

Executive Summary

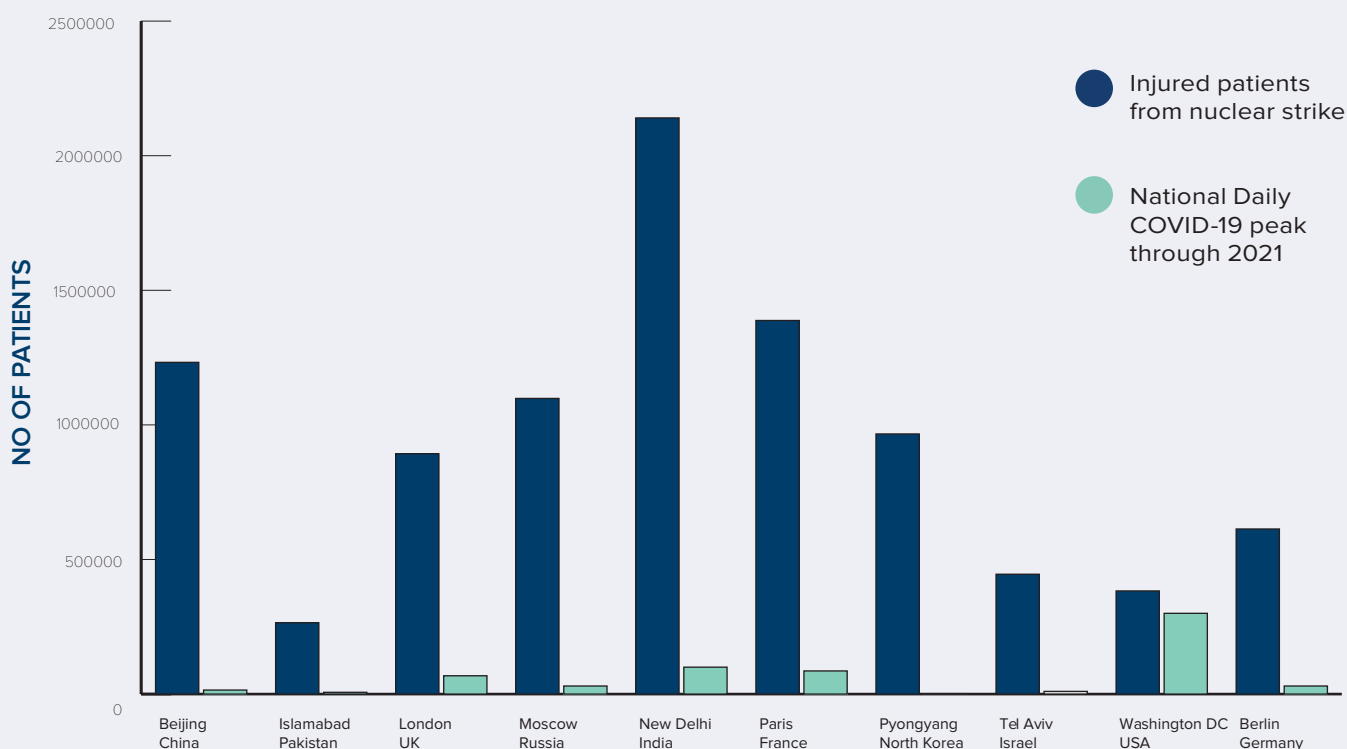
Nuclear-armed states may prepare to use nuclear weapons but they can never adequately prepare for the humanitarian consequences of their use. Examining the existing health infrastructure available to respond to the explosion of a moderately-sized nuclear weapon over nine cities in nuclear-armed states and one non-nuclear armed state's capital makes this point tragically clear. A nuclear war would realistically involve many nuclear weapons targeting many cities in a country, creating an enormous humanitarian catastrophe impossible for any health care system to deal with - one that could potentially lead to the end of civilization as we know it. But if even just one average-sized nuclear weapon were to be detonated over a major city today, the immediate health impact would be disastrous beyond the ability of any nation to effectively respond.

This report uses publicly available information about hospitals, doctors, nurses and the NUKEMAP simulator to evaluate the immediate health response capacity to treat victims of a 100 kiloton airburst nuclear weapon detonation. This NUKEMAP model does not include the impact of mass fire or fallout after a nuclear detonation.

While the consequences of this model varied from city to city based on population density and geographic size, the data is clear: even without calculating for the mass fires or fallout caused by a nuclear blast, none of these cities would have anywhere near the sufficient healthcare capacity to respond to a nuclear explosion over their city. There would not be enough doctors, nurses, hospital beds or intensive care unit (ICU) beds – even assuming that all available medical professionals are adequately trained in emergency medicine and that every bed listed in each of these cities that is not destroyed during the nuclear attack is unoccupied.

Under this scenario in New Delhi, for example, roughly 50,000 beds would have to accommodate more than two and a half million injured people. Several cities lack needed burn beds: Paris has nine; London two.

After the bomb's destruction of medical personnel and infrastructure, cities would be overwhelmed. In Washington D.C., over 500,000 people would be killed or injured by the blast. In Berlin, one-third of hospitals would be destroyed.



ESTIMATED INJURIES PER CITY FROM A SINGLE 100KT NUCLEAR EXPLOSION

- **Washington D.C.**
383,210 injured
- **London**
892,760 injured
- **Paris**
1,387,830 injured
- **Berlin**
613,320 injured
- **Moscow**
1,098,310 injured
- **Beijing**
1,232,310 injured
- **Pyongyang**
966,390 injured
- **Islamabad**
264,870 injured
- **New Delhi**
2,140,370 injured
- **Tel Aviv**
445,220 injured



Surviving doctors, and other health professionals, many of whom may not have specialized training, would be responsible for treating large numbers of seriously injured patients simultaneously. Many of these victims would have extensive burns which require teams of health professionals to provide the care necessary for survival. In Tel Aviv, each doctor would need to treat 28 patients at once. In Islamabad, every doctor would have to treat 366 people simultaneously. In Pyongyang, it would be 162 people to each doctor.

Any hospitals left standing towards the center of the city, roughly within a 3.2 - 8 km radius from the center, would be working without the technology needed to provide intensive medical care. In this scenario, when a nuclear weapon is detonated at an altitude of 1.45km it would likely generate an electromagnetic pulse with impacts similar to that of a surface burst. This electro-magnetic pulse would disable a lot of important digital equipment within the blast-damage area of the city, including communication equipment, computers, key components in vehicles, and medical devices - further complicating response by emergency and medical personnel in the immediate area. There would be disruptions to the supply of electricity needed to power cardiac monitors, ventilators, computers, X-ray and lab equipment, and also to the critical supply of clean running water and a functioning sewer system. A modern hospital is highly dependent on equipment that requires electricity and

the ability to provide intensive care without it would be very limited. Radiation, massive fires and streets blocked with debris would make it difficult, or impossible, to transport patients and equipment to any hospital that was still functioning.

In every city, the number of injured people needing medical assistance would be many times more than the highest daily number of new number of COVID-19 patients in the entire country. In Islamabad, 38 times more people would be injured in one second in one city than tested positive for COVID-19 in the entire country in a day at their peak of the pandemic through 2021. In Tel Aviv, it would be 39 times more people.

No city or health service can be adequately prepared to respond to the medical needs of civilians injured in the first few hours of one nuclear weapon being dropped on one city. The long-term health and environmental consequences of one nuclear detonation, let alone a full blown nuclear war, would be much worse.

All of the countries in this report make this risk more likely to become a reality by possessing or hosting nuclear weapons - but it is the people living in these cities that would pay the ultimate price. To ensure the safety of their citizens, city leaders must call on their country to join the Treaty on the Prohibition of Nuclear Weapons and take these nightmare scenarios off the table for good.