and indiscriminate suffering these weapons cause was key to this success. Health professionals played a role in this preventive campaign. The burden that landmines and other forms of weaponry place on health services is still not adequately taken into account by health economists, however.

Health professionals also contributed valuable information to the campaign to ban cluster munitions. During the two months after the 2006 ceasefire between Lebanon and Israel, three or four civilians were killed or injured every day by unexploded submunitions; 35% of them were children (Landmine Action 2006). The campaign had great success with the signing of a Convention on Cluster Munitions by 94 countries at the Oslo Signing Conference in 2008, and was set to enter into force (become binding international law) on 1 August 2010, 30 states having ratified it by 16 February 2010 (Cluster Munitions Coalitions 2010).

Epidemics and communicable diseases

> ***Why do you think violent conflict and war might bring about an increase in the transmission and incidence of communicable diseases?***

The reasons can be covered very broadly by the three **D**s: **displacement**, **disruption** and **debilitation**.

Displacement: This leads to people living in situations of stress, in unfamiliar and often overcrowded surroundings, where drinking water may be in short

supply and sanitation facilities inadequate. Diarrhoeal diseases and acute respiratory infections can thrive in these conditions, with cholera presenting a particular threat. The loss of privacy can also exacerbate the stress of having lost one's home and familiar surroundings because of conflict, possibly becoming separated from family members in the process.

Disruption: This can mean that health services are not available, including immunization and maternity services. It can have dire consequences for the spread of communicable diseases such as measles, which can be a major killer of children in such situations. As a result of health professionals identifying the terrible effects of measles, health workers no longer wait for an outbreak but carry out preventive mass immunization of vulnerable communities.

Violent conflict often means that travel can be dangerous, particularly at night. Curfews and roadblocks are often common. This means emergency transfers can be particularly difficult, including the transfer of obstetric emergencies.

Health professionals can advocate particular rules and procedures that allow emergencies to pass safely. This advocacy can be backed up by evidence, for example of the devastating consequences of a delay in reaching a health facility when a Caesarean section is needed.

HIV/AIDS can be a particular problem in conflict situations, both in terms of increased likelihood of transmission and for those living with HIV/AIDS.

The social effects of conflict may mean that normal social, economic and support networks are broken down, leaving people vulnerable to risky sexual activity to earn money, gain protection or seek comfort. An increase in the workload of health services that may have insufficient supplies for universal precautions can put health workers and patients at risk. Displacement and disruption can be particularly difficult for those living with HIV/AIDS, and may sometimes be accompanied by isolation and discrimination.

Debilitation: Given the living conditions people often have to endure in situations of conflict, they may become malnourished and stressed, and this may reduce their ability to fight the increased risk of infection – particularly in the case of children. The relationship between malnutrition and infection is one reason for the very high case fatality rate for measles in these situations.

Health professionals may have to make difficult decisions in some cases. The World Health Organization advises that a patient diagnosed with TB should not be treated unless there is a degree of certainty that they will be able to access their treatment for the next six months, because incomplete treatment leads to resistance (Coninx 2007).

Nutrition and food security

Food security is defined as access by all people at all times to a diet that enables them to live a full and active life. It concerns all the ways that people access food.

They may:

- earn wages to buy it
- grow it
- barter other things for it
- receive it as a gift (including food rations)
- work directly for food in a food-for-work programme
- collect wild foods such as berries.

Of course people may also stop buying other things in order to have money for food, or they may simply reduce the amount they eat.

It is a very risky survival mechanism when a young woman sells herself to a soldier to buy food for her children when her husband has disappeared in the conflict. A family cutting down on soap to buy food also brings its own risks. Health workers, including nutritionists, can highlight the signs that people are having difficulty finding enough to eat. Monitoring food security indicators such as prices and eating habits should indicate there is a problem early on. Later, health professionals investigating why there is an increase in sexually transmitted diseases and scabies may identify food security problems that need to be addressed.

Hungry children often appear on our televisions as a result of conflicts. They are a strong reminder that the social and economic upheaval caused by violent conflict affects all members of society, not just those who are killed and injured. Malnutrition has been shown to have a close association with conflicts (FAO 2006), and its effects may last a lifetime if the normal development of the child is severely affected. Food can also be used as a weapon of war, to try and influence the course of a conflict.

Micronutrient deficiencies – which may already be a problem in peacetime – frequently increase during conflict. Pregnant women will be more prone to anaemia, making them and their babies more vulnerable and increasing the risk of birth complications such as post-partum haemorrhage. Anaemia is one of the commonest micronutrient deficiencies, particularly in chronic and protracted conflict situations.

Mental health

You will have concluded from what we have discussed so far that violent conflict creates a highly stressful situation for those experiencing its direct or indirect effects. WHO estimated that 13% of the worldwide burden of disease (estimated in Disability-Adjusted Life Years) is due to mental health problems, including emotional reactions to trauma and war (WHO 2003).

Take a moment to think about what events specific to conflict may cause severe mental stress:

- witnessing the death of a family member
- witnessing violence
- being separated from family members, not knowing where they are
- living in fear of violence
- being displaced and losing your social network
- having to take on new responsibilities (for example households headed by women or children)
- feeling unable to protect those close to you.

Many health workers think the best thing to do for mental health in times of conflict is to concentrate on ensuring people are in a secure situation and on helping them regain control over their lives. Counselling and trauma programmes are still a regular feature of the humanitarian response to many situations. However, there is an ongoing debate about the correct balance between these two approaches (see **Course 5, Chapter 3** for more on this debate).

Noncommunicable diseases

Noncommunicable diseases represent the greatest burden of disease in some countries, and this does not change in a situation of conflict. The disruption caused to services means that people with these long-term conditions may be at risk: for example, diabetics may run out of insulin and those suffering from hypertension may run out of beta-blockers, with drastic consequences. Emergency health kits sent to the Balkans contained malaria tablets which were not needed, but too few drugs for noncommunicable diseases; the kits have since been adjusted.

The environment

You considered the environmental effects of some weapons in previous chapters. Scorched earth policy, setting fire to resources, and intentionally or unintentionally releasing toxic substances can be major health risks during wartime. The devastating effects of Agent Orange (dropped by US planes during the Vietnam war) continue to the present day in the form of birth deformities. The release of 10 million barrels of oil into the waters of the Gulf by Iraqi forces, and the firing of 732 Kuwaiti oil wells, had catastrophic environmental effects after the first Gulf war, with consequences for people's health and livelihoods.

Now take a few moments to read the section on 'Despoliation, defoliation and toxic pollution' on page 1159 of the following article:

Leaning J (2000), Environment and health: 5. impact of war. Canadian Medical Association Journal 163(9):1157–61. Available at: www.cmaj.ca/cgi/reprint/163/9/1157.pdf

Conclusion

The public health effects of war and violent conflict are clear. By collecting and documenting the evidence, health professionals can use it to call for accountability, and to advocate conflict prevention. If conflict does break out, they can use this evidence base to plan effective responses to the increased needs it will create.

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Lesson 2.5: Small arms and light weapons

Authors: Heather Farrell and Andrew Pinto

Learning objectives

By the end of this lesson you will be able to:

- provide a broad overview of the production, trade and use of small arms and light weapons
- assess their impact on health and development
- explain what is currently being done to limit their production, trade and use.

Introduction

Small arms and light weapons (SALW), or 'conventional weapons', are those that can be operated by one or two people. They include handguns, assault rifles, machine guns, grenades and landmines (Sidel 1995). These weapons are known to cause the majority of deaths in violent conflict globally, increase the number of deaths occurring during robbery or assault, and enhance the lethality of suicide. This lesson will help you understand some basic facts about SALW. We will discuss the scale of this epidemic, its impact on health and the role of health professionals in dealing with it. SALW are a massive public health problem and solutions require an integrated and interdisciplinary approach.

Dynamics of the epidemic

How big a problem are SALW? There are estimated 639 million small arms globally, or approximately one for every ten people on earth. More than half the world's countries are involved in producing the 7.5–8 million new weapons and 10–14 billion rounds of ammunition manufactured annually (Small Arms Survey 2003; Cukier and Sidel 2006).

Where do all these weapons come from and where do they go? The global trade in small arms and light weapons may be worth US $21 billion (€15 billion) annually (Hillier and Wood 2003). Around 98 countries have the capacity to produce SALW, but the vast majority are produced in Europe (47%) and North and Central America (34%). Ironically, the main producers are the five permanent members of the UN Security Council: the USA, the UK, France, Russia

and China. There is an overall pattern of arms flowing from the North to the South, with the top purchasers being developing countries like India, China and Saudi Arabia (Cukier and Sidel 2006). This is a continuation of the Cold War trend, and most of the weapons circulating in conflict zones in the developing world today date from that era.

It is a challenge to calculate the magnitude of the global trade in SALW, as it includes both legal and illegal spheres. Most SALW originate in legal production and trade (80–90%) but over a weapon's lifetime it may be diverted from legal trade into illegal trade, where it is likely to be used in violent conflict, human rights abuses and criminal activity (Small Arms Survey 2002).

SALW as weapons of mass destruction

SALW have a direct impact on health. Estimates of the direct death toll due to SALW range from 80 000 to 500 000 per year (Cukier and Sidel 2006; Small Arms Survey 2005). Most of these deaths occur in the developing world, in countries experiencing violent conflict or in a post-conflict state. In the developed world, most of the deaths due to SALW are related to suicide, accidents and crime.

In addition to direct fatalities, an estimated 3–4 times this number of people are injured by SALW. The injuries are usually quite severe, often requiring amputations and abdominal surgery, and causing neurological damage if they involve the spine or head. They are an increasing burden on the already strained health infrastructure of many countries, and consume resources in emergency departments around the world. Many survivors are left with permanent disabilities and few services are available in the developing world. The vast majority of victims are young men, who are often relied on to support families and generate income, so their injuries can have enormous social and financial implications. Finally, injuries due to SALW usually occur in the context of life-threatening events and can lead to life-long psychological difficulties, such as post-traumatic stress disorder (PTSD).

SALW also negatively impact on health indirectly. They provoke and prolong conflicts (Arya and Cukier 2004; Rawson 2002), precipitate genocide (Goose and Smyth 1994; Meek 1999) and disrupt the provision of humanitarian assistance and development initiatives (Muggah and Berman 2001; Gebre-Wold 2002), especially affecting women and children (Albertyn et al. 2003). They undermine what the UNDP calls 'human security', or safety from chronic threats, such as hunger, disease and repression, and protection from sudden and hurtful disruptions in the patterns of daily life. On a day to day basis, housing, food security, access to clean water, employment opportunities and levels of crime can be affected by gun violence (Box 1).

Box 1: Alternative ways of examining the impact of gun violence

Social disintegration:

- problems with policing when civilians out-arm police
- breakdown of traditional authority structures with increased use of SALW in resolving disputes.
- SALW causing instability:
- hindrance of post-conflict reconstruction and reconciliation
- failure of disarmament, demobilization and rehabilitation programmes.
- increase in armed crime due to their widespread availability.
- Impact on human rights:
- increased levels of violence against women and children
- constraints on access to health care due to insecurity
- use of SALW by security forces to constrain political rights.

SALW and violent behaviour

Research on SALW often focuses on determining the numbers of weapons available in a certain context. This information is useful because we know that there is a relationship between the accessibility of SALW and the numbers of injuries and deaths that result from their use (Cukier and Chapdelaine 2001). However, a close comparison of individual cases indicates that variables other than accessibility to firearms play a role in the number of firearms-related deaths and injuries. For example, approximately 8% of households in Northern Ireland had firearms in 1999, and there were just under five intentional firearms deaths per 100 000 people. Many more Swedish than Northern Irish households had firearms (20%), but Sweden's rate of intentional firearms deaths at 2.4 per 100 000 was less than half that of Northern Ireland. In a more extreme example, 50% of Finnish households possessed firearms compared to approximately 42% of American households, but the American rate of intentional firearms deaths was more than double that of Finland (Cukier and Sidel 2006).

Similarly, studies of armed conflict have shown that access to weapons is related to injury and death due to SALW. However, interpersonal conflict can take the place of war and SALW weapons injury may only decline by between 20–40% in the post-conflict period if SALW remain accessible (Cukier and Sidel

2006). There could be numerous reasons for the continued use of SALW during a period that is considered post-conflict, such as unresolved grievances or the perception of insecurity by one or more parties. All too often, such wars are not fought for simple political objectives that are amenable to outside diplomacy. When the stakes are high, lack of proper weapons is not an inducement to compromise, but an invitation to improvise.

Arms reductions programmes are therefore an important part of the response when we attempt to reduce violence due to SALW, as well as violence more generally, because they can limit the destructiveness of violence. The demand side for SALW must also be considered, however. Health workers have an important role in working to reduce the motivations for violent behaviour, such as dealing with legitimate grievances and strengthening human security.

Efforts to mitigate SALW problems

'The death toll from small arms dwarfs that of all other weapons systems – and in most years greatly exceeds the toll of the atomic bombs that devastated Hiroshima and Nagasaki. In terms of the carnage they cause, small arms, indeed, could well be described as "weapons of mass destruction". Yet there is still no global non-proliferation regime to limit their spread' – former UN Secretary-General Kofi Annan (2000:52).

Broadly, activists and advocates are working in three major, overlapping areas to end gun violence. The first is attempting to control the weapons themselves, similar to 'vector control' for other areas of public health. This includes working to limit production of new weapons; limiting the transfer of weapons within and between countries; banning the sale, production or ownership of certain types of weapons; working to decrease the number of SALW in circulation through gun buy-back projects; and disarmament, demobilization and rehabilitation (DDR) in post-conflict areas. Attempts to control and limit trade in SALW, and track weapons and ammunition, have proven extremely difficult, and little progress has been made in establishing a global arms trade treaty (Sidel 1995; Small Arms Survey 2003). In this category, we could also include requiring firearms to be stored safely, separate from ammunition, with locks on the triggers – there is growing evidence that this is effective in reducing injuries due to SALW, especially suicides and unintentional use (Shenassa et al 2004).

The second area is addressing behavioural or enabling factors that encourage gun violence. This may include focused bans on carrying or use of SALW, such as in specific areas of a city or on Friday and Saturday nights, when most injuries occur in many settings. Activists have worked to address 'gun culture', or attitudes that encourage the use of SALW to solve problems. Specific examples include public awareness campaigns about the damage that SALW cause, such

as the International Physicians for the Prevention of Nuclear War 'One Bullet Stories' and the International Action Network on Small Arms 'Million Faces Campaign'.

Finally, a third and related area is addressing the root causes of gun violence, and violence overall. Poverty and a lack of basic necessities, a lack of political empowerment, violence against women and many more factors increase the use of SALW. It is difficult to evaluate the success of many of these initiatives, primarily because the level of violence in any given context is driven by so many factors.

Many groups have called for more research into injury surveillance, as such information would assist with monitoring and evaluating preventative interventions (Krug 2004). Evidence from 'disorganized settings', which include areas of active conflict or recent conflict and low-income areas, is difficult to obtain (Zwi 2002). These locations are often the most affected by the use of SALW.

Box 2 : Peace through Health framework of initiatives on SALW

Primordial:

- Addressing root causes: health professionals involved with dealing with poverty, human security initiatives.

Primary:

- Dealing with individual and group behaviour change: suicide prevention, youths involved in gangs, conflict prevention, pointing out the impact of SALW on health, using research to quantify the problem, talking with decision-makers.

Secondary:

- Mitigating the use of guns, campaigning for gun bans, registries etc.

Tertiary:

- Limiting the damage done by guns: improving emergency health services and triage protocols, injury surveillance at the point of care, counselling and assisting victims of SALW.

Conclusion

Violence related to SALW can be seen as a public health problem. Many different factors contribute to it, and SALW have both direct and indirect impacts on health. Health professionals can get involved in advocacy and activism to limit the spread and use of SALW, applying the Peace through Health principles taught in the MPW courses (Table 2). It is important to have a deep analysis of violence in order to be effective in mitigating it.

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Links

International Physicians for the Prevention of Nuclear War
IANSA, International Action Network Against Small Arms
ControlArms
Stockholm International Peace Research Institute
Small Arms Survey

Chapter 3: The health professions' responses to war and weapons

Intermediate objectives

By the end of this chapter you will be able to:

- provide an historical overview of the different ways health professionals have worked towards war prevention, disarmament and weapons control
- evaluate how information can be used for advocacy purposes
- demonstrate some advocacy skills.

Lesson 3.1: Educating the public

Author: Marion Birch

Earlier in this course you learned about weapons that present huge potential risks to the public, and should therefore be of great concern to them. However, knowing something is bad for you does not necessarily mean you do all you can to prevent or avoid it. In this lesson we will consider what might change people's attitude to the threats presented by war. How can we share knowledge about this, and enable people to help address the situation?

Learning objectives

By the end of this lesson you will be able to:

- understand communication techniques to explain the health effects of war to the public
- design appropriate education and awareness-raising programmes.

To start this lesson we will consider what might change people's attitude to the threats presented by war. This is closely linked to considering how knowledge about this threat is given to the public – how should it be presented, and made interesting but not so frightening that people switch off? Lastly, what can be included in this information that enables people to help address the situation?

Knowing your target audience

It is important to know what type of audience you will be talking to.

Consider the following examples. Write down some of the issues you may have to consider when communicating with these different audiences.

A| A campaign to raise awareness of the dangers of nuclear weapons, in a coastal town where 12% of the working population are employed in the port where the submarines that carry these weapons are based.

B| A campaign to raise awareness of the indiscriminate and terrible effects of cluster munitions and the need to support the implementation of the Convention on Cluster Munitions, in a small country town where many families have relatives in the armed forces.

In case **A** some people's main concern may be about their jobs. They may also be sensitive if they think they are being held directly responsible for the terrible effects of nuclear weapons. Some of these concerns can be overcome – for example, by stressing that the government could convert the dockyards to peaceful alternatives

which would create jobs. However, an analysis of whom the campaign is targeted at is important: not everyone can be persuaded.

In case **B** people may feel you are making an implied criticism of their relatives in the armed forces, who they consider are ready to risk their lives in defence of the nation. It may be a good idea to acknowledge the links of the town with the military at the start – so it does not become the 'elephant in the room'. You can also mention whether your government has ratified the Cluster Munitions Convention, and stress the indiscriminate effects of cluster munitions on civilians.

It may also be necessary to design the message to respond to other information that people might have received. For instance, a few years ago, if you were talking about the Trident nuclear weapons system in the UK, it was important to take into account the language used by those who supported Trident – that it is a 'precise' weapon that can deliver a 'surgical strike'. It was necessary to counteract this argument by showing that even the smallest nuclear warhead would have terrible and indiscriminate effects.

More recently the argument of those supporting the renewal of Trident has changed: now they say we need Trident because the UK needs a 'nuclear deterrence' for its security and status, but would never use it (perhaps this is partly due to the success of previous campaigns).

Education campaigns need to show the lack of logic in this type of statement: e.g. if it is common knowledge that it would never be used, how can it be a 'deterrent'; and if the UK needs a nuclear weapon for security and 'deterrence' surely every other country can say the same, with disastrous implications for proliferation.

This is just one example of how education and awareness-raising programmes need to adapt, depending on what other information people are receiving at the time. Think of other examples from your own country and situation.

Knowing yourself

It is important to take account of your own knowledge, feelings, past experience, background and motivation when organizing an education or awareness raising programme.

Knowledge: Do you and others involved have sufficient knowledge of the subject? Do you need to involve others, perhaps as advisors? They might be specialists in the subject or people with experience of various campaigning methods. It's good to ask yourself these questions at the start, and when you decide in more detail what you are going to do.

Feelings: You may feel very passionate about what you want to educate people about, and want to transfer that passion to them. Passion is often effective, but it is important

to try and put yourself in the position of your target audience when considering your strategy, and think objectively about what will influence them, and how.

Past experience: Campaigning about something that has affected you personally can make you a very strong communicator. People who suffered from landmines and spoke about their experiences made a huge contribution to raising awareness of their indiscriminate consequences. However, it is still important to stand back from time to time and check that you are being objective about your strategy for your education programme.

Background and motivation: Many people have strongly held ideological, political or religious beliefs that sustain and motivate them. These may also be the motivation for getting involved in education and awareness-raising programmes about specific issues.

This is fine – everyone has their particular convictions and beliefs – as long as it does not distort the programme. Be careful that strongly held convictions do not divert the focus of your education from what it was originally intended to be, or influence your communication strategy by, for example, making it difficult for you to think objectively about your target audience. If you have doubts, involve a colleague or someone you feel understands and can advise you objectively.

What is the message?

Some issues – such as the debate around the effects of depleted uranium – can be scientifically quite complex. Depending on your audience, it may be better to highlight a few key messages and then in some way (e.g. during discussion or e-mail exchange) allow people to find out more for themselves. It is always important that those involved in the campaign know the background behind the key messages, so as to be able to inform discussion and respond to questions.

Who is delivering the message?

Health professionals have a great advantage – opinion polls show that they are among the most trusted professions. They also represent health, in which everyone has a stake, and many people feel a bond with health professionals because they consult them when they are in need. It is also assumed that they are well informed about all matters relating to health.

It can help if health workers stress their professional role in their campaigns.

At a demonstration in 2007 against the replacement of Trident in Edinburgh, Scotland, health professionals set up a clinic in the street and took people's blood pressure while talking to them and distributing literature about the health effects of Trident (Faslane 365).

In its early days in the 1960s, the UK-based Medical Association for the Prevention of War portrayed war as a disease, and therefore the legitimate concern and area of knowledge of health professionals. This is a strong idea with many implications, but would probably not go down well in the small town mentioned above with relatives in the armed forces.

Many more examples of health professionals using their role to further their message are given in **Lesson 3.4**.

What methods can be used?

People lead busy lives and may find it difficult to take an interest in yet another source of information or campaign. The shock tactics used in some health promotion activities appear to be counterproductive, too: people just turn off if they are too scared or feel they cannot do anything about an issue. Many different methods can be used to reach the public, but they should always suggest something – however small – that people can do about the problem, such as writing to a politician or a newspaper, or joining others for a meeting or a march.

Do the following exercise, as a practical way of helping you think about different methods of educating the public.

Exercise

Go to the nearest place where you would feel comfortable having a cup of tea or coffee, or some other refreshment, and engaging people in conversation, such as your college canteen. Try to tell someone about something that really concerns you and about which you have some knowledge – perhaps you know the website of an organization that is campaigning on this issue. If they show interest, give them a contact: a website or organization where they can find out what people are trying to do about it.

Suggested issues and contacts you could use include the International Campaign to Abolish Nuclear Weapons, which is campaigning for a nuclear weapons convention (ICAN); and the Merlin campaign against the terrible health consequences of the war in the Democratic Republic of Congo. You can find out about these on the websites in the references.

- ***How did that go?***
- ***Were people happy to talk to you – why or why not?***
- ***Did they feel comfortable with the subject?***
- ***Did they think it was relevant for them? Did they ask any questions?***
- ***Were they happy with you? Did they ask you to identify yourself?***
- ***Do you think they will follow up on the contact you gave them?***

Engaging directly one-to-one takes time, but it can be very effective if the time, place and person are right. While this exercise is of course rather artificial, it does raise interesting issues that can help you plan a strategy for an education campaign.

Time: Are people very concerned about something else, or very busy? If so they will not engage.

Place: An open public place where people come to enjoy themselves can be a good place for a 'happening' such as Target X, which has been developed by the student body of the International Physicians for the Prevention of Nuclear Weapons.

> ***Take a moment to look at the photos of a campaign conducted in Trafalgar Square, London. www.ippnw-students.org/Target/photos.html***

Person: As mentioned above, it will help if it is clear you are a health professional. For this reason white coats and stethoscopes are sometimes used in campaigns, or something else that makes this identity clear.

To decide how best to try and inform the public, it is necessary to consider all the issues we have mentioned above and select the best strategy.

> ***Take a moment to think about the possible ways you might try to engage people.***

You might have identified the following tools:

- a briefing
- a public talk or meeting
- a public debate
- a demonstration
- a stunt
- a mailing of information in a letter
- a website or part of a website
- a blog
- a piece of street theatre.

This list is not exhaustive and you may have come up with other examples. They may of course be used in combination – a sustained campaign usually involves using several different tools to implement its chosen strategy.

Think about what issues you took into account when deciding which strategy and tools to use. Write these down.

You may have thought about:

- visibility
- existing interest
- the need to make initial engagement
- what has been tried already
- the level of public knowledge of the issue
- whether the subject is a sensitive one
- whether the subject is likely to be controversial.

Now return to the various tools that can be used in campaigning, and think of them again in the light of these factors.

Briefing: Is there sufficient interest in this subject for people to read a briefing? Is it a subject on which people need more information? Is other information being disseminated that needs correcting?

Public talk or meeting: Will people come? What will attract them in terms of speakers, time, place? How can you interest the media? Can you place articles in the media before the event to draw attention to it?

Public debate: Are there genuine issues that would benefit from an informed debate? Would it attract people? Are the people you are asking to speak competent, and aware that things could get heated? How will you manage questions from the floor?

Demonstration: Is the issue one that enough people feel really strongly about to get good attendance? Or is the issue so important that a small number of people in the right place will attract media attention?

Stunt: Is this an appropriate subject for a stunt – will people see the point of it? Will it have some humour but at the same time not be offensive? Will it provide a good photo opportunity?

Mailing information in a letter: Are people likely to read something on this issue addressed specifically to them? This could be productive when you are asking them to do something specific.

Website or part of a website: Will you be able to maintain this and keep it up to date? Is your target audience likely to use the Internet frequently? Could you ask an organization to allow you to post information on their website?

Blog: Will you be able to give this a minimal amount of maintenance and make sure no offensive or illegal messages are posted? Do you have people with the right knowledge whom you can ask to post messages from time to time to keep the debate interesting?

Street theatre: Does the issue lend itself to making a strong visual or dramatic image? Can you follow up with informed discussion with passers-by? Do you have relevant material to give out at the same time? Will it be in a convenient location that will not cause an obstruction? Target X mentioned above is a good example of this.

And finally ...

Educating the public about war and weapons raises some special issues, but general good practice with regard to communication and teaching can be applied. Decide what information you want to put across and to whom, and who is best placed to do this and how.

This lesson has not addressed formal education in schools, colleges, universities, institutes or evening classes. Another important activity is to try and get these issues introduced as a standard part of the curriculum in educational establishments.

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Lesson 3.2: A history of health professional activism for peace

Author: Leo van Bergen

Learning objectives

By the end of this lesson you will be able to:

- debate whether curative health work in large-scale war is futile
- describe the history of health professionals' involvement in anti-war movements
- describe some of the dilemmas facing health professional groups and individual health workers.

Introduction

Health workers have always been among those striving for peace, and have been part of the organized peace movement since it began in the 19th century. But it was not until the beginning of the 20th century that they did so in their own organizations, making use of health-related concepts. Some health professionals had come to believe that they had a distinctive part to play in the fight against war, because war was a threat to physical and mental health. Some said that striving for and waging war was a sign of mental illness, including Flusser (1932).

Peace activism was, however, disputed by other health professionals, not least because of the dilemmas it posed.

Humanizing war

Health workers have always been active in the peace movement, but the phenomenon of health professionals protesting against war because they are health workers is recent.

A number of doctors protested against war in the 19th century, but never for health reasons. Some attempts were made to 'humanize' war, of which the establishment of the International Committee of the Red Cross in 1863 is the best known. Underlying these attempts was the conviction that war was an unavoidable disaster, like a natural disaster, or even a punishment from God. All health professionals could do, was ease the suffering by treating the sick and wounded regardless of their nationality.

This attempt at humanization did not hinder the rise of modern armies with more personnel and deadlier weaponry. On the contrary, the creation of armies based on mass conscription rather than the use of mercenaries led to further calls for the proper treatment of armed forces in battle. With countries wishing to avoid the heavy cost of military health services, Red Cross organizations were soon acting as voluntary extensions of the military health care system, and receiving orders from military health officers. It has been argued that the Red Cross became successful precisely because of this call for proper treatment of conscripted sons and husbands (Van Bergen 1994, Hutchison 1995).

The first medical peace group

The first real medical peace group was established in 1905, during the Russo-Japanese war. It originated in a lecture by the French physician Joseph Alexandre Rivière in 1904, calling on his fellow doctors to support the idea of universal peace. He established the Association Médicale Internationale Contre La Guerre (International Medical Association Against War), which had abolition of war and respect for human life as its basic founding principles.

IMAW was a success, supported in several more countries including the United Kingdom, Russia, Italy and the United States. But the First World War caused its sudden decline, although it continued to exist until the mid-1930s in the name and in the person of Rivière (Van Bergen 1991).

The First World War and medical pacifism

The First World War showed that health care was of the utmost importance for keeping up morale and fighting strength. It also showed that medical decisions in war were mostly based on military rather than medical grounds. For instance, people with severe wounds were left to die because there was a greater chance that people only slightly wounded could play a role in the war effort. We will discuss this further in **Course 5**.

This led a Dutch nurse, Jeanne van Lanschot-Hubrecht, to question for the first time in history the medical aid given in times of war, or at least under military command. She thought it was medically preferable to focus all attention and energy on the prevention of war (Van Lanschot-Hubrecht 1918). When war broke out, a strike by doctors and nurses would end it sooner and spare more lives than curative action ever could. Not everyone agreed with her arguments, to say the least, but she started a discussion that is still at the heart of the relationship between health care and war.

Van Lanschot-Hubrecht died just before the war ended, but her example was followed by others during the interwar years, probably without knowing of her existence.

For instance, in his 1926 book *Public health in war*, the Austrio-Hungarian medical officer Kassowitz discussed the dualistic role of medicine, and recognized that the essential role medicine played in victory had become more important than the humanitarian task of caring for the wounded and dying (Jenssen 2002).

Dutch leadership of medical peace work between the world wars

Figure 1: Poster for the Association Internationale des Medecins Contre La Guerre

In 1930, the Dutch family practitioner J. Roorda and some colleagues urged the Dutch Medical Association to take action to prevent war, resulting in the establishment of the Committee for War Prevention. It called on 39 other national medical associations and the Association Professionelle Internationale des Médecins to cooperate in preventing the health disaster called war – the first time in history that an official medical association had done so.

The Netherlands, neutral during the First World War, was the focus of peace activity in general in the interwar years, and of health peace activity in particular. The Committee for War Prevention was, for instance, preceded by the Anti-War Group of Nurses, founded at the Amsterdam Wilhelmina Hospital at the end of the 1920s. They particularly spoke against the Red Cross, with its numerous military men on its board, and the danger that humanizing war could lead to accepting it as a means of settling conflict.

In 1932 doctors from several countries met in Amsterdam as a result of Felix Boenheim's Appeal to the World's Physicians, a medical response to Henri Barbusse's initiative for an international anti-war convention. Hundreds of doctors from 14 countries signed the appeal, including Sigmund Freud, Carl Jung and Fritz Brupbacher.

At the convention, which was dominated by communists, doctors declared their refusal to participate in war preparation, like all inter-war pacifists. Discussion also focussed on air raids and chemical warfare. Eleven national groups founded the Association Internationale des Médecins contre la Guerre (International Association of Physicians against War) – but sadly its headquarters in Berlin were destroyed after Hitler's rise to power (Van Bergen 1991).

The Medical Peace Campaign in the UK


THE DOCTOR'S VIEW OF WAR

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With a Foreword by
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GEORGE ALLEN & UNWIN LTD

Figure 2: 'The doctor's view of war' edited by Horace Joules

The British Medical Association failed to form a peace committee and so, in 1936, some doctors founded the Medical Peace Campaign (MPC). One of its members was John Ryle, Cambridge professor of social medicine, who trod unknowingly in the footsteps of Van Lanschot by declaring that he dreamed of a doctors' strike against all war-related activities (Ryle 1938).

The MPC and Roorda's Committee for War Prevention organized a special meeting at a 1936 peace conference in Brussels attended by doctors from all over the world. After the conference the MPC declared, 'the work of preserving peace is a prophylactic measure of the first order'. It said there was no distinction between politics and medicine, especially social medicine and public health medicine, so it was 'only logical' to educate health professionals to embrace the task of 'preventing the miserable consequences of war by forestalling its outbreak'.

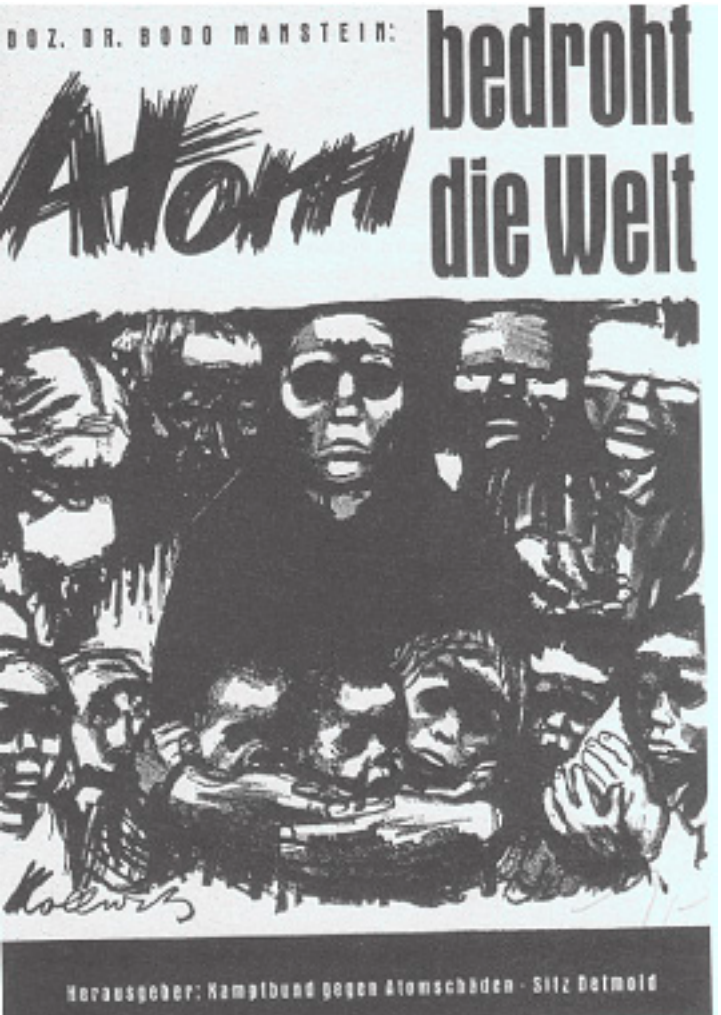
The best-known activitiy of Roorda's group was the publication of the Letters on war psychosis to statesmen from psychiatrists in 1935, signed by 336 psychiatrists and psychologists from 30 countries. Like their later book *Medical opinions on war* (1939), its psychiatric and psychological orientation was influenced by the famous published correspondence between Einstein and Freud on war (Nathan and Norden 1960), and by the book *Krieg als Krankheit* (*War as disease*) by an Austrian physician (Flusser 1932).

Just as the rise of Hitler had ended the Association, the war ended the activities of Roorda and Ryle. Pacifism, medical or not, was not considered the answer to the rise of totalitarianism, even by many of those who in theory sympathized with it; it was thought the brute force of national socialism and communism could only be countered by similar means. During the war Roorda became a founder of the Dutch medical resistance group Medisch Contact (Medical Contact).

Figure 3: German edition of the Letter to statesmen

In the aftermath of the use of atom bombs against Japan in 1945, medical resistance to violent conflict revived. In the nuclear age many decided that health care in war would indeed be futile, and health preparations an insult to human intelligence. Several groups were established, ultimately resulting in the founding of International Physicians for the Prevention of Nuclear War (IPPNW).

IPPNW



Titelblatt der Broschüre »Atom bedroht die Welt« von Bodo Manstein, herausgegeben von Kampfbund gegen Atomschäden e.V. in Detmold

Figure 4: Poster against nuclear war

The detonation of atomic bombs by the US over Hiroshima and Nagasaki was not the beginning of the medical anti-war movement. Doctors only began to speak out about the nuclear arms race after the Cold War began and the USSR, UK, France and China had also become nuclear states. Gradually this concern found its focus in the organization called International Physicians for the Prevention of Nuclear War. Its central message is that there can be no adequate medical response to a nuclear war: the only course of action is to try to prevent it.

From the 1950s there were some medical anti-war and/or anti-nuclear activities – for instance, through the Medical Association for the Prevention of War in the UK – but the history of IPPNW began in 1961 when the American cardiologist Bernard Lown heard a lecture on nuclear arms by the Nobel Peace Prize laureate Philip Noel-Baker. Utterly alarmed, Lown set up US Physicians for Social Responsibility (PSR), and began publicising scientific studies on the devastating effects of nuclear war.

PSR lost momentum but was reactivated by the Australian paediatrician Helen Caldicott at the end of the 1970s, at the same time when protest against nuclear arms gained a new peak, resulting for instance also in the establishment in amongst others Sweden, Australia and the UK of groups of Nurses against Nuclear War. Meanwhile Lown and a younger colleague, James Muller, began discussing the possibility of cooperation with Soviet colleagues. Lown contacted Evgeny Chazov, whom he knew professionally and had connections in the Kremlin. If American-Soviet cooperation was to be a success, connections in high places were essential.

As a result, IPPNW was established in 1980 and an international congress in Geneva was held the next year, where the Americans succeeded in persuading their Soviet colleagues that they should deal only with the prevention of nuclear war, excluding all other issues.

Within four years IPPNW had about 135 000 members in about 40 countries. Most were members of national affiliates, some of which existed before IPPNW was created, such as PSR in the USA and NVMP in the Netherlands.

IPPNW called for:

- a verifiable freeze on the development and deployment of nuclear weapons
- a declaration of no-first-use by the nuclear powers
- a moratorium on testing while a comprehensive test ban treaty was negotiated.

When Soviet leader Mikhail Gorbachev announced in 1985 that the USSR would unilaterally refrain from nuclear testing, and called on the US to do the same, IPPNW claimed – probably rightfully – that its stance had influenced this major step towards international disarmament.

The Nobel Prize Committee agreed and awarded IPPNW its prestigious peace prize later in 1985. The honour was controversial: Western conservative politicians accused IPPNW of being on the side of the USSR. It also came to public notice that Chazov had, in 1973, been co-signatory to a letter denouncing the Soviet nuclear physicist and human rights campaigner Andrei Sakharov, who had won the Nobel Peace Prize in 1975 and was banished to internal exile in 1980. There were demonstrations in Oslo when the prize was awarded, with placards saying 'Free Sakharov' and 'Lown: choose your friends better'.

The Nobel Committee responded that in previous years human rights organizations had won the prize because of their deep concern for human rights. This time the committee had focused on the issue of disarmament, which had human rights at its heart, even 'the most fundamental right of all – the right to life.' In the words of IPPNW, it is a medical obligation to combat and prevent 'the final epidemic' (Abrams 2001). The episode nevertheless remained a stain on IPPNW and at least for a time reduced its ability to make moral appeals.

Throughout the 1980s and 1990s, IPPNW comprehensively documented the health and environmental effects of the production, testing, and use of nuclear weapons. From uranium mining to nuclear testing and production, from Nevada to Moruroa and Hanford to Chelyabinsk, IPPNW and its affiliates collected and analysed data that gave the public an assessment of the health and environmental costs of pursuing security through nuclear weapons.

Making use of medical authority, IPPNW and its affiliates not only educated the public, but also organized it to protest and change government policies, in the belief that people's active involvement is essential if war is to be prevented and nuclear weapons abolished. As the Cold War came to an end, IPPNW's membership had grown to comprise some 200 000 doctors, other health workers and concerned citizens in every part of the world.

After the Cold War

IPPNW has faced a challenging future since the end of the Cold War, with deep cuts in nuclear arsenals and public interest shifting to other concerns such as the environment, global poverty and the threats posed by civil wars and terrorism. Its membership declined dramatically, even in the context of new countries such as Israel, Pakistan, India and North Korea joining the nuclear club, and the development of new generations of nuclear weapons.

The organization would have to increase its efforts to capture the attention of politicians and the public, at a time when its financial resources were declining. There were many decisions to make. It could shift its advocacy towards targeted lobbying of decision-makers, but this would not be as effective without a large public constituency to back it up.

Figure 5: The founders of IPPNW receiving the Nobel Peace Prize, 1985

IPPNW could also shift its focus to issues like poverty, the environment and 'small wars' to which more people would respond, and which, it could justifiably argue, laid the grounds for international instability and an increased threat of nuclear war. This idea would certainly appeal to the organization's members in developing countries, for whom these problems are everyday threats. On the other hand, losing its focus on nuclear disarmament would dissipate scarce resources.

IPPNW and its national affiliates tried all these different approaches as they responded to changing circumstances. In terms of nuclear-specific activities, notable successes since the end of the Cold War have included:

- organizing health professionals to boycott General Electric, a campaign that helped remove this multinational corporation from the nuclear weapons industry;
- securing, in cooperation with other organizations, a landmark ruling from the International Court of Justice confirming the illegality of the threat and use of nuclear weapons;
- participating in the Australian government's Canberra Commission on the Elimination of Nuclear Weapons, which set out a realistic approach to nuclear disarmament;
- submitting, with other organizations, a model Nuclear Weapons Convention to the UN.

As well as campaigning on nuclear weapons, it has been instrumental in:

- creating SatelLife, a health development project that provides state-of-the-art communications technology to assist the exchange of critically needed information between North and South;
- campaigning on the health effects of the Gulf Wars;
- launching the Aiming for Prevention campaign in 2001 to reduce and prevent injuries and death from small arms violence and its effects on health, development, and peace in the developing world;
- campaigning on landmines as part of the International Coalition to Ban Landmines;
- participating in ICAN, the 2007 international campaign to abolish nuclear weapons, to reawaken public concern about the growing threat posed by nuclear weapons, and to mobilize civil society to demand a nuclear-weapon-free world through the negotiation and adoption of a nuclear weapons convention.

All these activities, in which health students play an increasingly active role, have been carried out by a much smaller organization than in the 1980s. There are real questions about the effectiveness of its post-Cold War strategy, in a world where concern about nuclear weapons seems further away than ever. IPPNW advocacy on other issues may have been helpful in holding together a diverse federation with diverse concerns, but it also faces competition from other nongovernmental actors in these areas, and must take care to add value to existing campaigns.

In some ways the story of IPPNW echoes the successes and failures of previous attempts at building a medical peace movement. Rapidly changing political and social situations can diminish an organization's campaigning power and

close it down. Yet IPPNW has achieved much more than any previous medical peace organization, and has had a major influence on policy. Even today, the organization and many of its affiliates around the world make important contributions to world health and peace.

Dilemmas

Although the threat of war to mental and physical health is obvious, by no means all health professionals support activism against war or for disarmament. This has partly do to with the fundamental dilemmas characterizing the relationship between health professionals and violent conflict. For instance, a doctor can choose to participate in the peace movement to try to prevent medical involvement in war, but may thus help to jeopardize medical aid to war victims. There is a dissonance between the rejection of war and the obligation to take care of the wounded.

A second dilemma arises when health professional activists must decide whether or not it is more humane to go to war. Arguments have always raged on whether war will prevent a greater humanitarian disaster. It was a key part of the debate about whether the Allied powers should go to war with Germany in 1939; and about intervention in Yugoslavia and Rwanda in the 1990s, and later in Iraq.

Such debates have occasionally diluted the moral strength of health professional peace movements. The pacifist answers that such groups gave in such situations were not seen as an adequate response to the humanitarian dilemma that confronted society, and could even be condemned as the wrong answer in moral and political terms. They also laid themselves open to the criticism that health work was supposed to be neutral and apolitical, and therefore that health professionals campaigning against war was a contradiction.

The dilemma is this: which actions are more in accordance with professional ethics?

- Curing the sick and wounded, which means they will be sent back to the conflict, thus strengthening the war effort, with the result that even more people are killed and maimed.
- Refusing to cure the sick and wounded, making war less probable or less bloody but leaving people in need unattended.

Nevertheless many health workers believe that medical assistance during war is often (or even always) futile, and that opposing war and trying to prevent it is a sound reaction despite the neutrality of the health professions.

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Lesson 3.3: Data-to-policy work

Author: Marion Birch

Many of our MPW lessons draw on the wealth of data about the immediate and longer-term effects of weapons and violent conflict. These data take different forms and their reliability varies. Evidence needs to be credible if it is to be used to advocate for changes in policy, and needs to be used strategically to make a case for the desired policy change. This lesson will consider what makes some types of data more credible than others, and how the evidence can be used to influence policy.

Learning objectives

By the end of this lesson you will be able to:

- understand what kinds of public health data can be used to describe the effects of weapons and violent conflict;
- understand how this data can be used to try and change policy;
- describe campaigns that have used such information.

The search for credible evidence

There are data of varying quality about the effects of individual weapons, and about the health effects of violent conflict. Evidence for advocacy need credibility.

Take a moment to think about what may make data more credible, and write down your ideas.

Factors that might make data more credible and therefore useful for policy work include:

- the data have been collected using a recognized method;
- the data come from a well-functioning system – for example, a well-established and supervised national health information system;
- the data have been shown to be consistent over time, geographical area, and when collected by different actors.

Conversely, data will have less influence on policy if they are one-off, have been collected erratically, come from a poorly functioning health information system, or are disputed by other data collected in a similar way. However, there are situations where the best available data have to be used as they are all that there is.

We have to take into account the perceived credibility of data as well as the actual credibility.

> ***Take a moment to think about what factors may make data less credible regardless of their actual quality, and write down your ideas.***

Data may be questioned because:

- the people or organizations collecting or presenting the data have a strong known interest in showing a particular result;
- the method is not understood;
- data have been collected on a very low budget and this has affected collection and/or analysis;
- it has not been possible to collect data in a transparent way, for example if sources have to be protected.

Your efforts to change policy are less likely to be successful if the data are not considered credible, particularly by those you are seeking to influence. You must think about these issues when you are considering what strategy to adopt when trying to influence policy.

Here are a few examples to help you consider the effects of these various influences.

Credibility example 1

Weapons manufacturers study the effects of weapons as they develop and manufacture them.

> ***Now read this article about the new Raytheon 'heat beam' weapon from the Boston Business Journal that you will find at this link: http://boston.bizjournals.com/boston/stories/2004/11/29/daily30.html Think about the type of data they are providing, and why.***

Here the motivation is clearly to sell the weapon. They want people to be aware of its effectiveness while at the same time downplaying any adverse health effects. Manufacturers' information can be a useful source, however, when you are collecting information to advocate against certain weapons. This claim that

it is comparable in sensation to 'having a hot iron placed on the skin' sounds remarkably like torture. The advantage for campaigning is that these facts come from people trying to promote the weapon, so campaigners are very unlikely to be accused of bias.

Credibility example 2

At the beginning of the Iraq war there was considerable concern that the allied forces that invaded the country were not counting casualties among the Iraqi population. Several attempts were made by civil society and the Iraqi Ministry of Health to rectify this:

Iraq Body Count, a nongovernmental organization, collected and still collects all reports of casualties in the media in a structured and methodical manner (eliminating double counting and ensuring consistent interpretation), and has done so since the invasion. A group of distinguished epidemiologists conducted two random cluster sample surveys and extrapolated the results to the Iraqi population in 2004 and 2006.

The Iraqi Ministry of Health produces figures from its health information system. The Iraq Living Conditions Survey (ILCS) – a general survey of households – was carried out in 2004 by the Iraqi Ministry of Planning and Development Cooperation with the support of the UN Development Programme.

The data produced were used to campaign against the violent conflict in Iraq, and there was much debate, often ill informed, about the various methods used.

If you seek to influence policy through the use of data, disagreements about data sources between those advocating the same thing can negatively affect the campaign. Constructive triangulation of data from different sources, and honesty about the limitations of certain methods, is likely to strengthen rather than weaken a campaign.

> ***Think for a moment about the data collection methods used in the examples above.***

They included:

- **A** | gathering information from media sources in a thorough and methodical way;
- **B** | a random cluster sample survey;
- **C** | mortality records from the national health information system;
- **D** | a door-to-door interview survey using a larger random sample (mortality was one question among many).

Think of the advantages and disadvantages of each for policy work.

You may have come up with some of these points:

Method	Main advantage	Main disadvantage
A |	All deaths reported very likely to be real	Media coverage is likely to be an underestimate, and biased towards certain types of events
B |	Strong tried and tested method	Difficult to carry out in such an unsafe situation and large diverse area. A difficult method to describe to non-specialists
C |	All deaths reported likely to be real	A significant number of deaths likely to take place outside hospital in this situation, and not to be reported. The health information system may not be functioning well
D |	Very large sample size with smaller confidence interval	With so many interviews and a long questionnaire, it is harder to get consistency across all interviewers

It is interesting that the Iraq mortality data that probably received the least publicity were generated by the Iraq Living Conditions Survey, which covered 21 668 households and all governorates in Iraq. Why should such an authoritative source be ignored?

- International actors in conflict areas may be reluctant to take government data seriously and engage in debate about it;
- the public debate about mortality data collected by mortality-specific studies may have diverted attention from this very large study, where mortality was just one of the indicators;
- politicians cherry-pick or ignore the evidence to justify their policy decisions.

As we have seen, the actual and perceived reliability of the data is a strong influence on policy work. It is of course important to use the most reliable data; however, a strategy is also needed that takes into account how the data is likely to be perceived. Here are a few more comments on two other sources of information.

The armed forces: Many armed forces carefully record the effects of their weapons. This information can be extremely powerful in advocacy; however it is usually kept secret or released in a selective way, taking public opinion into account.

National health information: (also see second credibility example above). Depending on the system in place, deaths and injuries recorded routinely may be able to be traced to particular weapons or circumstances. With some weapons such as landmines it may be clearly recorded. In other cases it may just be put down to violence or conflict more generally. There are clear limitations in many contexts as the health system will not attend to all injuries, or receive notification of all deaths. However, if this limitation is taken into account this source frequently has a huge coverage. It can be used to show trends – for example, an increase in violent deaths, or ratios like an increase in violent deaths as a percentage of all deaths.

An example of using this sort of data, in this case as part of a campaign against firearms in El Salvador, can be found at http://www.ippnw-students.org/Chapters/ElSalvador/research.html

Data on longer-term effects of violent conflict

Data on the longer-term effects of weapons and violent conflict present a particular challenge. It is well known – and intuitive – that the longer-term effects of violent conflict are devastating for the individuals, infrastructure, economy and development of the communities affected. But because the cause and effect are further apart, establishing that the effects are directly related to the conflict through data becomes harder, as there are many more confounders created by other potential causes.

> ***What do you think would help campaigners to strengthen the link between longer-term public health consequences and violent conflict? Please write down your ideas now.***

You may have thought of the following:

- **Establishing a causal chain**: If bridges have been blown up, boats cannot cross the river at night, and there are no maternity services that can carry out a Caesarean section in the cut-off area, a rise in maternal deaths in this area is likely to be due to lack of access to facilities to deal with obstetric emergencies.

- **Drawing parallels between different conflict situations which have the same longer term outcomes**: This can be done with some quite specific measurements, for example using Disability-Adjusted Life Years (DALYs), which take into account the effects of disability on 'healthy' life lost as well as effect on life expectancy. Have a look at the paper by Ghobarah, Huth and Russett (undated) and read the conclusion. There is considerable debate about the use of DALYs, but this will give you an idea of the sort of thing it is possible to do using models.
- **Following through on the effects of certain injuries**: For example, children affected by landmines will need a number of prostheses and continued physiotherapy as they grow; their disability will also have multiple effects on their daily lives. While this is known, producing evidence of the effects for children, their families and health services can provide strong evidence for advocacy. Landmine Action has done very significant work in this area that undoubtedly helped its very influential campaign to ban landmines. You may like to read the summary of one of their reports on cluster munitions (Landmine Action 2006).
- **Showing the contrast between communities that have not experienced conflict and those that have**: If only some areas of the country have been affected by conflict, health indicators from the health information system may show very different levels of significant factors, for example, malnutrition.

Data-to-policy work and preventive action: predicting the future

There is a considerable body of knowledge on the health effects – both short- and longer-term – of both specific weapons and violent conflict, which can be used to advocate against certain proposed actions. As mentioned above, this may be against the development of a particular weapon or against violent conflict in general.

When it became clear that the US and UK governments were considering going to war against Iraq by invading it, part of the considerable resistance to this policy was the first report on health in Iraq by the British NGO Medact, Collateral damage: the health and environmental costs of war on Iraq (Medact 2002). This report used a variety of the methods outlined above to predict the devastating consequences of going to war, most of which have tragically now come about. You may like to read the introduction and conclusion of this report.

Conclusion

The two most important aspects of data-to-policy work are the credibility of the information used, and the strategy adopted to use it to influence people. Information is more credible if the reasons for the source, method of collection and analysis are clearly explained. A careful analysis of who and what it is intended to influence will produce an effective strategy. Credible information and an appropriate strategy can together have a powerful influence on policy-makers and the public.

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Lesson 3.4: Health professional alliances with larger movements

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In **Lesson 3.2** we studied health for peace groups. As we have already seen, health workers and their organizations have also joined wider peace campaigns. In this lesson we shall explore further how health professionals participate in larger movements.

Learning objectives

By the end of this lesson you will be able to

- describe some of the ways in which health professionals have joined campaigns against the effects of wars and weapons.

Introduction

Many health workers and their organizations join non-medical peace campaigns such as the International Campaign to Ban Landmines and the campaign against small arms. Humanitarian organizations, like the Red Cross and Medécins sans Frontières (MSF), although often criticized by health peace activists, can and do play a part in these campaigns. By assisting and helping victims, they see the horrors of certain weapons. Their testimonies, whether in public, through diplomatic circles or through organizations like Amnesty International, strengthens their advocacy.

Example of an alliance

In **Lesson 3.2** we discussed individuals and groups of health professionals who have rejected war, or certain kinds of war or weapons. These groups often work in coalition with a range of other organizations.

One example is the International Campaign to Ban Landmines (ICBL). It was launched in 1992 by a number of nongovernmental organizations, including health ones. The founding members were Handicap International, Human Rights Watch, Medico International, the Mines Advisory Group, Physicians for Human Rights and the Vietnam Veterans of America Foundation. Having witnessed the horrendous effects of landmines on individuals and communities in different parts of the world, they argued that the only solution was a total ban on the production, stockpiling, transfer and use of anti-personnel mines. They also called for increased international resources for humanitarian mine clearance and mine victim assistance programmes.

In 1997, a mine ban treaty was agreed by the international community and, in the same year, the ICBL received the Nobel Peace Prize. The mine ban treaty, sometimes also called the Ottawa Convention, was signed in December 1997 by 122 governments in Ottawa, Canada. After ratification by 40 countries, the treaty became binding under international law in 1999.

The ICBL now calls for:

- universalization of the mine ban treaty
- compliance with the treaty's provisions
- increased and sustained resource commitments for mine clearance, mine risk education and victim assistance, and for stockpile destruction
- firm establishment of the norm, as an international standard of behaviour (ICBL 2007).

Medical opposition to the use of small arms

Small arms are usually defined as smaller weapons that combatants can carry. Medium and heavy machine guns as well as smaller mortars, recoilless rifles and some rocket launchers may also be included. The International Action Network on Small Arms (IANSA) – a global network of civil society organizations – was established in 1998 'to stop the proliferation and misuse of small arms and light weapons' (IANSA undated). It wants to reduce small arms violence by:

- raising awareness among policy-makers, the public and the media about the global threat to human security caused by small arms;
- promoting the work of NGOs to prevent small arms proliferation through national and local legislation, regional agreements, public education and research;
- fostering collaborative advocacy efforts, and providing a forum for NGOs to share experiences and build skills;
- establishing regional and subject-specific small arms networks;
- promoting the voices of survivors in regional and global policy discussions.

These weapons are a great threat because their trade has hardly been regulated. Luckily, after years of neglect, small arms are back on the international agenda, partly thanks to IANSA and other NGOs such as Human Rights Watch, who have constantly highlighted the human rights and health dangers that the unregulated, unrestricted and often illegal trade in small arms brings. The 'one bullet stories', that showed the health and economic effects on one person hit by a bullet, demonstrated the value of health professional input.

The Red Cross

The primary purpose of organizations such as MSF and the Red Cross is to work in areas of violent conflict. In principle it is not their task to protest against war, the use of certain kinds of weapons or strategies like mass rape. Nevertheless, humanitarian aid organizations have an advocacy role when there are severe violations of human rights and genocide – whether through official channels, other organizations such as Amnesty, or as a last resort in public. Health workers are well placed to witness violence or recognize its effects.

The main difference on this issue between MSF as a whole and the Red Cross is that MSF, believing that justice is as important as medical aid, is more willing to go public. This was the main reason why French doctors who were working for the Red Cross during the Biafran war started the new organization in 1971. In their eyes, failing to protest openly against the way the Nigerian government was waging war against its rebellious province would make them accomplices.

Advocacy, let alone public outcry, is nevertheless not always part of humanitarian health work because it may conflict with medical neutrality – or means that medical humanitarian organizations are not seen as neutral. This can hinder aid because access to victims may be denied and aid workers may be threatened, abducted or killed. They are no longer seen as aid workers but as accomplices of the enemy, and therefore treated as such.

This also applies to attacking certain types of weapons, especially if one side of the conflict uses them more than the other. Such protests can – and will – be attacked as a breach of neutrality. Taking a stand against certain weapons will be viewed as politics, while many people think health organizations should be non-political: it is said that you cannot be neutral and political at the same time. Nevertheless both organizations have sometimes campaigned against particular wars and several types of weaponry, claiming that a state of war does not mean that 'anything goes'.

Let us turn to the Red Cross as an example. The Red Cross has launched a campaign to get rid of explosive remnants of war, an action comparable to the landmine campaign (see **Lesson 1.3**). Like landmines, unexploded artillery shells, hand grenades, mortars and rockets kill or severely injure many people, and their existence has serious consequences. Red Cross participation in the international action on cluster munitions is part of this campaign. Cluster bombs consist of several smaller munitions which spread across a wide area after the explosion of the parent device, but do not always explode. They too are remnants of war that cause severe harm to civilians and communities outside the boundaries of war. In theory they are aimed at eliminating columns of tanks and artillery posts, but according to Handicap International, 98% of their victims are civilians. They are undiscriminating weapons, killing and maiming not just soldiers but also civilians, and remain dangerous after peace treaties are signed.

Dissatisfied with the international community's lack of movement on this issue, 30 countries decided in 2006 to make a treaty to ban cluster bombs – a Protocol on Explosive Remnants of War. This protocol requires each party to an armed conflict to remove and to provide assistance for the removal of these weapons, and to take other measures to reduce the threat to civilians. Along with the Convention on the Prohibition of Anti-Personnel Mines, the protocol is an important part of the efforts to minimize death, injury and suffering in war-torn areas.

Conclusion

Besides taking part in the health peace movement, health professionals can take other kinds of action against war or certain types of war. Here we have examined just a few of the many examples of such actions. Many health professionals, by active participation or just signing a letter or petition, play their part in trying to reduce the horrors of war.

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⇨ Course 1 ⇨ Course 2 ⇨ Course 4 ⇨ Course 5 ⇨ Course 6 ⇨ Course 7

Glossary Course 3

Armed conflict:

Similar to violent conflict, but denoting conflicts where parties on both sides resort to the use of physical violence and weapons.

Biological weapon:

A biological weapon uses living organisms to cause disease or death in large numbers of people, animals or plants. It is intended that these organisms should live and multiply in the target, and for infection to take hold and spread to others. As well as disease agents, poisons that are made by living things, such as toxins from plants or animals, can also be included in the term.

Chemical weapon:

A chemical weapon is defined as being any chemical which through its chemical action on life processes can cause death, temporary incapacitation or permanent harm to humans or animals.

Civil society:

The United Nations defines civil society as "associations of citizens (outside their families, friends and businesses) entered into voluntarily to advance their interests, ideas and ideologies. The term does not include profit-making activity (the private sector) or governing (the public sector)".

Civil society might therefore include labour unions, faith-based groups, business and professional associations, academic and research institutions, human rights networks, consumer rights coalitions, social movements, social and sports clubs, philanthropic foundations, and other forms of 'associational life'.

Cluster bomb:

Cluster bombs are intended for attacking large-scale enemy troop formations. They come apart in the air before making contact, dispersing between 200 and 400 small bomblets that can saturate a radius of 250 yards.

Conflict:

Perception of incompatible goals in a goal-seeking system. Conflict is not necessarily violent. In fact, parties who have incompatible goals may deal with them in productive and non-violent ways.

Development:

Alan Thomas says that the term development is commonly used in three ways: as a vision of how we would like the world to be; to describe a process of historical change; and to mean the actual interventions of governments, international agencies and others make to bring development about.

Dirty bomb:

Dirty bombs are weapons which disperse radioactivity by detonating conventional explosives surrounded by nuclear material. This material might be spent nuclear fuel or diverted nuclear material from a research laboratory or a hospital for example.

Disability-Adjusted Life Years:

A numerical measure of life expectancy that takes health-related quality of life into account.

First world war:

Armed conflict lasting from August 1914 to November 1918, which cost the lives of around nine million soldiers. The main warring parties were Germany, Austria-Hungary and the Ottoman Empire on the one hand and Great Britain, France and Belgium on the other. The United States entered the war in 1917 on the side of the latter. The war is nowadays particularly remembered because of its countless cases of war neurosis and because it saw the first use of poison gas (at Ypres, April 1915). The vast majority of deaths, however, were the result of the use of 'conventional' weaponry.

Gender:

Gender refers to the socially constructed roles, behaviours, activities, and attributes that a given society considers appropriate for men and women (World Health Organisation).

Geneva Conventions:

The Geneva Conventions were established by governments under the auspices of the International Committee of the Red Cross to regulate the conduct of war. The first Convention (1864) focused on the rights of the armed sick and wounded as well as medical personnel. The second (1906) included those fighting at sea. The third (1929) set up rules for the treatment of prisoners of war and the fourth (1949) protected civilian populations. Two additional protocols were formulated in 1977 to protect victims of international and non-international conflicts.

Health system:

The World Health Organisation defines a health system as "all the activities whose primary purpose is to promote, restore or maintain health". The functions of a health system have been defined in a more detailed way by Maureen Mackintosh and Meri Koivusalo. At the core are health services, but these are complemented by public health functions (surveillance, prevention, cross-sectoral action and emergency preparedness); systems for training the people needed to staff the system (medical and nursing schools etc); and policy, ethical and regulatory decision-making bodies which direct the health systems and the people in them.

Health:

The World Health Organisation defines health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity".

Human Security:

The Canadian government defines human security as "freedom from pervasive threats to people's rights, safety and lives." Human security includes economic security, food security, health security, environmental security, personal (physical) security, community security, and political security.

Humanitarian aid:

Aid which is concerned with or seeking to promote human welfare.

Inequality:

Inequalities represent disparities in income, health, education, ownership of land, access to power and so on. Some inequalities are unavoidable: not all of us have the genetic make-up that will help us run the 100 metres as fast as Olympic sprinters. But many inequalities, such as those listed above, can be avoided. These avoidable inequalities are sometimes called inequities.

International Committee of the Red Cross:

An organisation set up in 1863 by five Swiss citizens from Geneva: Henry Dunant was the leading figure. It strives to regulate the conduct of war firstly, by taking care of the sick and wounded and secondly, by establishing rules for the conduct of violent conflict.

International Humanitarian Law:

See the Geneva Conventions

Landmine:

Landmines are conventional weapons used in wars to stop military opponents from encroaching into territory. There are between 600 and 700 different types of landmines that are produced in 60 countries. Examples include blast mines and fragmentation mines.

In terms of their effects two types of landmines can be distinguished. Anti-personnel mines are directed against persons and are activated by contact, proximity or presence of a victim. Anti-vehicle-mines, on the other hand, are directed against any kind of vehicle.

Life expectancy:

Life expectancy is a measure of length of survival. Often expressed as an average of populations or population sub-groups, it can be calculated at birth or at any age up from birth (for example, life expectancy at age 30) to show average length of life remaining.

Morbidity:

Morbidity means illness or disease. Measures of morbidity such as the prevalence of chronic diseases can be used, among other measures, to help understand the health of a population.

Mortality:

Mortality means death. Measures of rates of mortality such as life expectancy and infant mortality can be used, among other measures, to help understand the health of a population.

Nuclear weapons:

A weapon whose explosive power results from a nuclear reaction. This reaction results in the release of an immense amount of energy in the form of an explosion, many times greater than that of conventional explosives.

Ottawa Convention:

The Ottawa Convention signed in 1997, is the international anti-personnel mine ban treaty. It bans the use, development, production, stockpile and transfer of anti-personnel landmines. As of November 2006, 151 countries had ratified or acceded to the Ottawa treaty.

Peace:

Not merely the absence of violence, but a state of mutual beneficial relationships, fair structures, and a culture of peace. Peace is also a capacity to handle conflicts with empathy, creativity and by non-violent means (J. Galtung).

Poverty:

Poverty has many dimensions. It can include lack of income and material goods, as well as lack of the things that we all have reason to value, such as the ability to lead a healthy life, be educated, to have political or spiritual liberty. The World Bank has set an international poverty line at about US$1 per day. The 1.2 billion people who live below this line are said to be in a state of "absolute poverty", in other words "a condition of life so characterised by malnutrition, illiteracy and disease as to be beneath any reasonable definition of human decency" (World Bank). But poverty is also a relative concept: all societies – at different levels of economic and social development – have different standards for what constitutes living in poverty.

Protection:

In the context of humanitarian aid this refers to the protection efforts of humanitarian agencies in conflict areas (but not including physical armed protection).

For humanitarian agencies, protection refers to 'all activities aimed at obtaining full respect for the rights of the individual in accordance with the letter and the spirit of the relevant bodies of law (i.e. human rights law, international humanitarian law and refugee law)' (Inter-agency Standing Committee 1999).

Psychosocial:

A programme or way of thinking that puts the psychological development of individuals in the context of their social environment.

Reconciliation:

Repair of broken relationships and the restoration of peaceful relationships.

Refugee:

A person who, owing to well founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country.

Second world war:

Armed conflict beginning in September 1939 with the invasion of Poland by Nazi Germany (although Japan had invaded China in 1937). It became a 'world war' in a truer sense in 1941 after the bombardment of Pearl Harbour by the Japanese and the consequent declaration of war by the US on Japan and Germany. Although in terms of the percentage of soldiers killed it was a less bloody war than the first world war, the total sum of the dead – approximately 40 million – was devastating. For the first time in history in a major war the civilian dead outnumbered those within the fighting forces. The war is also infamous for Nazi Germany's medical experiments on human beings, and its sterilisation and so-called 'euthanasia' programmes.

Small arms and light weapons (SALW):

Small arms and light weapons (SALW), or 'conventional weapons', are those that can be operated by one or two individuals, and include handguns, assault rifles, machine guns, grenades and landmines.

Structural violence:

Structural violence refers to socio-economic and political processes which violate basic human needs (J. Galtung).

UN Security Council:

The UN Security Council has primary responsibility, under the UN Charter, for the maintenance of international peace and security. The Council is composed of five permanent members – China, France, Russian Federation, the United Kingdom and the United States – and ten non-permament members that are elected for two-year terms.

Vietnam war:

The Vietnam war might best be seen as part of the cold war and anti-colonial battles which convulsed south-east Asia in the period after second world war. After the defeat of Vietnam's French colonisers by the Viet Minh forces at the battle of Dien Bien Phu in 1954, the country was split into a communist-ruled North and a capitalist south. The south was supported by the United States. The Americans feared that – in the wake of the Chinese revolution – the fall of south Vietnam would lead to a communist takeover of all countries in south-east Asia (the 'domino theory').

American interference in Vietnam led to armed conflict with the communist-ruled North throughout the 1960s and 1970s. The war extended to neighbouring countries. The war ended in 1975 when American troops were expelled from the southern Vietnamese city of Saigon. Around 50,000 American soldiers had died; Vietnamese dead are estimated at one million.

Violence:

Unnecessary insult of basic human needs (J. Galtung).

Violent conflict:

The use of physical and psychological force or power to 'solve' a conflict.

War:

Extreme form of violence. Used as a means to solve conflicts between nation states, or between groups within a nation state (civil war).