Nuclear weapons are the most destructive, most indiscriminate, most inhumane instruments of mass murder that we have ever created. Humanity could probably not survive a nuclear war using even a fraction of the arsenals in existence today. In this presentation, we will look at the effects of nuclear weapons on individual victims, entire populations, and the environment, and explain why IPPNW doctors and many others have come to the conclusion that human security and survival depend upon ridding the Earth of these indefensible weapons.
The unique and horrifying effects of nuclear weapons result in catastrophic consequences. The only natural events to which a nuclear explosion can be compared…
hurricanes,...
… volcanic eruptions, and similar disasters that result in thousands of casualties and cause catastrophic environmental damage.
Unlike natural disasters, however, the consequences of nuclear weapons use—including lethal harm to millions of people who are not even involved in the conflicts in which they are used—are the result of human decisions. They can be prevented by different human decisions.
Not long after that, evidence that radioactive strontium-90 was accumulating in the baby teeth of children as a result of the hundreds of atmospheric nuclear tests conducted by the US and the former Soviet Union, proved that nuclear weapons did not have to be used in war to endanger human health.
So why would the use of nuclear weapons be a humanitarian catastrophe on an unprecedented scale?
Nuclear weapons are in a class by themselves, and we have to consider them separately from other weapons that kill and destroy on a large scale.

First, even a single nuclear explosion over a city can kill tens of thousands — even hundreds of thousands — of people immediately. As we will see, the casualties of a nuclear war in which even a small fraction of today’s arsenals are used would reach into the tens of millions.
Second, nuclear weapons eradicate the social infrastructure required for recovery from conflict. Roads and transportation systems, hospitals and pharmacies, fire fighting equipment, and communications would all lie in rubble throughout a zone of complete destruction extending for miles.
Third, nuclear weapons explosions have extreme and long-lasting environmental consequences, including disruption of the Earth’s climate and agricultural productivity.
What makes nuclear weapons uniquely abhorrent is the ionizing radiation they release as a result of the uncontrolled chain reaction of fissile materials. We will look at the acute and long term health effects of exposure to radiation in a moment.
Nuclear weapons are indiscriminate in their effects.

They cannot distinguish between military and civilian targets…
Nuclear weapons are indiscriminate

No distinction between combatants and non-combatants

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...or between combatants and non-combatants.
Once the explosive energy of a nuclear chain reaction has been released, it cannot be contained.
People in neighboring and distant countries having nothing to do with the conflict would suffer from climate effects and from radioactive fallout, even if they were at a safe distance from the blast and thermal destruction near ground zero.
Other weapons that violate these norms, even though they are far less destructive than nuclear weapons, have already been banned by international agreement. These include antipersonnel landmines, seen here…
…chemical weapons, such as the mustard gas that was used during the first world war and against Iranian civilians during the Iran-Iraq war in the 1980s; biological weapons; and, most recently, cluster munitions, which can lie unexploded along roads and in fields and kill civilians, including children who mistake them for toys, long after the end of hostilities.
Nuclear weapons have been exploded twice over cities as an act of war. The United States dropped the first atomic bomb over Hiroshima on August 6, 1945.
The thermal wave generated by the explosion vaporized everything and everyone near ground zero, and incinerated and melted solid materials at greater distances. The intense heat and winds started firestorms that covered more than four square miles (11 km²). The radius of total destruction was about one mile (1.6 km). Nearly half the energy was released in the form of a blast wave, which traveled at supersonic speed, creating overpressures that killed people, leveled reinforced concrete structures, destroyed transportation systems, factories, and commercial buildings, and reduced houses to debris. An electromagnetic pulse destroyed communications and power systems. More than three-quarters of the buildings in the city were destroyed or irreparably damaged.
Three day later, on August 9, Nagasaki became the second city to experience the catastrophic humanitarian consequences of nuclear war.
In these film clips, we see the mushroom cloud forming over Nagasaki seconds after the 21-kiloton plutonium bomb was dropped. The heat from the blast reached 3,900 degrees Celsius (7,000 degrees F), generating winds of more than 600 miles per hour.

The physical effects of nuclear weapons include a heat (thermal) wave, a blast wave, an electromagnetic pulse, the release of ionizing radiation, and the production of radioactive isotopes.

[PAUSE UNTIL GROUND-LEVEL FOOTAGE]

More than two-and-a-half square miles were leveled, and nearly 74,000 people were killed immediately. Another 75,000 were injured.

Incendiary bombing campaigns had destroyed other Japanese and German cities, incinerating entire populations in vast firestorms, but never before had a single weapon, unleashing the forces that bind matter together, had such massive and terrifying results.
These Hiroshima and Nagasaki survivors are being treated for their injuries. In addition to second- and third-degree burns among those closest to the hypocenter, the consequences included crushing injuries due to the collapse of buildings; ruptured internal organs, especially the lungs; penetrating wounds from objects that had been turned into high-speed missiles; fractures of all kinds, including skull fractures, because people themselves were turned into missiles traveling at high speeds until they hit the nearest hard object. Large numbers of survivors were deafened because of ruptured eardrums, and blinded by retinal burns from reflex glances at the fireball.
Because there were so few doctors and nurses left alive in either city and most of the medical infrastructure had been destroyed, treatment of survivors had to be organized internationally, and with great difficulty. During the critical hours and days following the bombings, physicians who arrived in Hiroshima and Nagasaki had to work without equipment, blood supplies, medicines, and other resources needed for effective treatment. There was no electric power, no water, no transportation system, no communication, and unrecognizable surroundings.

One of the foremost experts on the medical effects of nuclear war, Dr. Jack Geiger, has drawn the lesson of Hiroshima and Nagasaki as well as anyone: "There is no survival, in any sense of that word that has social meaning, from a nuclear attack."
Exposure to the initial flux of neutrons and gamma rays and from the fallout of the radioisotopes produced by the detonation causes acute radiation syndrome—also known as radiation sickness. The source of exposure can also be radiation releases from nuclear power plant disasters such as Chernobyl or Fukushima, or any other external exposure to high energy X-rays, gamma rays, and neutrons capable of penetrating to internal organs.
Symptoms of acute radiation sickness include destruction of bone marrow; irreparable gastrointestinal damage and dehydration; uncontrolled internal bleeding; extreme susceptibility to infection; hair loss; and central nervous system dysfunction.
Death from acute radiation sickness usually occurs within days or weeks. Those who do recover may remain ill for months or even years.
Radiation poses a particular problem for rescuers attempting to assess the severity of injuries since there is no way, especially in the initial period, to know whether a person has received a moderate exposure and might survive with adequate care or has received a large exposure and will die regardless of what treatment is offered.
Exposures to lower doses of ionizing radiation, while they do not normally have acute effects, can cause leukemia, thyroid cancer, and cancers of the stomach, lung, liver, colon, bladder, breast, ovary, and skin.
The nuclear reactor disasters at Chernobyl and Fukushima released enormous quantities of radioactive isotopes into the environment, some of them with very long half-lives, posing increased cancer risks on populations far removed from the reactor sites for decades to come.
A classified Pentagon study conducted in 2002 projected that 12 million people would be killed outright in a nuclear war between India and Pakistan. Many additional millions would sustain injuries similar to those seen in Hiroshima and Nagasaki. Fallout from ground bursts would expose tens of millions more to lethal levels of ionizing radiation.
A nuclear conflict involving as few as 100 Hiroshima-sized bombs would disrupt the Earth's climate, causing precipitous drops in temperature and reductions in rainfall worldwide. These climate effects would have significant and long-lasting implications for agriculture and food supplies.
Climate experts have recently concluded that even a limited nuclear conflict would affect weather patterns throughout the world. Soot and debris injected into the atmosphere from the explosions and resulting fires would block sunlight from reaching the Earth, producing an average surface cooling of -1.25°C that would last for several years. Even 10 years out, there would be a persistent average surface cooling of -0.5°C.\(^4\)

There are more than one billion people in the world whose daily caloric intake falls below minimum requirements. Each year some five million children in this group starve to death. A small further decline in available food would put this entire group at risk. In the event of a major global cooling episode caused by a regional nuclear war we would expect to see reductions in harvests of staple crops, such as wheat, corn, and rice; dramatic rises in food prices; and hoarding on a global scale as countries that normally export grain held on to any surpluses they had to feed their own people. If famine conditions persisted for a year or more, it seems reasonable to fear that the total global death toll could exceed one billion from starvation alone.  

The worst case, which cannot be ruled out as long as these weapons exist, is a nuclear war between the US and Russia, using many or all of the 20,000 nuclear weapons those countries possess between them. If 500 warheads were to hit major US and Russian cities, 100 million people would die in the first half hour and tens of millions would be fatally injured. Huge swaths of both countries would be blanketed by radioactive fallout and their industrial, transportation, and communication infrastructures would be destroyed. Most Americans and Russians would die in the succeeding months from radiation sickness, epidemic disease, exposure and starvation.
The Earth’s climate and other fundamental ecosystems would collapse in what has been called a nuclear winter.
One final humanitarian consequence of nuclear weapons that cannot be overlooked is the enormous diversion of resources into the research and development, production, and deployment of warheads and their delivery systems, at the expense of real human and social needs that are inexcusably underfunded. The United States alone, from the Manhattan Project through the current decade, has spent more than $5 trillion on all aspects of the nuclear weapons complex. By contrast, the Stockholm International Peace Research Institute has estimated that it would take only $135 billion to fully achieve the Millennium Development Goals. Instead, each of the nine nuclear-weapons states is engaging in large, expensive programs to modernize its nuclear forces and to ensure that they will continue to endanger us all for decades to come.

So why are nuclear weapons of concern to physicians? In 1984, at the height of the Cold War between the US and the former Soviet Union, the World Health Organization concluded that doctors and scientists “have both the right and the duty to draw attention in the strongest possible terms to the catastrophic results that would follow from any use of nuclear weapons.”

The International Committee of the Red Cross—the world’s premier medical-humanitarian organization—first called for nuclear weapons to be banned in September 1945, mere weeks after the atomic bombings of Hiroshima and Nagasaki. Red Cross doctors, including Marcel Junod, pictured here, were among the first to witness the suffering and devastation in those two cities, and advised the states parties to the Geneva Conventions in 1950 that the “inevitable consequence [of nuclear weapons] is extermination, pure and simple.”

In 2010, the ICRC made the prohibition of nuclear weapons one of its top priorities. The Red Cross has repeatedly told the international community that the world’s doctors would be unable to respond in any meaningful way to the suffering caused by the use of nuclear weapons.
In November 2011, the Council of Delegates of the International Red Cross and Red Crescent Movement condemned nuclear weapons as incompatible with international humanitarian law. The resolution cited the 1996 advisory opinion of the International Court of Justice, which concluded that “nuclear weapons...have the potential to destroy all civilization and the entire ecosystem of the planet.”
The Red Cross called for negotiations on an international agreement to prohibit and eliminate nuclear weapons.
This existential threat to humanity requires a comprehensive solution. UN Secretary-General Ban Ki-moon and prominent civil society organizations are supporting the proposal for a global treaty to abolish nuclear weapons.
The Nuclear Non-Proliferation Treaty cites “the devastation that would be visited upon all mankind by a nuclear war.” The NPT’s nuclear disarmament obligation, however, has gone unfulfilled for more than 40 years, while the spread of nuclear weapons to other countries has continued. At the five-year review of the treaty in 2010, the NPT member states said repeatedly that failure to act on nuclear disarmament risked “catastrophic humanitarian consequences.”
For the first time in the 40-year history of the Non-Proliferation Treaty, the NPT member states explicitly referred to negotiations on a nuclear weapons convention as a way to fulfill the nuclear disarmament obligation contained in Article VI of the Treaty.
The Norwegian government will host an international conference in early 2013 that will bring together government and civil society experts to examine the catastrophic effects of nuclear weapons. A successful conference could change the terms of the debate about abolition, shifting attention away from deterrence-based rationales for keeping nuclear weapons and towards the humanitarian imperative for their elimination.

Catastrophic Humanitarian Consequences
Oslo, March 2013

- Reframe the debate in order to delegitimize nuclear weapons
- Possible entry point for a political process leading to a ban?

International Physicians for the Prevention of Nuclear War
ICAN — the International Campaign to Abolish Nuclear Weapons — is a civil society campaign launched by IPPNW in 2007. ICAN brings together NGOs, professional organizations, grassroots groups, diplomats, religious leaders, academics, youth groups — everyone who has a stake in a secure, prosperous, and peaceful world—to advocate for a global abolition treaty. To learn more about the campaign and how you can add your voice to our call for a world without nuclear weapons, visit icanw.org.
Former Hiroshima mayor Tadatoshi Akiba is an ICAN supporter and a former co-chair of Mayors For Peace, a global network that now includes more than 5,000 cities calling for the elimination of the nuclear threat. Mayor Akiba has said "We can, together, prevent the use of and eliminate nuclear weapons. We cannot afford to fail."