

## **Operating under Fire:**

The Effects of Explosive Weapons on  
Health Care in the East of Ukraine

Harvard Law School International Human Rights Clinic and PAX



INTERNATIONAL HUMAN RIGHTS CLINIC  
HUMAN RIGHTS PROGRAM AT HARVARD LAW SCHOOL



# Operating under Fire

The Effects of Explosive Weapons  
on Health Care in the East of Ukraine

## Cover Illustration

Empty beds and stretchers line a hallway in Avdiivka City Hospital, where damage from the use of explosive weapons has hindered the provision of health care.

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The International Human Rights Clinic (IHRC) at Harvard Law School seeks to protect and promote human rights and international humanitarian law through documentation; legal, factual, and strategic analysis; litigation before national, regional, and international bodies; treaty negotiations; and policy and advocacy initiatives.

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Harvard Law School International Human Rights Clinic and PAX

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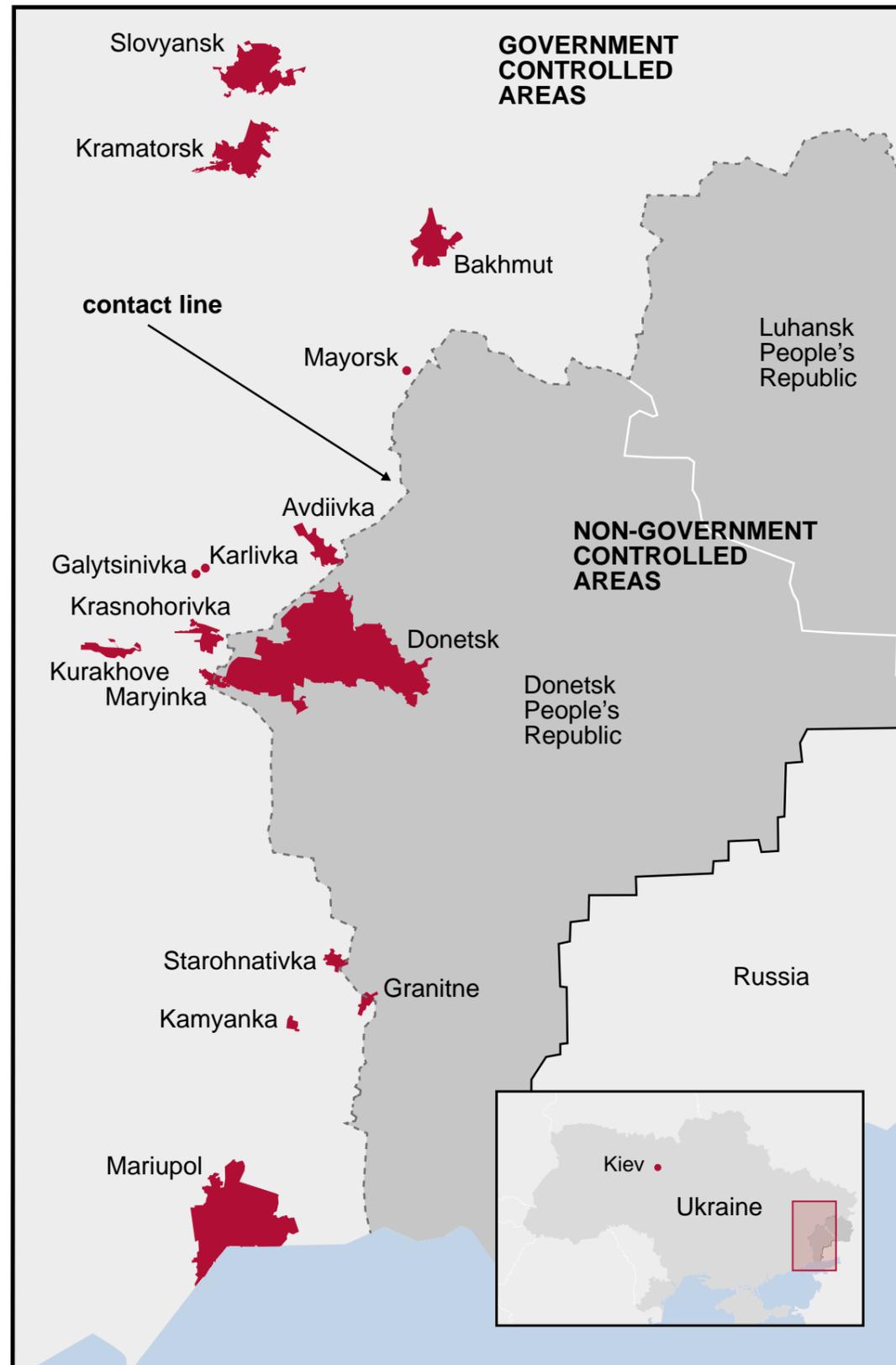
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# Table of Acronyms

AOAV	Action on Armed Violence
ARES	Armament Research Services
CESCR	Committee on Economic, Social and Cultural Rights
CIMIC	Civil-Military Cooperation
EKG	Electrocardiograph
EU	European Union
GICHD	Geneva International Centre for Humanitarian Demining
HE/FRAG	High explosive/fragmentation
ICESCR	International Covenant on Economic, Social and Cultural Rights
ICRC	International Committee of the Red Cross
IED	Improvised explosive device
IHL	International humanitarian law

IHRC	International Human Rights Clinic
INEW	International Network on Explosive Weapons
MBRL	Multi-barrel rocket launcher
MLRS	Multiple launch rocket system
MSF	Médecins Sans Frontières
NGO	Nongovernmental organization
OCHA	Office for the Coordination of Humanitarian Affairs
OSCE	Organization for Security and Co-operation in Europe
SMM	Special Monitoring Mission
UDHR	Universal Declaration of Human Rights
UN	United Nations
UNICEF	UN Children's Fund
UNIDIR	UN Institute for Disarmament Research
WHO	World Health Organization

## Donbass Region



▲  
North

Map depicts communities referenced in this report. It shows contact line as indicated in International Committee of Red Cross, “#New Normal,” April 2017, <https://www.icrc.org/en/document/newnormal-eastern-ukraine>.

20 km

# Summary and Recommendations

Since the armed conflict in the east of Ukraine began in 2014, the use of explosive weapons in populated areas has adversely affected the region’s health care system. Shelling, by which this report means use of ground-launched explosive weapons, has directly damaged hospitals, destroyed ambulances, and killed or injured health workers and patients. Shelling has also inflicted harm indirectly by shutting down infrastructure and creating travel risks. As a result, the quality, availability, and accessibility of health care—three elements of the right to health—have declined. This situation has exacerbated the conflict-related difficulties faced by civilians in the east of Ukraine. It also exemplifies one of the many humanitarian problems associated with using explosive weapons in populated areas.

Explosive weapons encompass a range of air-dropped and ground-launched weapons, including aircraft bombs, artillery projectiles, rockets, and missiles. Some types have wide area effects due to their broad radius of destruction, inaccurate delivery system, and/or delivery in salvos of multiple munitions. When explosive weapons with wide area effects are used in populated areas, they almost always cause humanitarian harm. They kill or injure civilians immediately through blast and fragmentation. They cause buildings to collapse and debris to fly, which can lead to more civilian casualties. In addition, explosive weapons have reverberating effects; for example, by damaging infrastructure, they can interfere with the operations of hospitals and schools as well as compel local people to flee.

Concern about the use of explosive weapons, especially with wide area effects, in populated areas has grown over the past decade. States, the United Nations (UN) secretary-general, UN bodies, the International Committee of the Red Cross (ICRC), and nongovernmental organizations

(NGOs) have all condemned the humanitarian harm caused by the practice. A proposal to develop an international political commitment on the topic has gained momentum with a series of meetings organized by Austria. In documenting the harm that shelling has caused to Ukraine's health care system, this report aims not only to shed light on the serious and ongoing suffering experienced by the civilians of one country but also to underscore the need to adopt such an overarching political commitment and end the use of explosive weapons with wide area effects in populated areas.

This report is the result of a collaboration between Harvard Law School's International Human Rights Clinic (IHRC) and PAX, a Dutch peace organization that is a co-founder of the International Network on Explosive Weapons (INEW). Part I of the report provides background on explosive weapons and the situation in Ukraine. Chapters 1 and 2 examine the humanitarian concerns raised by explosive weapons and the applicability of international humanitarian and human rights law. Chapter 3 provides an overview of the armed conflict in the east of Ukraine and the role played by explosive weapons. Chapter 4 provides an assessment of the Ukrainian health care system. Part II presents the findings of the report, which are based primarily on field research done in September 2016. Chapters 5 and 6 detail the direct and indirect harm that the use of explosive weapons in populated areas has inflicted on the region's health care system. Chapter 7 analyzes how this harm has adversely affected patient care.

## Armed Conflict and Health Care in Ukraine

The armed conflict in the east of Ukraine emerged from a series of protests, collectively known as the Euromaidan, about Ukraine's relations with the European Union (EU) and, by extension, with Russia. The civil unrest, which began in Kiev, spread east and escalated into armed conflict in 2014. Anti-maidan, pro-Russian armed groups seized territory and declared the Donetsk and Luhansk areas to be independent People's Republics, although they were not recognized as such by any UN member state. Ukraine responded with military force.

Over the past three years, all parties to the conflict have inflicted significant humanitarian harm through their widespread use in populated areas of explosive weapons, especially those with wide area effects. According to figures from Action on Armed Violence (AOAV), a UK-based NGO, the use of explosive weapons in populated areas caused more than 2,300 civilian casualties in Ukraine from 2014 to 2016. In 2015, a peace deal known as Minsk II established a buffer zone, requiring the withdrawal of certain explosive weapons. Minsk II has been only partially successful, however, and fighting has continued along the contact line.

Ukraine's health care system, which already fell below the standards of other parts of Europe, has suffered as a result of the conflict. For example, the contact line has made it difficult for civilians on the government controlled side to access the region's specialized hospitals located in or near Donetsk in the non-government controlled areas. Military checkpoints have prevented medical personnel from reaching their patients and patients from reaching nearby hospitals and clinics. Ambulances have reportedly come under small arms fire. Most relevant for this report, shelling has interfered with the provision of health care in a number of ways.



Empty benches stand outside a wing of Avdiivka City Hospital that was abandoned after two direct hits by explosive weapons. © Anton Skyba for International Human Rights Clinic at Harvard Law School and PAX / September 2016.

## Effects of Explosive Weapons on Health Care

The use of explosive weapons in populated areas has directly harmed the health care system in the east of Ukraine. When explosive weapons have hit hospitals or exploded nearby, they have caused structural damage, shattered windows, and endangered personnel and patients. On June 3, 2015, for example, shelling in Krasnohorivka struck an ambulance substation, setting fire to the ambulance garage and adjacent neurology department. Staff members had to carry the patients, many of whom were immobilized, across the hospital grounds to the basement of another building as shells fell around them. Although no one died in this attack, the substation had yet to be repaired when IHRC-PAX researchers visited in September 2016.

Shelling has inflicted harm indirectly as well as directly, meaning that the health care system has felt the reverberating effects of the use of explosive weapons in populated areas. In all of the cities and towns IHRC-PAX researchers visited, shelling had damaged infrastructure, causing widespread and long-term interruptions to utilities essential to the provision of health care. Explosive weapons have caused power outages by cutting electric wires and knocking out transformers. They have interfered with water supplies by breaking water mains leading to hospitals. Explosive weapons have left medical facilities without heat because they severed hot water pipes and above-ground gas lines. They have also cut communications with hospitals and ambulance services by cutting phone lines and damaging cell phone towers. Ongoing shelling has delayed restoration of services by making it too dangerous for workers to complete repairs. In addition, new spikes in shelling, such as in Avdiivka in February 2017, have shut down services previously repaired.

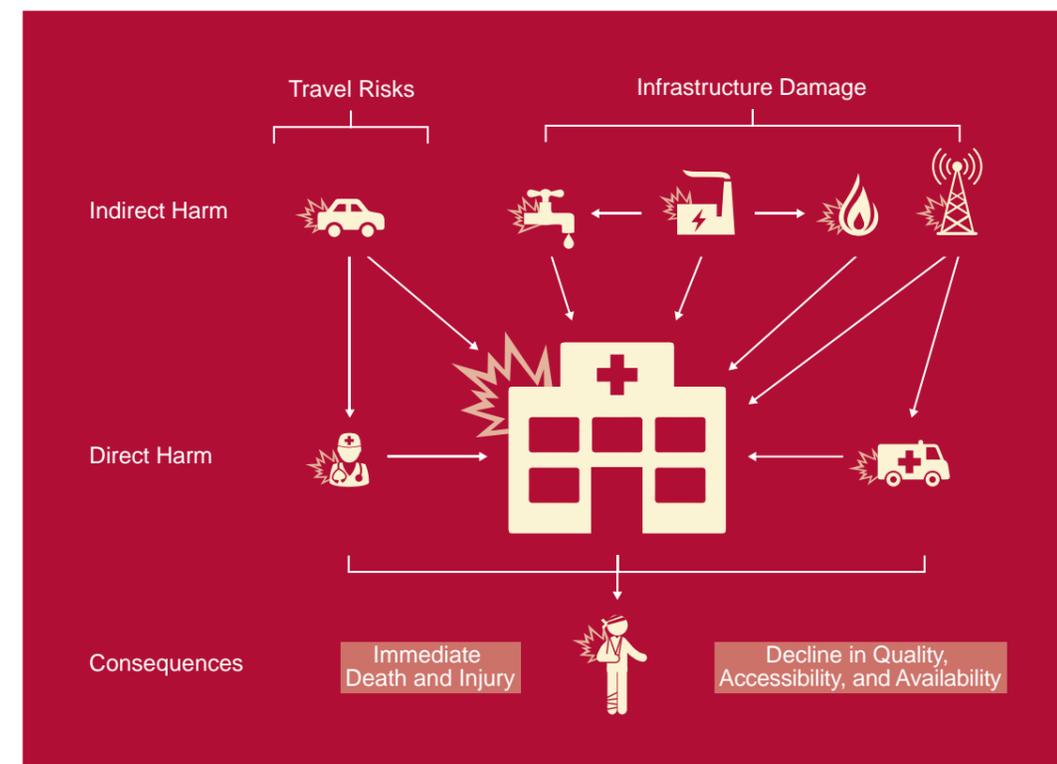


Explosive weapons shattered windows at Maryinka District Central Hospital in Krasnohorivka. While some windows had been replaced by September 2016, others consisted of broken glass and torn plastic sheeting.  
 © Anton Skyba for International Human Rights Clinic at Harvard Law School and PAX / September 2016.

Shelling has also caused indirect harm by making travel dangerous for medical personnel. While many health workers have risked their lives to reach the hospitals and clinics where they care for patients, shelling has at times made their journeys impossible. Some medical personnel have even felt compelled to leave the region altogether in order to protect themselves and their families. During periods of heavy shelling, the use of explosive weapons has prevented ambulance personnel from leaving their stations and providing emergency services to residents in need.

The direct and indirect harm caused by the use of explosive weapons in populated areas has had serious consequences for patient care. Quality has declined because hospitals have had to restrict their operations to confined spaces and treat patients in frigid temperatures. In addition, medical personnel have had to improvise in their treatment, doing surgery by candlelight, sterilizing equipment off site, and bringing their own water to work in buckets or bottles. The use of explosive weapons has also reduced the availability of health care. Many facilities have had to cut back on their services, send patients to distant hospitals for care, and rely on outside assistance from the military. Finally, shelling has created problems of accessibility. Civilians have often found it too dangerous to travel to hospitals or clinics, except in emergencies, and they have had trouble obtaining medications because security risks contributed to the closure of pharmacies in the region.

### Effects of Explosive Weapons on Health Care System and People It Serves



The web of direct and indirect harm caused by using explosive weapons in populated areas can kill and injure civilians immediately and cause a decline in the quality, accessibility, and availability of health care.

### Recommendations

To minimize the effects of fighting on the region's civilian population, parties to the armed conflict in the east of Ukraine should immediately:

- ◆ Cease the use of explosive weapons with wide area effects in populated areas, and
- ◆ Take precautions to avoid harming medical facilities, transport, and personnel as well as the infrastructure essential for proper health care.

To prevent future harm from the use of explosive weapons in any part of the world, states should:

- ◆ Cease the use of explosive weapons with wide area effects in populated areas, and
- ◆ Develop and sign on to a political commitment that seeks to minimize the harm caused by the use of explosive weapons in populated areas.

# Methodology

**I** HRC-PAX researchers conducted field research in Kiev and along the contact line in the east of Ukraine in September 2016. They interviewed 55 people, including local residents; doctors, nurses, ambulance personnel, and government health officials; representatives of UN agencies; members of local NGOs; and military personnel providing supplementary health care to civilians. Researchers also visited hospitals, clinics, ambulance stations, and other medical posts to see damage first hand. They updated and supplemented this information with desk research on explosive weapons, the armed conflict in Ukraine, and the country's health care system.

This report focuses on the adverse effects of the use of explosive weapons in populated areas on the Ukrainian health care system and the civilian population it serves. It does not seek to identify the party responsible for any particular attack or the specific type of explosive weapon used. In addition, the report does not address intentional attacks on hospitals, which would amount to war crimes under international humanitarian law unless the facilities were used to harm the enemy. Although it is not always possible to determine the intent behind a particular attack, researchers sought to document damage caused by the wide area effects of explosive weapons rather than that caused by direct targeting of medical facilities, transport, or personnel.

The IHRC-PAX team traveled to nine communities in government controlled areas just west of the contact line. They applied for but did not receive permission to travel to non-government controlled areas, but research suggests the effects of the shelling were similar on both sides of the line.<sup>1</sup>

# PART I:

# BACKGROUND

<sup>1</sup> See, for example, "Ukraine Conflict: Battle Rages in Donetsk and Luhansk," *BBC News*, January 19, 2015, <http://www.bbc.com/news/world-europe-30878406> (accessed April 26, 2017); "Shelling Damages Hospital in Donetsk," video, *BBC News*, January 19, 2015, <http://www.bbc.com/news/av/world-europe-33585489/shelling-damages-hospital-in-donetsk> (accessed April 26, 2017); Organization for Security and Co-operation in Europe (OSCE), "Latest from OSCE Special Monitoring Mission (SMM) to Ukraine, Based on Information Received as of 19:30, 8 June 2016," OSCE daily report, <http://us6.campaign-archive2.com/?u=b11aceda364f8f9afa6cadbbb&id=65d997fda1&e=9f45643c49> (accessed April 26, 2017).

# 1. Explosive Weapons in Populated Areas

**T**he use of explosive weapons in populated areas has become a defining and devastating feature of contemporary armed conflicts. In places such as Iraq, South Sudan, Syria, Yemen, and Ukraine, civilians have borne the brunt of the harm it has inflicted. Explosive weapons come in a variety of forms. When used in cities, towns, and villages, they cause civilian casualties and have ripple effects on daily lives, livelihoods, and the provision of services. They have severe consequences for health care systems, which are generally centered where civilians concentrate. The international community has recognized the humanitarian problems created by explosive weapons and taken the first steps toward creating a political commitment designed to minimize the harm caused by the use of explosive weapons in populated areas.

## **Explosive Weapons**

Explosive weapons operate through the detonation of a high explosive substance that creates blast and fragmentation effects. They can be air dropped or ground launched and encompass a range of weapons, such as tank rounds, artillery projectiles, mortar bombs, rockets, missiles, and aircraft bombs. They can be factory-made munitions as well as improvised explosive devices (IEDs).<sup>2</sup>

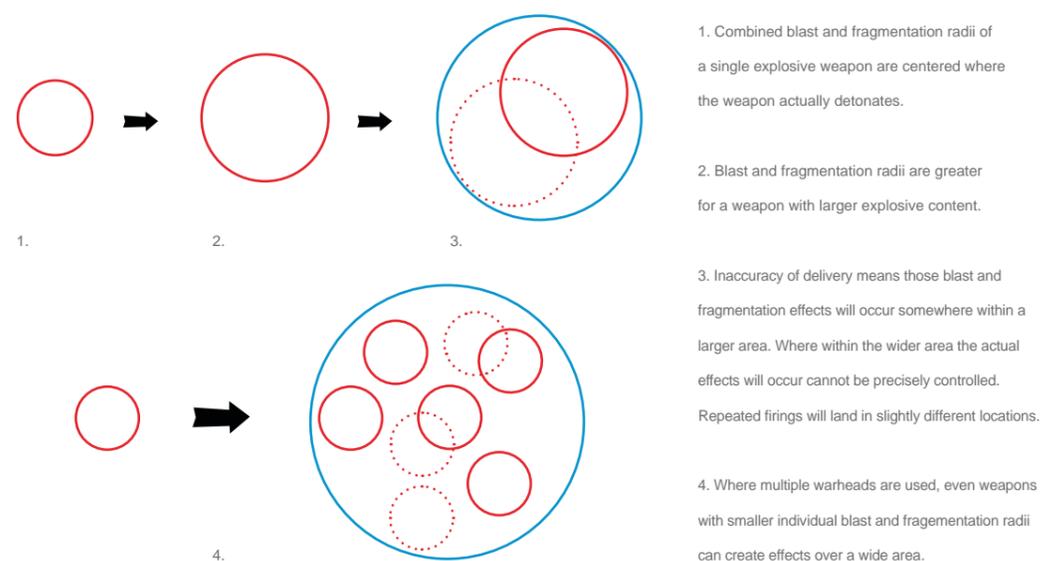
<sup>2</sup> International Committee of the Red Cross (ICRC), "Explosive Weapons in Populated Areas: Factsheet," June 14, 2016, <https://www.icrc.org/en/document/explosive-weapons-populated-areas-factsheet> (accessed March 2, 2017), p. 1.

The humanitarian impact of explosive weapons is especially great when they have a wide area effect and are used in populated areas. Wide area effects can come from:

- ◆ The large destruction radius of an individual munition used,
- ◆ The inaccuracy of a delivery system,
- ◆ The delivery of multiple munitions over a wide area, or
- ◆ A combination of the above.<sup>3</sup>

When used in places where civilians are concentrated, explosive weapons with wide area effects will often fail to distinguish between civilians and combatants, civilian objects and military objectives, and thus have an impact that extends beyond the military target.<sup>4</sup>

### Wide Area Effects of Explosive Weapons



Source: Article 36 and PAX, *Areas of Harm: Understanding Explosive Weapons with Wide Area Effects*, October 2016, <http://www.inew.org/site/wp-content/uploads/2016/10/PAX-A36-Areas-of-Harm.pdf>

<sup>3</sup> Ibid.

<sup>4</sup> For studies on the wide area impact of explosive weapons, see Article 36 and PAX, *Areas of Harm: Understanding Explosive Weapons with Wide Area Effects*, October 2016, <http://www.inew.org/site/wp-content/uploads/2016/10/PAX-A36-Areas-of-Harm.pdf> (accessed April 27, 2017); Armament Research Services (ARES) for the ICRC, *Explosive Weapons in Populated Areas: Technical Considerations Relevant to their Use and Effects*, June 3, 2016, <https://www.icrc.org/en/document/explosive-weapons-populated-areas-use-effects> (accessed April 27, 2017); Action on Armed Violence (AOAV), *Wide Area Impact: Investigating the Wide-Area Effect of Explosive Weapons*, February 2016, <http://www.inew.org/site/wp-content/uploads/2016/03/Wide-Area-Impact-explosive-weapons-in-populated-areas.pdf> (accessed April 21, 2017).

## Civilian Harm from the Use of Explosive Weapons in Populated Areas

The vast majority of people affected by the use of explosive weapons in populated areas are civilians. They are killed or injured by either the weapons' primary effects, i.e., blast and fragmentation, or secondary effects, such as collapsing buildings and flying debris. Since 2011, Action on Armed Violence, a UK-based NGO, has done an annual global survey of casualties from explosive weapons based on English-language media reports in which at least one casualty was recorded. AOAV's data does not reflect every casualty but is intended to be an indicator of the scale and patterns of civilian harm.<sup>5</sup> AOAV found that in 2016 more than 32,088 civilians were reportedly killed or injured by explosive weapons around the world. When explosive weapons were used in populated areas, civilians represented 92 percent of the casualties.<sup>6</sup>



A woman in the frontline village of Starohnativka shows a photograph of her home, which was partially destroyed by explosive weapons. © Anton Skyba for International Human Rights Clinic at Harvard Law School and PAX / September 2016.

The use of explosive weapons has significant tertiary or reverberating effects that extend beyond the killing and injuring of individuals on impact. Demolition of homes causes residents to flee. Destruction of hospitals and schools leads to a decline in health care and education. People may lose their livelihoods when factories, offices, or other workplaces are hit. By damaging infrastructure, such as roads, electricity grids, water supply systems, heating, and communications

<sup>5</sup> For the details of AOAV's methodology, see AOAV, "Methodology," <https://aoav.org.uk/explosiveviolence/methodology/> (accessed March 5, 2017).

<sup>6</sup> Email from AOAV, to PAX, March 27, 2017.

networks, explosive weapons can interfere with services essential to civilians' daily lives. The interplay of these effects can exacerbate the harm they cause. For example, the loss of electricity not only affects residential activities but can also undermine the operations of hospitals, schools, and industrial facilities.<sup>7</sup>

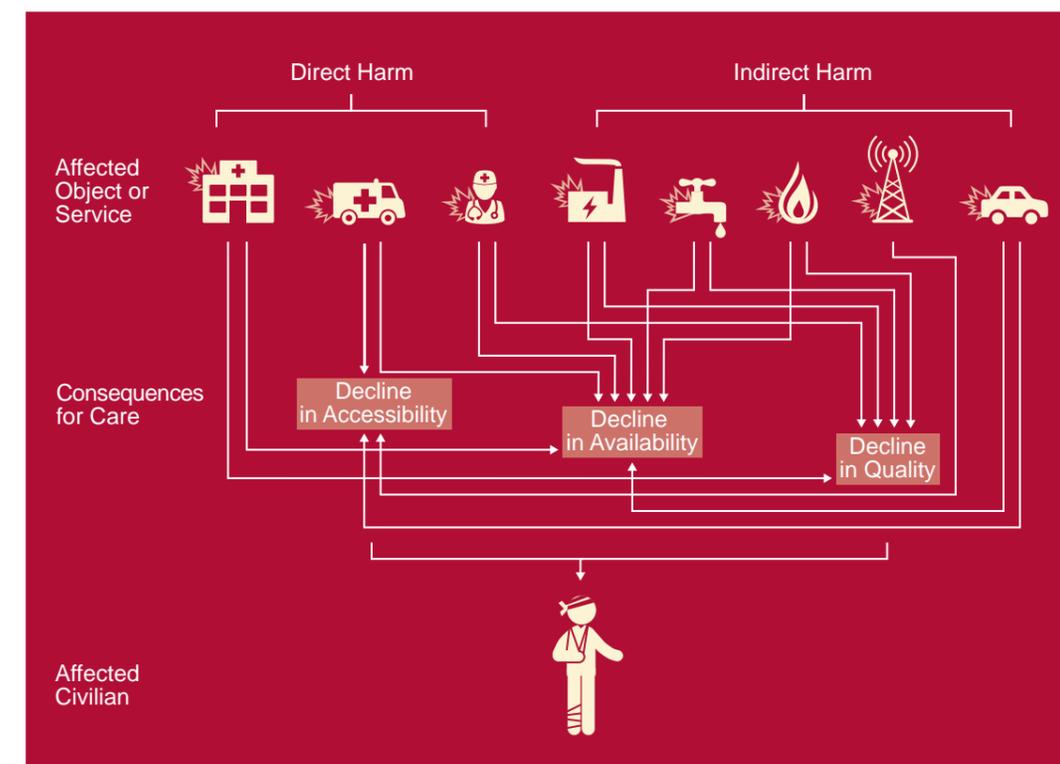
## Repercussions of Explosive Weapons on Health Care

Concern about the effects of armed conflict on health care has grown in recent years. Bodies such as the World Health Organization (WHO) and the Safeguarding Health in Conflict Coalition, a group of international NGOs, have documented attacks on medical facilities and personnel around the world. According to a WHO publication, "Over the two-year period from January 2014 to December 2015, there were 594 reported attacks on health care that resulted in 959 deaths and 1561 injuries in 19 countries with emergencies. . . . Sixty-two per cent of the attacks were reported to have intentionally targeted health care."<sup>8</sup>

While in some cases health care is intentionally targeted in violation of international law, in others cases, it is a victim of collateral damage. According to the same WHO publication, in 2014 and 2015 at least 20 percent of attacks on health care objects (notably facilities, personnel, and transport) were unintentional, and intentionality was undetermined for another 19 percent.<sup>9</sup> The use of explosive weapons in populated areas was likely responsible for the majority of harm to health care objects that were not directly targeted. Because medical facilities are generally situated near the people they serve, they are particularly vulnerable to the shelling of cities, towns, and villages.

Explosive weapons can affect health care in a number of ways. In addition to killing and injuring medical personnel and patients, they may damage or destroy hospitals and clinics, leading to a decrease in or cessation of medical services. Shelled roads and travel risks can interfere with the transport of patients, whether by ambulance or personal vehicle, and block the delivery of supplies and humanitarian aid. Medical personnel may be unable to reach their workplace or forced to flee the region. Explosive weapons can also shut down utilities, such as electricity, water, and gas, which are necessary for the provision of proper care. Together these effects can lead to a decline in the quality, availability, and accessibility of health care and harm the civilians who depend on it.

## Consequences for Health Care of Using Explosive Weapons in Populated Areas



The use of explosive weapons in populated areas can directly harm hospitals, ambulances, and health workers and cause indirect harm by damaging infrastructure and creating travel risks. This harm can have significant consequences for the level of health care and the patients who need it.

## International Concern and Response

The civilian harm caused by the use of explosive weapons in populated areas has generated increasing concern in recent years. As of May 2017, more than 75 countries from all regions of the world had recognized in official statements the humanitarian problems caused by explosive weapons.<sup>10</sup> The UN secretary-general has repeatedly drawn attention to the weapons' adverse impacts since 2009.<sup>11</sup> In 2016, for example, the secretary-general urged states to "raise awareness of the widespread and predictable pattern of harm that results from the use of explosive weapons with wide-area effects in populated areas" and called on parties to any armed conflict to "refrain from using explosive weapons with wide-area effects in populated areas."<sup>12</sup> Several other UN bodies and representatives, such as the UN Children's Fund (UNICEF), the UN emergency relief coordinator, the special representative of the UN secretary-general on children and

<sup>7</sup> For an extensive list of reports on the humanitarian impact of explosive weapons in populated areas as documented by NGOs and other actors, such as the UN Office for the Coordination of Humanitarian Affairs (OCHA), see International Network on Explosive Weapons (INEW), "Learn More," [www.inew.org/learn-more-about-inew](http://www.inew.org/learn-more-about-inew) (accessed April 21, 2017).

<sup>8</sup> World Health Organization (WHO), *Attacks on Health Care: Report on Attacks on Health Care in Emergencies*, 2016, <http://who.int/hac/techguidance/attacksreport.pdf?ua=1> (accessed March 2, 2017), p. ii.

<sup>9</sup> *Ibid.*, p. 7.

<sup>10</sup> INEW, "Acknowledging the Harm," [www.inew.org/acknowledgements](http://www.inew.org/acknowledgements) (accessed March 2, 2017).

<sup>11</sup> UN Security Council, "Report of the Secretary-General on the Protection of Civilians in Armed Conflict," S/2009/277, May 29, 2009, [http://www.un.org/en/ga/search/view\\_doc.asp?symbol=S/2009/277](http://www.un.org/en/ga/search/view_doc.asp?symbol=S/2009/277) (accessed March 2, 2017), para. 36.

<sup>12</sup> UN Security Council, "Report of the Secretary-General on the Protection of Civilians in Armed Conflict," S/2016/447, May 13, 2016, <http://reliefweb.int/sites/reliefweb.int/files/resources/130516%20SG%20report%20on%20PoC%20-%20advance%20copy.pdf> (accessed March 2, 2017), paras. 67-68.

armed conflict, and the UN Office for the Coordination of Humanitarian Affairs (OCHA) have highlighted the issue and echoed the secretary-general's call to avoid using explosive weapons with wide area effects in populated areas.<sup>13</sup>

The International Committee of the Red Cross and civil society have also vocally criticized the use of explosive weapons in populated areas. In a 2016 statement to the UN Security Council, for example, the ICRC said, "Especially in urban environments these weapons are prone to indiscriminate effects, with often devastating consequences for civilians."<sup>14</sup> The ICRC concluded that "the use of explosive weapons with a wide impact area should be avoided in densely populated areas."<sup>15</sup> The International Network on Explosive Weapons, a worldwide coalition of NGOs, has actively campaigned for an end to the use of explosive weapons with wide area effects in populated areas, and its member organizations have bolstered its case by documenting the humanitarian harm the weapons have caused around the world.<sup>16</sup>

The mounting opposition to the use of explosive weapons, especially with wide area effects, in populated areas, has led to a push to develop an international political commitment on the topic. Since 2013, meetings convened by Norway, Chatham House, OCHA, and the ICRC have examined the problems of explosive weapons and ways to address them.<sup>17</sup> In September 2015, Austria hosted a group of governments, UN agencies, and civil society organizations to discuss the proposal to adopt a political commitment designed to minimize the humanitarian impacts of the use of explosive weapons in populated areas. Reaching Critical Will, a member of INEW, reported, "At the end of the meeting, many of the participating governments indicated support for developing a political commitment on this issue. . . . The outcome is a great step toward reducing human suffering."<sup>18</sup> The UN secretary-general has expressed support for such work, urging states to "collect and share practice and policy on minimizing such harm and engage constructively in the ongoing process to develop a political declaration addressing the issue."<sup>19</sup> Austria organized a follow-up meeting in October 2016 and further meetings are expected.

<sup>13</sup> UN Children's Fund (UNICEF) United Kingdom, *Keeping Children Safe in Emergencies*, November 2, 2015, <https://www.unicef.org.uk/publications/keeping-children-safe-in-emergencies/> (accessed March 2, 2017), p. 14; Under-Secretary-General and Emergency Relief Coordinator Valerie Amos, "Security Council Briefing on Protection of Civilians," February 12, 2014, <https://docs.unocha.org/sites/dms/Documents/USG%20Valerie%20Amos%20Security%20Council%20Remarks%20on%20POC%2012Feb2014.pdf> (accessed March 2, 2017); UN General Assembly, "Report of the Special Representative of the Secretary-General for Children and Armed Conflict," A/68/267, August 5, 2013, [http://www.un.org/en/ga/search/view\\_doc.asp?symbol=A/68/267](http://www.un.org/en/ga/search/view_doc.asp?symbol=A/68/267) (accessed March 2, 2017), paras. 12, 14, and 19; OCHA, "Protecting Civilians from the Use of Explosive Weapons in Populated Areas," August 11, 2016, <https://docs.unocha.org/sites/dms/Documents/EWIPA%20Fact%20Sheet%20-%20Latest.pdf> (accessed March 2, 2017).

<sup>14</sup> ICRC, "Protection of Civilians: ICRC Statement to the UN Security Council," January 19, 2016, <https://www.icrc.org/en/document/icrc-vice-president-speech-protection-civilians-un-security-council-debate> (accessed March 2, 2017). See also ICRC, "International Humanitarian Law and the Challenges of Contemporary Armed Conflicts," report for the 31st International Conference of the Red Cross and Red Crescent, October 2011, <https://www.icrc.org/eng/assets/files/red-cross-crescent-movement/31st-international-conference/31-int-conference-ihl-challenges-report-11-5-1-2-en.pdf> (accessed March 2, 2017), pp. 40-42.

<sup>15</sup> ICRC, "Protection of Civilians: ICRC Statement to the UN Security Council," January 19, 2016.

<sup>16</sup> For a list of some of INEW members' publications, see INEW, "Learn More," <http://www.inew.org/learn-more-about-inew#inew-member-material> (accessed March 2, 2017).

<sup>17</sup> Reaching Critical Will, "Ending the Use of Explosive Weapons in Populated Areas," <http://www.reachingcriticalwill.org/news/latest-news/10180-ending-the-use-of-explosive-weapons-in-populated-areas> (accessed March 2, 2017).

<sup>18</sup> Reaching Critical Will, "States Move to Stop Bombing and Bombardment in Towns and Cities," <http://www.reachingcriticalwill.org/news/latest-news/10182-states-move-to-stop-bombing-and-bombardment-in-towns-and-cities> (accessed March 2, 2017).

<sup>19</sup> UN Security Council, "Report of the Secretary-General on the Protection of Civilians in Armed Conflict," S/2016/447, May 13, 2016, para. 68.

## 2. International Law

**W**hen used in populated areas, explosive weapons, especially with wide area effects, pose threats to civilians that raise concerns under several provisions of international law. International humanitarian law, also known as the laws of war, prohibits attacks that fail to distinguish between civilians and combatants and requires states to take precautions to protect civilians during attacks. International human rights law establishes a right to health, which entitles people to "timely and appropriate" health care.<sup>20</sup>

Although this report does not seek to identify specific violations of international law, it documents harm to the health care system that generally runs counter to these legal frameworks. The harm reinforces the need for a political commitment to create a clear standard against the use of explosive weapons with wide area effects in populated areas.

<sup>20</sup> Committee on Economic, Social and Cultural Rights (CESCR), General Comment No. 14, The Right to the Highest Attainable Standard of Health (Art. 12), U.N. Doc. E/C.12/2000/4 (2000), para. 11.

## International Humanitarian Law

### Distinction

International humanitarian law places limits on the means and methods of warfare,<sup>21</sup> and one of its cornerstones is the principle of distinction. This principle requires parties to an armed conflict to distinguish at all times between civilians and combatants as well as between civilian objects and military objectives.<sup>22</sup> While civilian objects can lose their protected status if used to “make an effective contribution to military action,” when in doubt, an object is presumed to have a civilian purpose.<sup>23</sup> According to the ICRC, the principle of distinction is customary international humanitarian law applicable in international and non-international armed conflicts.<sup>24</sup>

Indiscriminate attacks, which are unlawful, breach this principle. They include attacks that are:

- ◆ Not directed at a specific military objective,
- ◆ Employ a method or means of combat which cannot be directed at a specific military objective, or
- ◆ Employ a method or means of combat the effects of which cannot be limited as required by international humanitarian law.<sup>25</sup>

The second and third types of indiscriminate attacks are most relevant to this report. The use of explosive weapons with wide area effects is problematic because such weapons generally cannot be directed at a specific target and have effects that cannot be sufficiently limited. As a result, their use in populated areas frequently inflicts harm on civilians and civilian objects. In 2011, the ICRC stated, “The use of explosive weapons in densely populated areas exposes the civilian population and infrastructure to heightened—and even extreme—risks of incidental or indiscriminate death, injury or destruction,” and recommended it be avoided if the weapons had a “wide impact area.”<sup>26</sup> Certain explosive weapons, notably cluster munitions and antipersonnel landmines, have been banned under all circumstances because they were considered indiscriminate especially when used in populated areas.<sup>27</sup>

International humanitarian law expressly prohibits two specific types of indiscriminate attacks. First, it prohibits “attacks by bombardment by any methods or means which treats as a single military objective a number of clearly separated and distinct objectives located in a . . .

concentration of civilians or civilian objects.”<sup>28</sup> The use of explosive weapons with wide area effects in a populated area often falls into this category because the weapons blanket an area rather than strike a single military target.

Second, international humanitarian law prohibits attacks that violate the principle of proportionality. In other words, an attack is unlawful if it “may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated.”<sup>29</sup> Although the proportionality of particular attacks is determined on a case-by-case basis, significant civilian harm is foreseeable whenever explosive weapons, especially those with wide area effects, are used in populated areas. A proportionality analysis should account for this expected harm, including both direct and reverberating effects.<sup>30</sup>

### Precautions in Attacks

International humanitarian law also requires parties to an international or non-international armed conflict to take precautions to avoid harm to civilians. The ICRC’s Customary International Humanitarian Law Database states, “In the conduct of military operations, constant care shall be taken to spare the civilian population, civilians and civilian objects.”<sup>31</sup> In particular, parties to a conflict should take “all feasible precautions . . . to avoid, and in any event to minimize, incidental loss of civilian life, injury to civilians and damage to civilian objects.”<sup>32</sup> Using explosive weapons with wide area effects in populated areas generally runs counter to the requirement to take steps to minimize civilian harm.

### Protection of Medical Objects and Personnel

International humanitarian law includes many customary provisions related to health care. Article 18 of the Fourth Geneva Convention states, “Civilian hospitals . . . may in no circumstances be the object of attack, but shall at all times be respected and protected by the Parties to the conflict.”<sup>33</sup> Hospitals only lose that protection if they are no longer used for “humanitarian duties” and parties use them to commit “acts harmful to the enemy.”<sup>34</sup> Other provisions of international humanitarian law establish protections for medical units and transport.<sup>35</sup> Although these rules focus on preventing intentional attacks on medical objects and personnel, they illustrate that international humanitarian law highly values the provision of medical care and considers it worthy of protection. As this report will show, the use of explosive weapons in populated areas endangers the health care system, even when that is not the underlying intent.

<sup>21</sup> See, for example, Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflicts (Protocol I), adopted June 8, 1977, 1125 U.N.T.S. 3, entered into force December 7, 1978, art. 35(1) (“In any armed conflict, the right of the Parties to the conflict to choose methods or means of warfare is not unlimited.”).

<sup>22</sup> ICRC, Customary International Humanitarian Law (IHL) Database, Rules 1 and 7, [https://ihl-databases.icrc.org/customary-ihl/eng/docs/v1\\_rul](https://ihl-databases.icrc.org/customary-ihl/eng/docs/v1_rul) (accessed March 2, 2017). Many of the provisions that the ICRC considers customary rules also appear in Protocol I to the Geneva Conventions, although that treaty applies only to international armed conflicts. For the principle of distinction, see also Protocol I, art. 48.

<sup>23</sup> ICRC, Customary IHL Database, Rules 8 and 10. See also Protocol I, art. 52.

<sup>24</sup> ICRC, Customary IHL Database, Rules 1 and 7.

<sup>25</sup> *Ibid.*, Rule 12. See also Protocol I, art. 51(4).

<sup>26</sup> ICRC, “International Humanitarian Law and the Challenges of Contemporary Armed Conflicts,” pp. 41–42. Citing Protocol I’s negotiating history, the ICRC noted, “The prohibition of indiscriminate attacks was specifically ‘intended to take account of the fact that means or methods of combat which can be used perfectly legitimately in some situations could, in other circumstances, have effects that would be contrary to some limitations contained in the [First Additional] Protocol, in which event their use in those circumstances would involve an indiscriminate attack.’” *Ibid.*, p. 41.

<sup>27</sup> Convention on Cluster Munitions, adopted May 30, 2008, CCM/77, entered into force August 1, 2010; Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on their Destruction (Mine Ban Treaty), adopted September 18, 1997, 2056 UNTS 241, 36 ILM 1507, entered into force March 1, 1999.

<sup>28</sup> ICRC, Customary IHL Database, Rule 13. See also Protocol I, art. 51(5)(a). Protocol III to the Convention on Conventional Weapons has defined “concentration of civilians” broadly to mean “any concentration of civilians, be it permanent or temporary, such as in inhabited parts of cities, or inhabited towns or villages, or as in camps or columns of refugees or evacuees, or groups of nomads.” Protocol on Prohibitions or Restrictions on the Use of Incendiary Weapons (Protocol III) to the Convention on Conventional Weapons, adopted October 10, 1980, 1342 U.N.T.S. 137, entered into force December 2, 1983, art. 1(2).

<sup>29</sup> ICRC, Customary IHL Database, Rule 14. See also Protocol I, art. 51(5)(b).

<sup>30</sup> ICRC, “Q&A on the Issue of Explosive Weapons in Populated Areas,” *International Review of the Red Cross* (2016), pp. 7–8 (“While acknowledging that it is both impractical and impossible for commanders to consider all possible effects of an attack, the ICRC considers that those reverberating effects which are foreseeable in the circumstances must be taken into account.”).

<sup>31</sup> ICRC, Customary IHL Database, Rule 15. See also Protocol I, art. 57(1).

<sup>32</sup> ICRC, Customary IHL Database, Rule 15. See also Protocol I, art. 57(1).

<sup>33</sup> Geneva Convention (IV) Relative to the Protection of Civilian Persons in Time of War (Fourth Geneva Convention), adopted August 12, 1949, 75 U.N.T.S. 287, entered into force October 21, 1950, art. 18. See also ICRC, Customary IHL Database, Rule 35.

<sup>34</sup> Fourth Geneva Convention, art. 19.

<sup>35</sup> See, for example, *ibid.*, arts. 20–22. See also ICRC, Customary IHL Database, Rules 25, 26, 28, and 29.

## International Human Rights Law: The Right to Health

International human rights law considers health to be a “fundamental human right indispensable for the exercise of other rights.”<sup>36</sup> It appears in a number of instruments, including the Universal Declaration of Human Rights (UDHR) and the International Covenant on Economic, Social and Cultural Rights (ICESCR).<sup>37</sup> According to the Committee on Economic, Social and Cultural Rights (CESCR), the treaty body that interprets the ICESCR, the right to health encompasses both “the underlying determinants of health” and “timely and appropriate health care.”<sup>38</sup> The latter is particularly relevant to this report’s discussion of the effects of explosive weapons on Ukraine’s health care system.

In its General Comment No. 14, the CESCR lays out four elements of the right to health, which can be used as a framework to judge the standard of health care after the use of explosive weapons in populated areas. The elements are:

*Quality:* Under this element, “health facilities, goods and services must . . . be scientifically and medically appropriate and of good quality. This requires, inter alia, skilled medical personnel, scientifically approved and unexpired drugs and hospital equipment, safe and potable water, and adequate sanitation.”<sup>39</sup>

*Availability:* To meet the standards of this element, “[f]unctioning public health and health-care facilities, goods, and services, as well as programmes, have to be available in sufficient quantity.” Availability requires “safe and potable drinking water. . . , hospitals, clinics and other health-related buildings, trained medical and professional personnel . . . , and essential drugs.”<sup>40</sup>

*Accessibility:* This element has several dimensions, but the one most applicable to this report is physical accessibility, which requires that “health facilities, goods and services . . . be within safe physical reach for all sections of the population.”<sup>41</sup>

*Acceptability:* This element mandates that “health facilities, goods and services . . . be respectful of medical ethics and culturally appropriate.”<sup>42</sup> It is less relevant to the discussion of the effects of explosive weapons.

Chapter 7 will employ these elements (except for acceptability) to evaluate how the use of explosive weapons in populated areas has affected health care in the east of Ukraine.

<sup>36</sup> CESCR, General Comment No. 14, para. 1.

<sup>37</sup> Universal Declaration of Human Rights (UDHR), adopted December 10, 1948, G.A. Res. 217A(III), U.N. Doc. A/810 at 71 (1948), art. 25(1); International Covenant on Economic, Social and Cultural Rights (ICESCR), adopted December 16, 1966, G.A. Res. 2200A (XXI), 21 U.N. GAOR Supp. (No. 16) at 49, U.N. Doc. A/6316 (1966), 993 U.N.T.S. 3, entered into force January 3, 1976, art. 12.

<sup>38</sup> CESCR, General Comment No. 14, para. 11.

<sup>39</sup> *Ibid.*, para. 12(d).

<sup>40</sup> *Ibid.*, para. 12(a).

<sup>41</sup> *Ibid.*, para. 12(b).

<sup>42</sup> *Ibid.*, para. 12(c).

# 3. Explosive Weapons and the Armed Conflict in Ukraine

For more than three years, armed conflict has divided Ukraine and caused significant harm to the civilians living along the so-called contact line that separates government and non-government controlled areas. Parties to the conflict have used an array of explosive weapons, many of which are notorious for their wide area effects, and they have launched the weapons into cities, towns, and villages on both sides of the line. This practice has killed or injured thousands of civilians in Ukraine and highlights why bringing an end to the use of explosive weapons with wide area effects in populated areas is a humanitarian imperative.

## History of the Armed Conflict in Ukraine

The armed conflict in the east of Ukraine emerged from civil unrest about the country’s relations with the EU and by extension with Russia, 22 years after Ukraine gained independence from the Soviet Union. Protests erupted in Kiev in November 2013 after the Ukrainian government announced it would suspend the Ukraine-European Union Association Agreement and seek closer economic ties with Russia.<sup>43</sup> In the months that followed, demonstrations, collectively known as the Euromaidan, took place throughout the country. On February 20, 2014, clashes between

<sup>43</sup> David Stern, “Ukraine Suspends Preparations for EU Trade Agreement,” *BBC News*, November 21, 2013, <http://www.bbc.com/news/world-europe-25032275> (accessed March 14, 2017); “Huge Ukraine Rally over EU Agreement Delay,” *BBC News*, November 24, 2013, <http://www.bbc.com/news/world-europe-25078952> (accessed March 3, 2017); “Ukraine Crisis: Timeline,” *BBC News*, November 13, 2014, <http://www.bbc.com/news/world-middle-east-26248275> (accessed March 14, 2017).

protestors and police in Kiev left dozens of people dead and hundreds more wounded.<sup>44</sup> Soon after, an agreement to settle the political crisis was reached between President Viktor Yanukovich and the main opposition leaders. The next day, President Yanukovich fled the country. The protestors took control of presidential administration buildings and the Parliament voted to remove the president from power and establish a new government.<sup>45</sup>

Anti-aidan and pro-Russian elements responded to these developments with their own protests and government-building takeovers in the east and south of Ukraine, especially in Crimea and the Donbass, which encompasses the Donetsk and Luhansk regions. Russian President Vladimir Putin signed a bill to annex Crimea in March 2014, and political turmoil in the Donbass soon escalated into armed conflict. In April, armed groups seized parts of the Donbass, eliciting a military response from Ukraine. On May 11, 2014, after controversial referendums, separatists declared Donetsk and Luhansk to be independent “People’s Republics,” although they were not recognized as such by any UN member state.<sup>46</sup>

Under international pressure, Ukraine, Russia, and the Donetsk and Luhansk People’s Republics signed the Minsk Protocol and a follow-up memorandum in September 2014. One of the provisions of the memorandum dictated that parties should pull heavy weapons at least 15 kilometers back from the contact line, thus creating a 30-kilometer buffer zone.<sup>47</sup> The agreements were largely unsuccessful, however. Ongoing hostilities necessitated the signing of a second deal, known as Minsk II, on February 12, 2015. It laid out 15 military and political measures designed to bring peace to the region, including an immediate ceasefire and withdrawal of certain heavy weapons.<sup>48</sup>

Despite some progress toward a cessation of hostilities, conflict in the region has continued. The Special Monitoring Mission (SMM) of the Organization for Security and Co-operation in Europe (OSCE)—formally mandated to observe and report on the situation in Ukraine in an impartial and objective way—has reported numerous breaches of Minsk II.<sup>49</sup> Those breaches have involved several spikes in violence. For example, in June 2015, a major battle, which will be discussed later in this report, took place in Krasnohorivka and Maryinka. In June–July 2016, the armed conflict caused 142 civilian casualties, including 20 deaths, according to a UN report; shelling accounted for more than half of those casualties.<sup>50</sup> Parties agreed to a ceasefire to mark the start of the school year in early September 2016, and it coincided with the IHRC-PAX research mission.<sup>51</sup> Fighting along the contact line intensified again in January and February

<sup>44</sup> See, for example, Ian Traynor, “Ukraine’s Bloodiest Day: Dozens Dead as Kiev Protesters Regain Territory from Police,” *The Guardian*, November 13, 2014, <https://www.theguardian.com/world/2014/feb/20/ukraine-dead-protesters-police> (accessed March 14, 2017); “Ukraine Crisis: Timeline,” *BBC News*, November 13, 2014.

<sup>45</sup> “Ukraine Crisis: Timeline,” *BBC News*, November 13, 2014.

<sup>46</sup> *Ibid.*

<sup>47</sup> “Memorandum on Stabilizing Ceasefire Another Important Step towards De-escalation, OSCE Chairperson-in-Office Says,” OSCE press release, September 20, 2016, <http://www.osce.org/cio/123808> (accessed March 2, 2017). For memorandum in Russian, see <http://www.osce.org/ru/home/123807?download=true> (accessed April 27, 2017).

<sup>48</sup> “Minsk Agreement on Ukraine Crisis: Text in Full,” *The Telegraph*, February 12, 2015, <http://www.telegraph.co.uk/news/worldnews/europe/ukraine/11408266/Minsk-agreement-on-Ukraine-crisis-text-in-full.html> (accessed March 7, 2017).

<sup>49</sup> See generally OSCE Special Monitoring Mission (SMM) to Ukraine, “Daily and Spot Reports from the Special Monitoring Mission to Ukraine,” <http://www.osce.org/ukraine-smm/reports> (accessed April 21, 2017).

<sup>50</sup> “UN Warns of Escalating Tension in Eastern Ukraine as Casualties Hit Highest since Last August,” *UN News Centre*, August 3, 2016, <http://www.un.org/apps/news/story.asp?NewsID=54615#.WL9vY4WADpK> (accessed March 14, 2017).

<sup>51</sup> “Ukraine Crisis: New Ceasefire ‘Holding with Eastern Rebels,’” *BBC News*, September 1, 2016, <http://www.bbc.com/news/world-europe-37243434> (accessed March 14, 2017).

2017, with OCHA reporting 38 civilian casualties, including 7 deaths, from January 29 to February 2 alone.<sup>52</sup>

## Explosive Weapons Used in Ukraine

All parties to the conflict in Ukraine have used explosive weapons in populated areas. Human Rights Watch documented the use of cluster munitions by Ukrainian and Russia-backed rebel forces at multiple points in the conflict.<sup>53</sup> Cluster munitions, which have a wide area effect because they disperse dozens or hundreds of submunitions over an area the size of a football field, are banned by the 2008 Convention on Cluster Munitions, to which neither Ukraine nor Russia are party.<sup>54</sup> The Minsk II agreement required the withdrawal of several types of explosive weapons. It mandated that parties pull out “all heavy weapons to equal distance with the aim of creation of a security zone [a] minimum 50 kilometres apart for artillery of 100mm calibre or more, and a security zone of 70km for [multi-barrel rocket launchers] and 140 kilometres for [multi-barrel rocket launchers] Tornado-S, Uragan, Smerch, and tactical missile systems Tochka U.”<sup>55</sup> The explosive weapons specifically named by Minsk II all have wide area effects and have been used frequently along the front line in the east of Ukraine. In demanding the removal of these explosive weapons, Minsk II seemed to acknowledge the immense humanitarian impact of their use in populated areas.



An explosive weapon penetrated the road in front of this home in a neighborhood of Krasnohorivka. © Anton Skyba for International Human Rights Clinic at Harvard Law School and PAX / September 2016.

<sup>52</sup> OCHA, “Ukraine Update No. 1; Deterioration of the Humanitarian Situation in the East,” February 6 2017, [https://www.humanitarianresponse.info/system/files/documents/files/ukraine\\_update\\_deterioration\\_of\\_the\\_humanitarian\\_situation\\_in\\_the\\_east\\_6\\_feb\\_2017.pdf](https://www.humanitarianresponse.info/system/files/documents/files/ukraine_update_deterioration_of_the_humanitarian_situation_in_the_east_6_feb_2017.pdf) (accessed March 2, 2017).

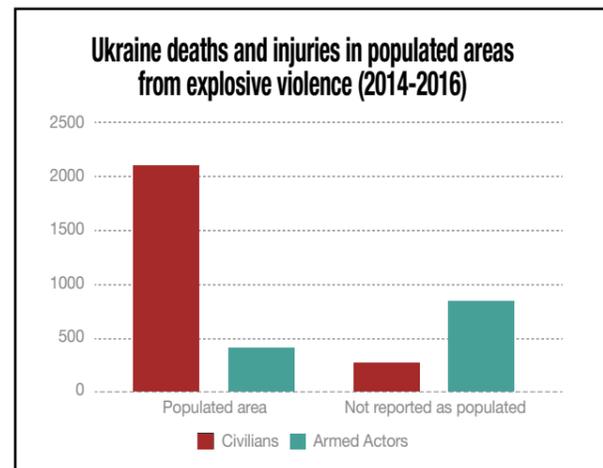
<sup>53</sup> “Ukraine: More Civilians Killed in Cluster Munitions Attacks,” Human Rights Watch news release, March 19, 2015, <https://www.hrw.org/news/2015/03/19/ukraine-more-civilians-killed-cluster-munition-attacks> (accessed April 4, 2017).

<sup>54</sup> Convention on Cluster Munitions, art. 1.

<sup>55</sup> “Minsk Agreement on Ukraine Crisis: Text in Full,” *The Telegraph*, February 12, 2015.

## Civilian Harm from Explosive Weapons in Ukraine

Explosive weapons have been a major source of civilian casualties during the armed conflict in the Donbass. According to AOA data, from 2014 to 2016, they caused about 2,357 civilian casualties, which represented 66 percent of all casualties from the use of explosive weapons in Ukraine.<sup>56</sup> Eighty-nine percent of the total civilian casualties, i.e., 2,096 casualties, were attributable to the use of explosive weapons in populated areas in particular.<sup>57</sup> Ukraine ranked seventh on AOA's list of countries with the most civilian deaths and injuries from explosive weapons in both 2014 and 2015, and twentieth in 2016.<sup>58</sup> AOA noted, however, that the drop in 2016 was partly due to the decrease in reporting that year because the conflict in Syria overshadowed that in Ukraine.<sup>59</sup>



Courtesy of AOA, [aoav.org.uk](http://aoav.org.uk).

AOAV found that ground-launched explosive weapons were the most significant cause of civilian casualties in Ukraine from 2014 to 2016. These weapons were responsible for 2,127, or 90 percent, of the civilian casualties from explosive weapons that AOA recorded in Ukraine in that period. Artillery shells, mortar bombs, and rockets were responsible for the majority of those casualties.<sup>60</sup> Multi-barrel rocket launchers, which fire rockets in salvos, were particularly deadly, causing an average of 14 civilian deaths per attack in 2014-2015, while overall, explosive weapons caused an average of 9 civilian casualties per attack in 2014 and 6 in 2015.<sup>61</sup> Although in 2016 AOA did not specify whether any casualties were specifically caused by multi-barrel rocket launcher

<sup>56</sup> AOA, "Explosive Weapons in Ukraine," data provided to PAX and IHRC, March 2017.

<sup>57</sup> Ibid.

<sup>58</sup> AOA, *Explosive States: Monitoring Explosive Violence in 2014*, May 2015, <https://aoav.org.uk/wp-content/uploads/2015/06/AOAV-Explosive-States-monitoring-explosive-violence-in-2014.pdf> (accessed March 7, 2017), p. 11; AOA, *Unacceptable Harm: Monitoring Explosive Violence in 2015*, April 2016, <https://aoav.org.uk/wp-content/uploads/2016/05/AOAV-Explosive-Monitor-2015.pdf> (accessed March 7, 2017), p. 12; email from AOA, to PAX, March 27, 2017.

<sup>59</sup> AOA, "Explosive Weapons in Ukraine," data provided to PAX and IHRC, March 2017.

<sup>60</sup> Ibid. In 2014, missiles killed or injured 300 civilians in three incidents, but almost all of these occurred in the shooting down of Malaysia Airlines Flight MH17 in July 2014. Ibid.

<sup>61</sup> AOA, *Wide Area Impact: Investigating the Wide-Area Effect of Explosive Weapons*, p. 20.

attacks, other organizations recorded continued use of the weapons system in 2016 and 2017.<sup>62</sup> According to AOA data, from 2014 to 2016, additional civilian casualties were caused by aerial weapons, IEDs, mines, car bombs, and attacks involving a combination of delivery methods.<sup>63</sup>

## Multi-Barrel Rocket Launchers Used in the Ukraine Conflict

In Ukraine multi-barrel rocket launchers, which are designed to attack an area rather than individual target objects, have been especially devastating when used in populated areas.<sup>64</sup> They have generally had a higher casualty rate per attack, and the Minsk II agreement specifically required that they be withdrawn to create a security zone. Using a cluster munition warhead on a multi-barrel rocket launcher contravenes the international norm set by the 2008 Convention on Cluster Munitions.<sup>65</sup> Regardless of their warhead, multi-barrel rocket launchers present serious humanitarian problems when used against towns and cities because of the indiscriminate wide area effect resulting from the large number of munitions they deliver simultaneously. The information below highlights three multi-barrel rocket launchers used widely in Ukraine.

### Grad

The BM-21 Grad, meaning "hail" in Russian, can launch up to 40 122mm rockets within 20 seconds.<sup>66</sup> Grad rockets can contain different types of warheads, but most commonly deliver a high explosive/fragmentation (HE/FRAG) warhead. While the original types of rockets fired by the Grad had a maximum firing range of 20 kilometers, more recent versions have a range of up to 40 kilometers.<sup>67</sup> One rocket has a lethal area<sup>68</sup> of between 700 and 850 square meters.<sup>69</sup> All rockets in a single salvo land within a rectangular shape of around 54,000 square meters.<sup>70</sup> Both Ukrainian government forces and armed rebel groups have used Grads in the Donbass.<sup>71</sup>

<sup>62</sup> See, for example, OSCE, "Latest from OSCE Special Monitoring Mission (SMM) to Ukraine, Based on Information Received as of 19:30hrs, 8 January 2016," OSCE daily report, January 8, 2016, <http://www.osce.org/ukraine-smm/215211> (accessed April 26, 2017); OSCE, "Latest from OSCE Special Monitoring Mission (SMM) to Ukraine, Based on Information Received as of 19:30hrs, 8 April 2016," OSCE daily report, April 9, 2016, [www.osce.org/ukraine-smm/232316](http://www.osce.org/ukraine-smm/232316) (accessed April 26, 2017); OSCE, "Latest from OSCE Special Monitoring Mission (SMM) to Ukraine, Based on Information Received as of 19:30hrs, 28 July 2016," OSCE daily report, July 29, 2016, <http://www.osce.org/ukraine-smm/257106> (accessed April 26, 2017); Ukraine Crisis Media Center, "SMM OSCE: Third Highest Use of Grad MLRS [Multiple Launch Rocket Systems] since January 2016 Recorded Last Week," March 10, 2017, <http://uacrisis.org/53573-osce-51> (accessed April 26, 2017).

<sup>63</sup> AOA, "Explosive Weapons in Ukraine," data provided to PAX and IHRC, March 2017.

<sup>64</sup> "Multi-barrel rocket launcher" and "multiple launch rocket system" are often used interchangeably, but this report will use the former because it is a more generic term that encompasses the latter.

<sup>65</sup> Ukraine is not party to the Convention on Cluster Munitions. For an up-to-date list of states party to the convention, see [www.stopclustermunitions.org](http://www.stopclustermunitions.org).

<sup>66</sup> AOA, "Investigation: Syria's Dirty Dozen," September 23, 2013, <http://aoav.org.uk/2013/syrias-dirty-dozen-grad/> (accessed April 21, 2017).

<sup>67</sup> Geneva International Centre for Humanitarian Demining (GICHD), "122 mm BM-21 Multi Barrel Rocket Launcher (MBRL)," 2017, <http://characterisationexplosiveweapons.org/studies/annex-a-122-mm-mbrl/> (accessed March 20, 2017).

<sup>68</sup> "Lethal area" refers here to the area in which a weapon's effect will incapacitate unprotected adult persons—in other words, the area in which all people present will be killed. See ARES, *Explosive Weapons in Populated Areas: Technical Considerations Relevant to their Use and Effects*, p. 48.

<sup>69</sup> Ibid., p. 57, Table 2.10: Estimated Lethality of Common Artillery Rockets.

<sup>70</sup> "Ukraine: Unguided Rockets Killing Civilians," Human Rights Watch news release, July 24, 2014, <https://www.hrw.org/news/2014/07/24/ukraine-unguided-rockets-killing-civilians> (accessed April 21, 2017).

<sup>71</sup> Ibid.

### Uragan

The BM-27 Uragan, meaning “hurricane” in Russian, can launch up to 16 220mm rockets within 20 seconds.<sup>72</sup> Each rocket has a lethal area of between 1,700 and 1,950 square meters.<sup>73</sup> Rockets for the BM-27 Uragan can be equipped with HE/FRAG warheads, cluster munitions, enhanced blast warheads, or high explosive or scatterable landmines (PTM-1G, PTM-3, or PFM-1). A full salvo of 16 rockets can engage targets within a range of 35 kilometers. When launched from its maximum range, a full salvo covers an area of 43,000 square meters.<sup>74</sup> In Ukraine, Uragan rockets have been used with an HE/FRAG warhead variant, scatterable anti-tank mine variant,<sup>75</sup> enhanced blast variant,<sup>76</sup> and cluster munition variant.<sup>77</sup> Both Ukrainian government forces<sup>78</sup> and the groups opposing them<sup>79</sup> have used Uragans.

### Smerch

The BM-30 Smerch or Tornado-M, meaning “whirlwind” in Russian, can launch up to 12 300mm rockets in 38 seconds.<sup>80</sup> Each rocket has a lethal area of between 2,400 and 2,600 square meters.<sup>81</sup> Various warheads have been developed for the Smerch multi-barrel rocket launcher, including cluster munition, anti-tank mine, HE/FRAG, and fuel-air explosive or enhanced blast variants. The fire range of the Smerch HE/FRAG variant is up to 90 kilometers, while the cluster munition variant has a maximum range of 50 kilometers.<sup>82</sup> In Ukraine both sides to the conflict used the BM-30 Smerch with cluster munition and HE/FRAG variants.<sup>83</sup>

<sup>72</sup> Military Today, “BM-27 Uragan,” 2017, [http://www.military-today.com/artillery/bm27\\_uragan.htm](http://www.military-today.com/artillery/bm27_uragan.htm) (accessed April 21, 2017).

<sup>73</sup> ARES, *Explosive Weapons in Populated Areas: Technical Considerations Relevant to Their Use and Effects*, p. 57, Table 2.10: Estimated Lethality of Common Artillery Rockets.

<sup>74</sup> Military Today, “BM-27 Uragan.”

<sup>75</sup> Human Rights Watch, “Landmines in Ukraine: Technical Briefing Note,” April 2015, [https://www.hrw.org/sites/default/files/supporting\\_resources/lm\\_landmines\\_in\\_ukraine-technical\\_briefing\\_note\\_6april2015\\_final.pdf](https://www.hrw.org/sites/default/files/supporting_resources/lm_landmines_in_ukraine-technical_briefing_note_6april2015_final.pdf) (accessed April 21, 2017).

<sup>76</sup> N. R. Jenzen-Jones, ARES, “Soviet & Russian ‘Flame Weapons’: Incendiary, Thermobaric, and FAE Systems in Ukraine,” <http://armamentresearch.com/soviet-russian-flame-weapons-incendiary-thermobaric-and-fae-systems-in-ukraine/> (accessed March 27, 2017).

<sup>77</sup> “Ukraine: Widespread Use of Cluster Munitions,” Human Rights Watch news release, October 20, 2014, <https://www.hrw.org/news/2014/10/20/ukraine-widespread-use-cluster-munitions> (accessed April 21, 2017).

<sup>78</sup> Ibid.

<sup>79</sup> OSCE, “Spot Report by the OSCE Special Monitoring Mission to Ukraine (SMM), 24 January 2015: Shelling Incident on Olimpiiska Street in Mariupol,” January 24, 2015, <http://www.osce.org/ukraine-smm/136061> (accessed March 20, 2017).

<sup>80</sup> Military Today, “BM-30 Smerch,” <http://www.military-today.com/artillery/smerch.htm> (accessed March 20, 2017).

<sup>81</sup> ARES, *Explosive Weapons in Populated Areas: Technical Considerations Relevant to Their Use and Effects*, p. 57, Table 2.10: Estimated Lethality of Common Artillery Rockets.

<sup>82</sup> Military Today, “BM-30 Smerch.”

<sup>83</sup> “Ukraine: More Civilians Killed in Cluster Munition Attacks,” Human Rights Watch news release, March 19, 2015.

## 4. Health Care System in Ukraine

The armed conflict in the east of Ukraine has had significant ramifications for the region’s health care system. While the country is known for having a broad-reaching and multi-tiered medical structure, the standard of care has been low for Europe, even without the fighting.<sup>84</sup> In the long run, this situation could make it more difficult for the system to recover from the conflict and the use of explosive weapons in particular. Systems that have been well managed and resourced prior to damage usually recover more quickly than those that have been neglected.<sup>85</sup> In the short term, medical personnel have had to overcome several conflict-related impediments to providing services. As will be detailed in Chapters 5-7, the use of explosive weapons in populated areas has had many adverse humanitarian impacts, but delays to reforms, obstacles to access, and heightened security risks have caused additional problems.

<sup>84</sup> Valery Lekhan et al., *Ukraine: Health System Review 2015*, 2015, [http://www.euro.who.int/\\_\\_data/assets/pdf\\_file/0018/280701/UkraineHiT.pdf](http://www.euro.who.int/__data/assets/pdf_file/0018/280701/UkraineHiT.pdf) (accessed March 4, 2017), p. 21; Health Strategic Advisory Group, *National Health Reform Strategy for Ukraine 2015-2020*, 2015,

[http://healthsag.org.ua/wp-content/uploads/2015/03/Strategiya\\_Engl\\_for\\_inet.pdf](http://healthsag.org.ua/wp-content/uploads/2015/03/Strategiya_Engl_for_inet.pdf) (accessed March 2, 2017), p. 8.

<sup>85</sup> Christina Wille and John Borrie, UN Institute for Disarmament Research (UNIDIR), *Understanding the Reverberating Effects of Explosive Weapons: A Way Forward*, 2016, <http://www.unidir.org/files/publications/pdfs/reverberating-effects-research-agenda-en-653.pdf> (accessed March 2, 2017), p. 5.

## Organizational Structure

Health care facilities in the east of Ukraine range from nurse's stations in small villages to advanced specialty departments at regional hospitals. According to Volodymyr Kolesnyk, the Ministry of Health's deputy director for Donetsk Oblast, Ukraine's health care system can be divided into four tiers:

- ◆ Primary care: family medicine services,
- ◆ Secondary care: district and municipal medical facilities,
- ◆ Tertiary care: regional hospitals and specialized care units, and
- ◆ Research laboratories.<sup>86</sup>

Emergency services, including ambulance substations, are another important component. This report focuses on primary and secondary health care and emergency services. In September 2016, the region's tertiary facilities were located in non-government controlled areas inaccessible to IHRC-PAX researchers.<sup>87</sup>

Due to the legacy of the Soviet era, Ukraine's health care system formally falls under the jurisdiction of the national Ministry of Health. In practice, however, much of the control has been decentralized. A 2015 study described the structure as "a complex multi-layered, sometimes parallel, system in which responsibilities in the health care sector are fragmented among central government . . . as well as 27 regional administrations and numerous administrative bodies at municipal, district and community levels."<sup>88</sup> Control over primary and secondary services, which encompasses the majority of health care, has been delegated to local (i.e., municipal and district) authorities. Tertiary and emergency services fall under the responsibility of the Ministry of Health's regional administrators, who are "financially and managerially independent."<sup>89</sup> The private health care sector, other than pharmacies, is quite small.<sup>90</sup>

## Standard of Care

Despite having "an extensive health care infrastructure,"<sup>91</sup> Ukraine's standard of health care has fallen far short of European standards, even setting aside the impact of the armed conflict. A 2014 publication, co-published by the Ministry of Health, found that "Ukraine presents one of the worst health profiles in the European region."<sup>92</sup> That document expressed concern about high out-of-pocket spending by patients, budgetary constraints, inefficient system design, decline in medical personnel, poor equipment, and corruption.<sup>93</sup> In 2015, the World Bank reported that the

<sup>86</sup> Interview with Volodymyr Kolesnyk, deputy director for Donetsk Oblast, Ministry of Health, Kramatorsk, September 19, 2016.

<sup>87</sup> Ibid.

<sup>88</sup> Lekhan et al., *Ukraine: Health System Review 2015*, p. xix.

<sup>89</sup> Ibid., pp. 18-21, 109.

<sup>90</sup> Ibid., p. 15; Health Strategic Advisory Group, *National Health Reform Strategy for Ukraine 2015-2020*, pp. 12-13.

<sup>91</sup> Lekhan et al., *Ukraine: Health System Review 2015*, p. 21.

<sup>92</sup> Health Strategic Advisory Group, *National Health Reform Strategy for Ukraine 2015-2020*, p. 8.

<sup>93</sup> Ibid., pp. 11-14.

country's "health outcomes remain very poor."<sup>94</sup> It found that the system has suffered from "inefficient allocation and use of resources, decades of neglected investments and rampant corruption in the sector."<sup>95</sup>

In November 2014, an advisory group that included the minister of health released a National Health Reform Strategy for 2015-2020. The minister wrote that the strategy sought to "revitalize and speed up the process of reforms in Health sector" and aimed to create a more "people-centered, outcomes oriented, and implementation focused" health care system.<sup>96</sup> The strategy's components included reducing what it described as the "exorbitant" number of beds.<sup>97</sup> As of 2015, Ukraine had approximately 40 percent more hospitals and hospital beds than the EU average,<sup>98</sup> and the number of beds determined the number of staff members per hospital.<sup>99</sup> While the extent of the policy's implementation is unclear, IHRC-PAX researchers did hear reports that downsizing had begun and that the government was not always replacing facilities damaged by the conflict or staff members displaced by it.<sup>100</sup> The IHRC-PAX report takes no position on the government's restructuring of the health care system; instead, it distinguishes the effects of the policy from those of the armed conflict. This report focuses on the humanitarian consequences of the reduction of staff and services attributable to the use of explosive weapons in populated areas.

## Impact of the Armed Conflict

As detailed in the rest of this report, explosive weapons have caused significant damage to the health care system in the east of Ukraine. They have not been the exclusive source of harm, however. Changed priorities, a new boundary line, and other security risks have also played a role.

While the loss of staff and departments may have ironically expedited the government's efforts to downsize, the armed conflict has generally slowed efforts to reform the health care system. According to a study published by the World Health Organization in 2015, "conflict and political instability have proved the greatest barrier to reform implementation. . . . [G]overnments have necessarily concentrated on more pressing humanitarian concerns."<sup>101</sup>

<sup>94</sup> Qimiao Fan, "Ukraine's Health System: Time for Change," *World Bank*, April 6, 2015, <http://www.worldbank.org/en/news/opinion/2015/04/06/ukraines-health-system-time-for-change> (accessed March 2, 2017).

<sup>95</sup> Ibid.

<sup>96</sup> Health Strategic Advisory Group, *National Health Reform Strategy for Ukraine 2015-2020*, p. 18.

<sup>97</sup> Ibid., p. 12. The strategy aimed to "[e]liminate duplication and reduce the need for available beds as per the existing norms." Ibid., p. 37.

<sup>98</sup> Fan, "Ukraine's Health System: Time for Change," *World Bank*.

<sup>99</sup> Lekhan et al., *Ukraine: Health System Review 2015*, p. 23.

<sup>100</sup> See, for example, interview with Dr. Victor Zinchenko, ambulance general assistance doctor, and staff member (name withheld), Krasnohorivka ambulance substation, Krasnohorivka, September 19, 2016; interview with Dr. Natalia Dolzhenko, head of therapy department, and nurse in therapy department (name withheld), Maryinka District Central Hospital, Krasnohorivka, September 20, 2016; interview with Volodymyr Kolesnyk, deputy director for Donetsk Oblast, Ministry of Health, Kramatorsk, September 19, 2016; interview with Dr. Viktoria Nikolova, head of family services and therapy department, Avdiivka City Hospital, Avdiivka, September 21, 2016.

<sup>101</sup> Lekhan et al., *Ukraine: Health System Review 2015*, p. xxi.

The contact line that splits the Donbass has had significant impacts on health care for residents. As of March 2017, the line cut through both the Donetsk and Luhansk oblasts and created an artificial divide in the region's health care services. Most of the specialized, tertiary health care is located in the city of Donetsk, part of the non-government controlled area of the self-proclaimed Donetsk People's Republic. Ministry of Health official Volodymyr Kolesnyk told IHRC-PAX researchers in September 2016 that "90 percent of the best equipment" was on that side of the line.<sup>102</sup> As a result, to access the care they needed, some residents in government controlled areas have had to make a lengthy and dangerous trip through the checkpoints to Donetsk city or had to travel to other regions of Ukraine.<sup>103</sup> Either approach has been expensive because residents have had to pay for transport and accommodation.<sup>104</sup> People who lack the time, freedom, or money to travel have often had to forgo specialist health care.

Military activities and security threats, beyond the use of explosive weapons in populated areas, have also interfered with the provision of health care. Ambulances have reportedly come under small arms fire, which has in some cases killed or injured ambulance personnel and patients.<sup>105</sup> Checkpoints have prevented medical personnel from accessing patients and patients from accessing nearby hospitals and clinics.<sup>106</sup> Travel has also been blocked by conflict-related destruction: for example, retreating forces blew up a bridge that prevented doctors and paramedics based in Galytsinivka from reaching patients.<sup>107</sup>

## PART II:

# FINDINGS

<sup>102</sup> Interview with Volodymyr Kolesnyk, deputy director for Donetsk Oblast, Ministry of Health, Kramatorsk, September 19, 2016.

<sup>103</sup> Interview with Marina Papuna, activist; Elena Horhulu, grandmother; and Maria Bero, mother, Starohnativka, September 22, 2016 (statements of all three) (Papuna, whose husband has had to travel to Donetsk city for treatment, said that since the armed conflict began, what used to be a 45-minute trip has taken six to seven hours due to the checkpoint delays).

<sup>104</sup> Interview with Volodymyr Kolesnyk, deputy director for Donetsk Oblast, Ministry of Health, Kramatorsk, September 19, 2016.

<sup>105</sup> Ibid. (reporting that sniper fire injured ambulance staff members and a patient in 2015); interview with Dr. Victor Zinchenko, ambulance general assistance doctor, and staff member (name withheld), Krasnohorivka ambulance substation, Krasnohorivka, September 19, 2016 (statement of Dr. Zinchenko) (reporting that two members of their substation and a patient died when an ambulance was shot at while at a checkpoint); interview with Dr. Lyudmila Tkachenko, head of clinic and general practitioner of family medicine, Galytsinivka Ambulatory Clinic, and paramedic (name withheld), Galytsinivka ambulance substation, Galytsinivka, September 21, 2016 (statement of paramedic) (recalling, "We received warning shots at the checkpost . . . over our heads to say we were standing there too long. No one was hurt, but it was scary.").

<sup>106</sup> Interview with Dr. Lyudmila Tkachenko, head of clinic and general practitioner of family medicine, Galytsinivka Ambulatory Clinic, and paramedic (name withheld), Galytsinivka ambulance substation, Galytsinivka, September 21, 2016 (statement of Dr. Tkachenko) (saying that "the checkpost was not a check but a block post. I couldn't get in village and villagers couldn't get out.").

<sup>107</sup> Ibid. (statements of both).

## Krasnohorivka Medical Facility



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# 5. Direct Harm to the Health Care System

The use of explosive weapons in populated areas has directly harmed the health care system in the east of Ukraine. Some explosive weapons have hit medical facilities, damaging structures and destroying ambulances parked on site. Other explosive weapons have detonated nearby, and their blast and fragmentation have shattered windows and caused additional damage to buildings. Shelling has also endangered and sometimes killed or injured health workers and patients.

## Damage to Medical Facilities and Ambulances

### *Krasnohorivka*

The impact of shelling on Maryinka District Central Hospital, located in Krasnohorivka, offers a striking example of the harm explosive weapons have inflicted on medical facilities in the region. This hospital, which serves patients from Krasnohorivka and Maryinka, reportedly housed at least a dozen departments and about 350 beds before the armed conflict. As of September 2016, only two departments, a general clinic, and 70 beds remained.<sup>108</sup> Shelling has also adversely affected the Krasnohorivka ambulance substation, which is located on the hospital grounds. As of September 2016, two ambulances continued to operate and were responsible for emergency calls

<sup>108</sup> Interview with hospital official (name withheld), Maryinka District Central Hospital, Krasnohorivka, September 20, 2016; interview with Dr. Natalia Dolzhenko, head of therapy department, and nurse in therapy department (name withheld), Maryinka District Central Hospital, Krasnohorivka, September 20, 2016.

within a 30-kilometer radius.<sup>109</sup> Victor Zinchenko, a doctor at the substation, reported that a recent decline in staff numbers had forced the substation to cut a typical ambulance team from four people to two. While the downsizing discussed in Chapter 4 contributed to the problem, Dr. Zinchenko estimated that about 30 percent of the attrition was due to the armed conflict.<sup>110</sup>



The painted word “shelter” marks the way to a protected section of Maryinka District Central Hospital in Krasnohorivka. Medical personnel and patients usually took cover in the hospital’s basement during the worst of the shelling.  
© Anton Skyba for International Human Rights Clinic at Harvard Law School and PAX / September 2016.

The hospital was caught in a crossfire of nearly constant shelling for two years beginning in 2014. When asked how many attacks they had witnessed, a doctor and nurse from the therapy department, both of whom worked at the hospital throughout the conflict, would not even venture a guess.<sup>111</sup> Department head Dr. Natalia Dolzhenko said, “No one counted them. If it happened, it happened.”<sup>112</sup> The therapy department nurse described one attack in which shells exploded near the hospital, and fragments landed on patients’ beds; fortunately the beds were unoccupied at the time.<sup>113</sup> The two women showed IHRC-PAX researchers pieces of the weapons that they kept in the staff room, and Dr. Dolzhenko noted that “everyone collects the shrapnel as souvenirs.”<sup>114</sup> The continuous shelling broke almost every window in the hospital at some point.<sup>115</sup> Dr. Dolzhenko recalled, “All the time you are feeling afraid for yourself and your patients when bullets and shelling are whistling all around.”<sup>116</sup> In cases of heavy shelling, staff members and patients would seek shelter in the basement of the hospital.<sup>117</sup>

<sup>109</sup> Interview with Dr. Victor Zinchenko, ambulance general assistance doctor, and staff member (name withheld), Krasnohorivka ambulance substation, Krasnohorivka, September 19, 2016 (statement of Dr. Zinchenko).

<sup>110</sup> Ibid. (statement of Dr. Zinchenko).

<sup>111</sup> Interview with Dr. Natalia Dolzhenko, head of therapy department, and nurse in therapy department (name withheld), Maryinka District Central Hospital, Krasnohorivka, September 20, 2016.

<sup>112</sup> Ibid. (statement of Dr. Dolzhenko).

<sup>113</sup> Ibid. (statement of nurse in therapy department).

<sup>114</sup> Ibid. (statement of Dr. Dolzhenko).

<sup>115</sup> Ibid. (statement of Dr. Dolzhenko).

<sup>116</sup> Ibid. (statement of Dr. Dolzhenko).

<sup>117</sup> Ibid. (statement of Dr. Dolzhenko).

Explosive weapons struck the medical facility on June 3, 2015, causing significant damage. The shelling in the area reportedly lasted from about 7 to 9 a.m.<sup>118</sup> Zinchenko, the doctor at the ambulance substation, said that he had just ended his shift when the shelling began. He and another staff member took cover in the hallway of the substation’s main building, leaving doors open on both sides to keep shockwaves from blowing the doors off their frames. The blast from a direct hit on the ambulance garage across the parking lot threw them against the wall, and fragments left pockmarks in the plaster just above their heads. Dr. Zinchenko remembered the staff trying to seek cover in the hospital’s basement: “We [were] all running there. It’s very scary when everything is gone. You’re outside with no protection.” The strike and fire it caused destroyed the garage, which had at least nine ambulance bays. Fire also burned one ambulance, and fragments damaged other ambulances.<sup>119</sup>



In June 2015, explosive weapons destroyed the ambulance garage of the Krasnohorivka ambulance substation and left a burned ambulance in the far right bay. Fire also damaged the adjacent neurology building of Maryinka District Central Hospital (left).  
© Anton Skyba for International Human Rights Clinic at Harvard Law School and PAX / September 2016.

The neurology department, which shares a wall with the ambulance garage, also felt the impact of the attack. The fire in the ambulance garage spread to the roof of the neurology building, forcing hospital personnel to evacuate a dozen patients across a lawn to another hospital building. Staff members had to carry many of the patients, particularly those who had suffered strokes or were immobilized due to back pain. Dr. Valentina Ksenofontova, the head of the neurology department, witnessed the attack and helped move the patients. The shelling, which she described as “massive,” continued throughout the evacuation and made the process terrifying and perilous.<sup>120</sup> Remembering that day, Dr. Ksenofontova said, “As a shell falls down, people start to cry and you need to find a way to reassure them.” She added, “To carry patients was also quite dangerous. . . . You know shells are falling but you don’t know where.”<sup>121</sup>

<sup>118</sup> Interview with Dr. Victor Zinchenko, ambulance general assistance doctor, and staff member (name withheld), Krasnohorivka ambulance substation, Krasnohorivka, September 19, 2016 (statement of Dr. Zinchenko).

<sup>119</sup> Ibid. (statement of Dr. Zinchenko).

<sup>120</sup> Interview with Dr. Valentina Ksenofontova, head of neurology department, Maryinka District Central Hospital, Krasnohorivka, September 20, 2016.

<sup>121</sup> Ibid.



Dr. Valentina Ksenofontova, head of the neurology department at Maryinka District Central Hospital in Krasnohorivka, helped carry immobilized patients to safety when the facility was shelled in June 2015.

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The fire brigade arrived at the hospital about 30 minutes after receiving a call from the ambulance staff.<sup>122</sup> Firefighters battled the flames as the shelling continued, but they ran out of water. Eventually water from the hospital well saved the neurology building from burning to the ground, although it continued to smoke and occasionally reignite for about 12 hours.<sup>123</sup>

By September 2016, the hospital had repaired the neurology department, but not the ambulance garage. IHRC-PAX researchers found that all that remained of the garage roof were twisted parts of the metal frame and collapsed sheets of corrugated steel. The burned-out ambulance, which was beyond repair, was still parked in its bay. A large pile of rubble spilled out of one end of the garage.

#### *Avdiivka*

In 2014 and 2015, explosive weapons caused significant direct damage to Avdiivka City Hospital. The facility serves the city of Avdiivka and local villages in the area.<sup>124</sup> Before the conflict, the hospital operated out of two buildings. After explosive weapons twice hit the larger, main building,

<sup>122</sup> Interview with Dr. Victor Zinchenko, ambulance general assistance doctor, and staff member (name withheld), Krasnohorivka ambulance substation, Krasnohorivka, September 19, 2016 (statement of Dr. Zinchenko).

<sup>123</sup> Interview with Dr. Valentina Ksenofontova, head of neurology department, Maryinka District Central Hospital, Krasnohorivka, September 20, 2016.

<sup>124</sup> Interview with Aleksandr Pasternak, chief engineer, Avdiivka Coke Plant, Metinvest, Avdiivka, September 21, 2016.

the hospital was forced to shut it down and relocate all of its services to the smaller structure, previously a maternity ward.<sup>125</sup> As of September 2016, the main building remained closed, and the hospital reportedly had only five departments and 150 beds.<sup>126</sup> Volodymyr Kolesnyk, deputy director of the Ministry of Health for Donetsk Oblast, estimated that the Avdiivka hospital was operating at around 30 percent of its original capacity at that time.<sup>127</sup>

Explosive weapons hit the five-story main building on September 3, 2014.<sup>128</sup> Neurology nurse Lyudmila Buravleva said she and other staff members cleaned up after the attack, collecting bricks and other pieces of debris, and carrying them out of the room on their shoulders in the dark because there was no electricity.<sup>129</sup>

In January 2015, the main building was hit again.<sup>130</sup> At that point, the hospital decided to move all medical personnel and services to the smaller building, and abandoned the main building almost completely.<sup>131</sup> The latter had sustained serious damage. For example, despite efforts to fix the roof, water flowed down to the third floor during heavy rains, a problem that continued in September 2016.<sup>132</sup> The attack also made it clear that people could not evacuate the main building quickly enough.<sup>133</sup>

Explosive weapons that detonated on the grounds next to the hospital caused further harm. Blast and fragmentation shattered almost every window in the main building and some in the small one. The Avdiivka Coke Plant, a major coke producer owned by Metinvest, repaired the hospital's windows on numerous occasions and replaced a total of 112 windows throughout the conflict.<sup>134</sup> According to a doctor and plant engineer, in one case, only two weeks to a month after installation of new windows, nearby explosions of shells broke 12 of them again.<sup>135</sup> When IHRC-PAX researchers visited the hospital in September 2016, they observed plywood and torn plastic sheeting covering dozens of windows. At the end of January 2017, two artillery shells exploded on the hospital grounds shattering additional windows, according to a photojournalist who visited the site immediately after the attack.<sup>136</sup>

<sup>125</sup> Interview with Volodymyr Kolesnyk, deputy director for Donetsk Oblast, Ministry of Health, Kramatorsk, September 19, 2016; interview with Dr. Viktoriya Nikolova, head of family services and therapy department, Avdiivka City Hospital, Avdiivka, September 21, 2016.

<sup>126</sup> Interview with Dr. Viktoriya Nikolova, head of family services and therapy department, Avdiivka City Hospital, Avdiivka, September 21, 2016.

<sup>127</sup> Interview with Volodymyr Kolesnyk, deputy director for Donetsk Oblast, Ministry of Health, Kramatorsk, September 19, 2016.

<sup>128</sup> "Eastern Ukraine: Both Sides Responsible for Indiscriminate Attacks," Amnesty International press release, November 6, 2014, <https://www.amnesty.org/en/latest/news/2014/11/eastern-ukraine-both-sides-responsible-indiscriminate-attacks/> (accessed March 3, 2017).

<sup>129</sup> Interview with Lyudmila Buravleva, neurology nurse, Avdiivka City Hospital, Avdiivka, September 21, 2016.

<sup>130</sup> Ibid.; interview with Dr. Viktoriya Nikolova, head of family services and therapy department, Avdiivka City Hospital, Avdiivka, September 21, 2016.

<sup>131</sup> Interview with Lyudmila Buravleva, neurology nurse, Avdiivka City Hospital, Avdiivka, September 21, 2016.

<sup>132</sup> Ibid.

<sup>133</sup> Interview with Aleksandr Pasternak, chief engineer, Avdiivka Coke Plant, Metinvest, Avdiivka, September 21, 2016.

<sup>134</sup> Ibid.

<sup>135</sup> Ibid.; interview with Dr. Viktoriya Nikolova, head of family services and therapy department, Avdiivka City Hospital, Avdiivka, September 21, 2016.

<sup>136</sup> Email from Anton Skyba, eyewitness and photojournalist, to PAX, March 30, 2017.

## Avdiivka City Hospital



▲  
North



Explosive weapons shattered dozens of windows in the main building of Avdiivka City Hospital. In 2015, the hospital abandoned the building and moved all of its operations to a second, smaller building, where they remained in September 2016.  
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### Other Damaged Facilities

The use of explosive weapons in populated areas has directly damaged health care facilities in several other communities in the east of Ukraine. The Center for Primary Medical Help in Maryinka experienced repeated shelling beginning in mid-2014. Dr. Olga Tokmakova, who worked at the center throughout the conflict, said, “It was a permanent process of receiving bullets and shells.”<sup>137</sup> Explosive weapons blew out windows and doors and knocked pieces of ceiling to the floor.<sup>138</sup> On January 26, 2015, the hospital sustained significant damage from heavy shelling and staff members were temporarily relocated, according to Médecins Sans Frontières (MSF).<sup>139</sup> In September 2016, IHRC-PAX researchers found some evidence of damage from fragmentation, but the hospital had largely been repaired and was operating again, at least in part.

Smaller medical facilities also felt the impact of the use of explosive weapons in populated areas. Dr. Lyudmila Tkachenko, head of the Galytsinivka Ambulatory Clinic, said that in 2014 shelling seriously damaged a paramedic office in Karlivka, a nearby village.<sup>140</sup> The paramedic who ran it escaped injury because she was on maternity leave at the time. As of September 2016, the office

<sup>137</sup> Interview with Dr. Olga Tokmakova, deputy head of medical services for civilians and gynecologist, Center for Primary Medical Help, Maryinka, September 20, 2016.

<sup>138</sup> Ibid.

<sup>139</sup> Médecins Sans Frontières, “Ukraine: MSF Calls for Safety of Civilians and Respect for Medical Facilities,” February 3, 2015, <http://www.msf.ie/article/ukraine-msf-calls-safety-civilians-and-respect-medical-facilities> (accessed March 3, 2017).

<sup>140</sup> Interview with Dr. Lyudmila Tkachenko, head of clinic and general practitioner of family medicine, Galytsinivka Ambulatory Clinic, and paramedic (name withheld), Galytsinivka ambulance substation, Galytsinivka, September 21, 2016 (statement of Dr. Tkachenko).

had not been repaired or reopened, and the Karlivka paramedic was forced to work out of the Galytsinivka ambulance substation.<sup>141</sup> In Mayorsk, a village located in the gray zone—i.e., the buffer zone between government and non-government controlled areas—residents reported that fragments from an explosive weapon struck their local nursing point early in the armed conflict, causing superficial damage.<sup>142</sup>

## Harm to Medical Personnel and Patients

Besides damaging buildings, the use of explosive weapons in populated areas in the east of Ukraine has also put health care workers and their patients at risk and caused some casualties. For example, Amnesty International reported that 66-year-old Taisiya Yurchenko, a patient in the trauma department of Avdiivka City Hospital, died from fragmentation wounds sustained in the September 3, 2014 strike.<sup>143</sup> The same attack injured a 65-year-old nurse, Vera Ivanovna, who was moving patients to the basement to protect them from the shelling. She told IHRC-PAX researchers that as she carried a patient out of Room 5, she heard an explosion in Room 1. Then she felt a hot sensation in her legs and stomach and saw that she had suffered several injuries and lost part of her finger. Doctors immediately operated on the nurse, by candlelight because the power was out, but they had to leave at least one piece of shrapnel in her stomach. The nurse showed researchers shrapnel scars on both legs and her left arm. She said she underwent rehabilitation for four months and then took a month's leave before returning to work at the hospital.<sup>144</sup>

Sloviansk Central Hospital lost at least one staff member to explosive weapons. Shelling occurred near the facility in mid-2014, according to Vladimir Stepanov, the hospital's senior doctor.<sup>145</sup> An explosive weapon that detonated approximately 100 meters from the hospital injured a female surgery nurse. She ultimately died from her fragmentation wounds.<sup>146</sup>

There have likely been additional casualties among medical personnel and patients in parts of the east of Ukraine that IHRC-PAX researchers did not visit. Hospitals have taken great care to protect human life, however, and may thereby have reduced the total number of deaths and injuries. As will be discussed in Chapter 7, personnel and patients have frequently taken shelter in windowless parts of hospitals, and hospitals have sometimes sent patients home where it was safer. Casualties among staff members and patients may also have been limited because many people have fled the region and those who remained have often found it too dangerous to travel to hospitals for work or treatment.

<sup>141</sup> Ibid. (statement of paramedic).

<sup>142</sup> Interview with shopkeepers #1 and #2 (names withheld) and Elena Shtoda, head of Free Mayorsk, Mayorsk, September 24, 2016.

<sup>143</sup> "Eastern Ukraine: Both Sides Responsible for Indiscriminate Attacks," Amnesty International press release, November 6, 2014. See also interview with Dr. Viktoria Nikolova, head of family services and therapy department, Avdiivka City Hospital, Avdiivka, September 21, 2016.

<sup>144</sup> Interview with Vera Ivanovna, nurse, Avdiivka City Hospital, Avdiivka, September 21, 2016; see also "Eastern Ukraine: Both Sides Responsible for Indiscriminate Attacks," Amnesty International press release, November 6, 2014.

<sup>145</sup> Interview with Dr. Vladimir Stepanov, head doctor, Sloviansk Central Hospital, Sloviansk, September 18, 2016.

<sup>146</sup> Ibid.

# 6. Indirect Harm to the Health Care System

In addition to affecting the health care system in the east of Ukraine directly, the use of explosive weapons in populated areas has inflicted harm indirectly by damaging infrastructure and creating travel risks for medical personnel. In other words, the health care system has felt the reverberating effects of explosive weapons that have damaged other sites and services. Shelling has caused widespread and long-term interruptions to the provision of utilities essential to health care, including electricity, water, heat, and communication, and has made restoring these services a slow and dangerous process. In addition, the use of explosive weapons has in some cases prevented health professionals from reaching their places of work and ambulances from responding to emergency calls.

## Damage to Infrastructure

### Power Outages

Explosive weapons have significantly disrupted the delivery of electricity, a utility critical to the operation of medical facilities. Electricity powers key equipment, such as refrigerators that preserve vaccines and other medicines; electrocardiograph (EKG) machines, which monitor heart rates; and ultraviolet lamps used, for example, to treat skin conditions.<sup>147</sup> Electricity runs elevators

<sup>147</sup> See, for example, interview with Dr. Lyudmila Bagmut, executive doctor and pediatrician, Granitne Ambulatory Clinic, Granitne, September 23, 2016.

that transport patients from floor to floor. It provides light that illuminates operating rooms and allows hospitals to provide care at night. Electricity is also needed to sterilize surgical and other instruments.<sup>148</sup>



Shelling has severed power lines and poles throughout the region, depriving hospitals of electricity needed for essential operations. © Anton Skyba for International Human Rights Clinic at Harvard Law School and PAX / September 2016.

All of the hospitals visited by IHRC-PAX researchers experienced power outages due to the shelling. In several towns and cities, including Avdiivka, Galytsinivka, and Slovyansk, fragments from explosive weapons reportedly cut wires that carried electricity to health care facilities as well as homes and businesses.<sup>149</sup> In at least three communities—Granitne, Krasnohorivka, and Maryinka—local interviewees said explosive weapons also hit transformers, which are necessary for the transmission and distribution of electricity.<sup>150</sup>

<sup>148</sup> Interview with Dr. Viktoria Nikolova, head of family services and therapy department, Avdiivka City Hospital, Avdiivka, September 21, 2016.

<sup>149</sup> See, for example, interview with Aleksandr Pasternak, chief engineer, Avdiivka Coke Plant, Metinvest, Avdiivka, September 21, 2016; interview with Lyudmila Buravleva, neurology nurse, Avdiivka City Hospital, Avdiivka, September 21, 2016; interview with Dr. Lyudmila Tkachenko, head of clinic and general practitioner of family medicine, Galytsinivka Ambulatory Clinic, and paramedic (name withheld), Galytsinivka ambulance substation, Galytsinivka, September 21, 2016; interview with Dr. Vladimir Stepanov, head doctor, Slovyansk Central Hospital, Slovyansk, September 18, 2016. See also interview with shopkeeper #1 (name withheld), Granitne, September 23, 2016; interview with hospital official (name withheld), Maryinka District Central Hospital, Krasnohorivka, September 20, 2016; interview with Dr. Olga Tokmakova, deputy head of medical services for civilians and gynecologist, Center for Primary Medical Help, Maryinka, September 20, 2016.

<sup>150</sup> See, for example, interview with shopkeeper #1 (name withheld), Granitne, September 23, 2016 (saying, “The transformer was hit. The wires were cut.”); interview with Aleksandr Kisil, paramedic, entry control point near Maryinka, September 22, 2016 (saying that fragments hit electricity lines, transformers, and substations in Krasnohorivka and Maryinka).

The power outages that have affected hospitals in the east of Ukraine have generally been wide reaching and long lasting. Avdiivka City Hospital lost its power in 2015 as part of an outage that Aleksandr Pasternak, chief engineer at the Avdiivka Coke Plant, estimated affected between three to four thousand people in the city.<sup>151</sup> The hospital went without power for about six months, according to Dr. Viktoria Nikolova, a senior doctor and department head.<sup>152</sup> On January 30, 2017, renewed shelling cut a key power line between the Avdiivka Coke Plant and Avdiivka, leaving the city of 16,000 without electricity for about a week.<sup>153</sup> Even after power was restored on February 5, OCHA reported, the city was running “mainly on three high-power generators to ensure minimum services.”<sup>154</sup> In addition, OCHA warned that “the ongoing hostilities still pose a risk of new or repeated damage to the infrastructure.”<sup>155</sup> The city, and thus its hospital, remain vulnerable to future use of explosive weapons.

Other cities and towns have also felt the impacts of severe power outages. The head doctor at Slovyansk Central Hospital said that when shells knocked out electricity lines across the city, the damage was “massive” and caused “hospitals and the whole city to have the same problem.”<sup>156</sup> His hospital had no electricity for at least several weeks.<sup>157</sup> A resident of Granitne reported that her village on the front line lost power for 280 days during the first year of the armed conflict.<sup>158</sup>

#### *Compromised Water Supply*

The use of explosive weapons in populated areas has also damaged hospitals’ water mains. Water is crucial to maintaining hygiene at medical facilities. Health workers use water to wash patients and to clean hospital buildings and equipment.<sup>159</sup> In addition, patients need potable water to drink. Consumption of non-potable water can exacerbate patients’ health problems and increase the influx of patients if other individuals are exposed to disease.

The effects of the damage to water mains has extended across the region and in some cases lasted for years. The loss of one pipe can disrupt the water supply to thousands of people, explained Yanna Thay, humanitarian affairs officer at OCHA in Kramatorsk.<sup>160</sup> Medical professionals in the cities and towns visited by IHRC-PAX researchers described long periods of time in which their hospitals’ water supplies were cut off or limited. For example, in September 2016, Dr. Natalia Dolzhenko, head of the therapy department, estimated that Maryinka District Central Hospital had operated without municipal water for about two years. She said, “We are receiving only promises

<sup>151</sup> Interview with Aleksandr Pasternak, chief engineer, Avdiivka Coke Plant, Metinvest, Avdiivka, September 21, 2016.

<sup>152</sup> Interview with Dr. Viktoria Nikolova, head of family services and therapy department, Avdiivka City Hospital, Avdiivka, September 21, 2016.

<sup>153</sup> OCHA, “Ukraine Update: Deterioration of the Humanitarian Situation in the East,” Update No. 1, February 6, 2017, <http://reliefweb.int/report/ukraine/ukraine-update-no-1-deterioration-humanitarian-situation-east-6-february-2017> (accessed March 7, 2017), p. 1 (noting, “The use of heavy artillery, including multi-rocket launchers (MLRS ‘GRAD’), was widely reported.”); OCHA, “Ukraine Update: Deterioration of the Humanitarian Situation in the East,” Update No. 2, February 13, 2017, [http://reliefweb.int/sites/reliefweb.int/files/resources/ukraine\\_update\\_issue\\_2\\_10\\_feb\\_final\\_0.pdf](http://reliefweb.int/sites/reliefweb.int/files/resources/ukraine_update_issue_2_10_feb_final_0.pdf) (accessed March 7, 2017), p. 1.

<sup>154</sup> OCHA, “Ukraine Update: Deterioration of the Humanitarian Situation in the East,” Update No. 1, February 6, 2017, pp. 1-2.

<sup>155</sup> *Ibid.*, p. 1.

<sup>156</sup> Interview with Dr. Vladimir Stepanov, head doctor, Slovyansk Central Hospital, Slovyansk, September 18, 2016.

<sup>157</sup> *Ibid.*

<sup>158</sup> Interview with shopkeeper #1 (name withheld), Granitne, September 23, 2016.

<sup>159</sup> Interview with Dr. Valentina Ksenofontova, head of neurology department, Maryinka District Central Hospital, Krasnohorivka, September 20, 2016 (washing patients); interview with Dr. Viktoria Nikolova, head of family services and therapy department, Avdiivka City Hospital, Avdiivka, September 21, 2016 (cleaning).

<sup>160</sup> Interview with Yanna Thay, humanitarian affairs officer, OCHA, Kramatorsk, September 19, 2016.

the pipe will be repaired.”<sup>161</sup> At that time, the facility was relying on well water, which staff members carried to the hospital each day. Two doctors predicted that even if the well were connected to the hospital water system, the water would freeze and burst the pipes during the winter because the hospital lacked heat.<sup>162</sup> Other affected medical facilities included the Center for Primary Medical Help in Maryinka<sup>163</sup> and Slovyansk Central Hospital.<sup>164</sup>

In some cases, disruption of the water supply has recurred after repairs. In Avdiivka, Aleksandr Usor of the city’s utility service company and Dr. Nikolova of Avdiivka City Hospital recalled water restrictions in 2015 that lasted six months.<sup>165</sup> As a result of renewed shelling in January 2017, Avdiivka experienced another severe water shortage. The loss of electricity on January 30 shut down the Donetsk Filtration Station, which usually provides water to about 400,000 people in the city and neighboring towns on both sides of the contact line.<sup>166</sup> The ICRC reported that despite efforts to repair it, the station had yet to be restarted by March 4.<sup>167</sup> The following day, the OSCE stated that the station had been shelled, further delaying the restoration of water services.<sup>168</sup>

The use of explosive weapons in populated areas has not only decreased the quantity of available water, but also compromised its quality. Bacteria growing within pipes broken by shelling has at times contaminated the water.<sup>169</sup> According to Yanna Thay of OCHA, the quality of water can be adversely affected even when pipes were not completely destroyed.<sup>170</sup>

#### Loss of Heat

Explosive weapons have also severed hot water tubes and above-ground gas lines that provide heat to medical facilities. Hospitals require heat to keep patients comfortable, which promotes healing, and to prevent the development of illness related to cold weather, such as bronchitis and pneumonia.<sup>171</sup> Heat is also necessary to make working conditions tolerable for staff, especially when windows are broken and the average winter temperature in the east of Ukraine is -6 degrees Celsius (21 degrees Fahrenheit).<sup>172</sup>

<sup>161</sup> Interview with Dr. Natalia Dolzhenko, head of therapy department, and nurse in therapy department (name withheld), Maryinka District Central Hospital, Krasnohorivka, September 20, 2016 (statement of Dr. Dolzhenko).  
<sup>162</sup> Ibid. (statement of Dr. Dolzhenko); interview with Dr. Valentina Ksenofontova, head of neurology department, Maryinka District Central Hospital, Krasnohorivka, September 20, 2016.  
<sup>163</sup> Interview with Dr. Olga Tokmakova, deputy head of medical services for civilians and gynecologist, Center for Primary Medical Help, Maryinka, September 20, 2016.  
<sup>164</sup> Interview with Dr. Vladimir Stepanov, head doctor, Slovyansk Central Hospital, Slovyansk, September 18, 2016.  
<sup>165</sup> Interview with Aleksandr Usor, head of brigade, Utility Service Company, and Vladimir Yuhimishin, resident, Avdiivka, September 21, 2016 (statement of Aleksandr Usor); interview with Dr. Viktoria Nikolova, head of family services and therapy department, Avdiivka City Hospital, Avdiivka, September 21, 2016. See also interview with Lyudmila Buravleva, neurology nurse, Avdiivka City Hospital, Avdiivka, September 21, 2016.  
<sup>166</sup> OCHA, “Ukraine Update: Deterioration of the Humanitarian Situation in the East,” Update No. 1, February 6, 2017, p. 1.  
<sup>167</sup> ICRC Ukraine twitter feed, March 4, 2017, [https://twitter.com/ICRC\\_ua](https://twitter.com/ICRC_ua) (accessed March 7, 2017).  
<sup>168</sup> OSCE SMM Ukraine twitter feed, March 5, 2017, [https://twitter.com/OSCE\\_SMM](https://twitter.com/OSCE_SMM) (accessed March 7, 2017).  
<sup>169</sup> Interview with Yanna Thay, humanitarian affairs officer, OCHA, Kramatorsk, September 19, 2016 (explaining that even if a pipe is not completely destroyed, water quality declines when bacteria can penetrate it); interview with Fatima Yandjeva, education specialist, UNICEF, Kramatorsk, September 19, 2016.  
<sup>170</sup> Interview with Yanna Thay, humanitarian affairs officer, OCHA, Kramatorsk, September 19, 2016.  
<sup>171</sup> Interview with Dr. Lyudmila Bagmut, executive doctor and pediatrician, Granitne Ambulatory Clinic, Granitne, September 23, 2016.  
<sup>172</sup> Climates to Travel, “Climate—Ukraine,” undated, <http://www.climatestotravel.com/climate/ukraine> (accessed March 3, 2017).



Aleksandr Pasternak, chief engineer at the Avdiivka Coke Plant, described how explosive weapons damaged tubes that carried heated water from the plant to Avdiivka, forcing the hospital to treat patients in frigid conditions.  
 © Anton Skyba for International Human Rights Clinic at Harvard Law School and PAX / September 2016.

IHRC-PAX researchers documented the loss of heat in medical facilities in a number of communities, including Avdiivka, Granitne, Krasnohorivka, and Maryinka.<sup>173</sup> Aleksandr Pasternak of the Avdiivka Coke Plant explained that in late January 2015 an explosive weapon hit the connection tube that carried heated water five kilometers from the plant to the city of Avdiivka, thereby disrupting the provision of heat to the city.<sup>174</sup> Aleksandr Usor, the utility repair worker, who was overseeing repairs to the tube at the time of his September 2016 interview, estimated that the 2015 outage lasted about six months.<sup>175</sup> Avdiivka experienced another citywide breakdown of its heating system after shelling on January 30, 2017, shut down its supply of electricity and water.<sup>176</sup> In Mayorsk, a shopkeeper explained in early September 2016 that there had been no gas to fuel heat in the village since late 2014.<sup>177</sup>

<sup>173</sup> Interview with Dr. Viktoria Nikolova, head doctor of family services and therapy department, Avdiivka City Hospital, Avdiivka, September 21, 2016; interview with Dr. Lyudmila Bagmut, executive doctor and pediatrician, Granitne Ambulatory Clinic, Granitne, September 23, 2016; interview with hospital official (name withheld), Maryinka District Central Hospital, Krasnohorivka, September 20, 2016; interview with Dr. Natalia Dolzhenko, head of therapy department, and nurse in therapy department (name withheld), Maryinka District Central Hospital, Krasnohorivka, September 20, 2016; interview with Dr. Valentina Ksenofontova, head of neurology department, Maryinka District Central Hospital, Krasnohorivka, September 20, 2016; interview with Dr. Olga Tokmakova, deputy head doctor for medical services for civilians and gynecologist, Center for Primary Medical Help, Maryinka, September 20, 2016.  
<sup>174</sup> Interview with Aleksandr Pasternak, chief engineer, Avdiivka Coke Plant, Metinvest, Avdiivka, September 21, 2016.  
<sup>175</sup> Interview with Aleksandr Usor, head of brigade, Utility Service Company, and Vladimir Yuhimishin, resident, Avdiivka, September 21, 2016 (statement of Aleksandr Usor).  
<sup>176</sup> OCHA, “Ukraine Update: Deterioration of the Humanitarian Situation in the East,” Update No. 1, February 6, 2017.  
<sup>177</sup> Interview with shopkeepers #1 and #2 (names withheld) and Elena Shtoda, head of Free Mayorsk, Mayorsk, September 24, 2016 (statement of Elena Shtoda).

### Unreliable Communications

By severing phone lines and damaging cell phone towers, explosive weapons have cut communications with medical facilities and personnel as well as with ambulance services. Local people need to be able to speak with health care providers, who can advise them on treatment over the phone, especially in cases of emergency. Residents also need to be able to communicate quickly and clearly with ambulance dispatchers so that paramedics arrive as soon as possible and are prepared to provide proper care. Reliable networks are especially critical during armed conflict when it can be dangerous for individuals to search for a cell phone signal outdoors.<sup>178</sup>

Shelling affected both landline and cell phone services in a number of locations visited by IHRC-PAX researchers in September 2016, including Granitne, Krasnohorivka, Maryinka, Mayorsk, Slovyansk, and Starohnativka.<sup>179</sup> A resident of Granitne told researchers that the town telephone station, located in the post office, was hit on one of the first days of shelling, cutting communications.<sup>180</sup> Cell phones in that town and elsewhere were frequently an unreliable alternative, and sometimes did not function at all.<sup>181</sup> The Granitne resident described her cell phone connection



Explosive weapons knocked out Granitne's telephone station, located in the town post office, on one of the first days of the armed conflict. The loss of the station made it more difficult for residents to communicate with the hospital or ambulance station. © Anton Skyba for International Human Rights Clinic at Harvard Law School and PAX / September 2016.

<sup>178</sup> Interview with hairdresser, shopkeeper #2, and resident #2 (names withheld), Granitne, September 23, 2016 (statement of shopkeeper); interview with resident #1 (name withheld), Granitne, September 23, 2016.

<sup>179</sup> Interview with shopkeeper #1 (name withheld), Granitne, September 23, 2016; interview with Dr. Lyudmila Bagmut, executive doctor and pediatrician, Granitne Ambulatory Clinic, Granitne, September 23, 2016; interview with Dr. Victor Zinchenko, ambulance general assistance doctor, and staff member (name withheld), Krasnohorivka ambulance substation, Krasnohorivka, September 19, 2016 (statement of staff member); interview with Aleksandr Kisil, paramedic, entry control point near Maryinka, September 22, 2016; interview with shopkeepers #1 and #2 (names withheld) and Elena Shtoda, head of Free Mayorsk, Mayorsk, September 24, 2016 (statement of Elena Shtoda); interview with Dr. Vladimir Stepanov, head doctor, Slovyansk Central Hospital, Slovyansk, September 18, 2016; interview with Dr. Elena Baturina, Starohnativka Ambulatory Clinic, Starohnativka, September 22, 2016.

<sup>180</sup> Interview with resident #1 (name withheld), Granitne, September 23, 2016.

<sup>181</sup> Ibid.

as “jumping” and attributed this problem to the loss of electricity due to shelling.<sup>182</sup> Dr. Elena Baturina of the Starohnativka Ambulatory Office said shelling damaged the cell phone connection, making it “very challenging to call an ambulance.”<sup>183</sup>

### Compounded Harm

The damage caused by explosive weapons to one type of infrastructure has often adversely affected another type, which has in turn harmed health care. For example, electricity outages, like the one in Avdiivka in January 2017, have shut down pumping stations, interfering with the supply of water to hospitals.<sup>184</sup> Loss of power has prevented the use of electricity to back up gas as a source of heat.<sup>185</sup> It has also interfered with communications because both portable landlines and cell phones require charging. The provision of water and gas have also been linked: loss of heat can cause pipes to freeze, thereby affecting the water supply.<sup>186</sup>

### Challenges of Repairs

The dangers posed by the use of explosive weapons in populated areas have frequently made repairing infrastructure slow and difficult, and thus led to longer-term problems for medical facilities.<sup>187</sup> A shopkeeper in the frontline village of Granitne recalled that military clashes often interrupted repairs.<sup>188</sup> Col. Mykola Tsybulko and Col. Vadym Borysenko, of the Civil-Military Cooperation system (CIMIC) of the Ukrainian Armed Forces, said that a ceasefire was a necessary precondition to conducting repairs.<sup>189</sup> In some cases, repairs had to wait for the completion of the demining process because of the risks explosive remnants of war posed to workers.<sup>190</sup> “It’s a question about risk assessment and security issues,” said Pasternak, the Avdiivka Coke Plant engineer. “You need a lot of time and resources arranging security. If someone is wounded or dies on reparation, then no one will do it.”<sup>191</sup>

<sup>182</sup> Ibid.

<sup>183</sup> Interview with Dr. Elena Baturina, Starohnativka Ambulatory Clinic, Starohnativka, September 22, 2016.

<sup>184</sup> OCHA, “Ukraine Update: Deterioration of the Humanitarian Situation in the East,” Update No. 1, February 6, 2017. See also interview with Col. Mykola Tsybulko, chief, and Col. Vadym Borysenko, Civil-Military Cooperation (CIMIC), Kramatorsk, September 19, 2016 (statement of Col. Tsybulko).

<sup>185</sup> Interview with Dr. Olga Tokmakova, deputy head of medical services for civilians and gynecologist, Center for Primary Medical Help, Maryinka, September 20, 2016.

<sup>186</sup> Interview with Dr. Natalia Dolzhenko, head of therapy department, and nurse in therapy department (name withheld), Maryinka District Central Hospital, Krasnohorivka, September 20, 2016.

<sup>187</sup> Interview with Yanna Thay, humanitarian affairs officer, OCHA, Kramatorsk, September 19, 2016; interview with hospital official (name withheld), Maryinka District Central Hospital, Krasnohorivka, September 20, 2016; interview with Dr. Lyudmila Tkachenko, head of clinic and general practitioner of family medicine, Galytsinivka Ambulatory Clinic, and paramedic (name withheld), Galytsinivka ambulance substation, Galytsinivka, September 21, 2016 (statements of both); interview with Fatima Yandieva, education specialist, UNICEF, Kramatorsk, September 19, 2016 (adding that the process of repairing water pipes damaged by explosive weapons can also adversely affect medical facilities by necessitating a shutdown of the whole water system).

<sup>188</sup> Interview with shopkeeper #1 (name withheld), Granitne, September 23, 2016.

<sup>189</sup> Interview with Col. Mykola Tsybulko, chief, and Col. Vadym Borysenko, CIMIC, Kramatorsk, September 19, 2016 (statements of both).

<sup>190</sup> Interview with Aleksandr Pasternak, chief engineer, Avdiivka Coke Plant, Metinvest, Avdiivka, September 21, 2016. The OSCE reported that mine clearance and a ceasefire were necessary to facilitate repairs on the Donetsk Filtration Station, which provides water to Avdiivka and surrounding communities. OSCE, “Latest from the OSCE Special Monitoring Mission to Ukraine (SMM), Based on Information Received as of 19:30, 3 March 2017,” OSCE daily report, March 4, 2017, <http://www.osce.org/ukraine-smm/302856> (accessed March 7, 2017).

<sup>191</sup> Interview with Aleksandr Pasternak, chief engineer, Avdiivka Coke Plant, Metinvest, Avdiivka, September 21, 2016. See also interview with Dr. Vladimir Stepanov, head doctor, Slovyansk Central Hospital, Slovyansk, September 18, 2016 (saying that in some cases repairs were made quickly and services were restored straight away, but in others repairs took a long time because the situation made it too dangerous for repair services to work).



Workmen repair heating pipes near Avdiivka City Hospital in September 2016. Shelling has often presented obstacles to repairing damaged infrastructure in the east of Ukraine.  
© Anton Skyba for International Human Rights Clinic at Harvard Law School and PAX / September 2016.

## Travel Risks for Medical Personnel

Shelling has posed security concerns for medical personnel as well as repair workers. Many health care professionals in the east of Ukraine have risked their lives in order to help the sick and wounded, but shelling has limited their best efforts in two ways. First, the threats posed by shelling have at times denied doctors, nurses, ambulance teams, and other medical personnel access to their workplaces where they care for patients. Some staff members have even felt compelled to flee the region in order to protect themselves and their families. Second, shelling has often made it too dangerous for ambulance drivers and paramedics to respond to emergency calls, even if they can reach their stations for their shifts.

### *Obstacles to Reaching Medical Facilities*

The use of explosive weapons in populated areas has made accessing medical facilities in the east of Ukraine a life-threatening endeavor for many staff members. Dr. Andrey Markevich of the Granitne Ambulatory Clinic said that “the biggest security issue was to get to my job here.”<sup>192</sup> Describing one of his drives from home to hospital, he said, “The village was in the crossfire. There were military positions behind it on both sides. . . . [M]issed shells were falling down from both sides.”<sup>193</sup>

<sup>192</sup> Interview with Dr. Andrey Markevich, ambulatory doctor, Granitne Ambulatory Clinic, Granitne, September 23, 2016.

<sup>193</sup> Ibid.

In some cases, the risks of explosive weapons use could not be overcome. Dr. Lyudmila Bagmut, executive doctor and pediatrician at Granitne Ambulatory, regularly braved shelling as she bicycled 15 kilometers from Kamyanka to her clinic every day.<sup>194</sup> On at least two occasions, however, shelling kept her away. In early 2015, on the same day her husband was evacuating their children, shelling was particularly heavy. As she passed a checkpoint, “shelling came in, and I fell down in the ditch. I started running down, but I had a feeling shells were following me and I was changing my position. I left one ditch, and the shells fell down there. It was the most scary experience I have passed through.” Dr. Bagmut said she prayed to God, “If you consider it is safe there, give me the force to pass through. If you think it is not safe, give me more fear.” She added, “Because I was coming from uphill, I saw the village, and I saw blasts every second. I was thinking, ‘Will I be useful if I die?’”<sup>195</sup> Ultimately Dr. Bagmut determined the danger was too great and returned home.<sup>196</sup>



Dr. Lyudmila Bagmut, executive doctor and pediatrician at Granitne Ambulatory Clinic, braved heavy shelling to reach work every day during the height of the armed conflict. On at least two occasions, shelling kept her from reaching the clinic.  
© Anton Skyba for International Human Rights Clinic at Harvard Law School and PAX / September 2016.

<sup>194</sup> Interview with Dr. Lyudmila Bagmut, executive doctor and pediatrician, Granitne Ambulatory Clinic, Granitne, September 23, 2016.

<sup>195</sup> Ibid.

<sup>196</sup> Ibid.

## Granitne Ambulatory Clinic



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Other doctors related similar experiences. Dr. Olga Tokmakova at the Center for Primary Medical Help in Maryinka remembered particularly heavy shelling during an offensive operation in the area on June 3, 2015, the same day as the attack on the Krasnohorivka ambulance substation discussed in Chapter 5. Dr. Tokmakova could not safely reach the hospital from her home in Krasnohorivka and instead sought shelter in her basement.<sup>197</sup>

The use of explosive weapons has made it especially difficult for medical personnel to travel along the front line and in the gray zone. Volodymyr Kolesnyk, the deputy director of the Ministry of Health for Donetsk Oblast, explained: “The dangerous part is mostly along the contact line. You can’t send civilian medics to a dangerous zone.”<sup>198</sup> According to Dmitri Shybalov of the local NGO Responsible Citizens, there has been “no medical care, no pharmacy, nurses, doctors, nothing” for villages within 10 kilometers of the contact line.<sup>199</sup> The medical staff that used to work and live in those villages has largely left, and security concerns have deterred others from taking their place.<sup>200</sup> A military paramedic who was working along the contact line for ASAP, a military ambulance service that sometimes assists civilians, explained, “Personal safety is the biggest instinct. Not a lot of doctors are willing to go here because every hour poses a threat to life.”<sup>201</sup>

While many medical professionals have tried to continue their work in the east of Ukraine despite the risks, shelling has motivated others to move away from the conflict zone. Dr. Viktoriya Nikolova reported that some of her colleagues at Avdiivka City Hospital went to safer parts of the country during the height of hostilities. One doctor relocated to Kramatorsk after she was injured by shelling.<sup>202</sup> Dr. Nikolova said, “People fled because they wanted to save themselves and their families.” After a direct hit on her hospital in late January 2015, the doctor left for four months: “I decided to save myself because I was living in the [hospital] building and watching shells fall down.”<sup>203</sup> The head doctor at Slovyansk Central Hospital said that the hospital lost almost 20 percent of its personnel because staff members fled the area due to the conflict.<sup>204</sup>

Some interviewees also attributed the departure of ambulance staff to the use of explosive weapons. For example, while in September 2016 three paramedics worked in Granitne, reportedly only one had stayed on during the worst of the shelling from October 2014 to February 2015. As a result, the ambulance station was unable to operate at full capacity during those months.<sup>205</sup>

<sup>197</sup> Interview with Dr. Olga Tokmakova, deputy head of medical services for civilians and gynecologist, Center for Primary Medical Help, Maryinka, September 20, 2016.

<sup>198</sup> Interview with Volodymyr Kolesnyk, deputy director for Donetsk Oblast, Ministry of Health, Kramatorsk, September 19, 2016.

<sup>199</sup> Interview with Dmitri Shybalov, Responsible Citizens, Kramatorsk, September 18, 2016.

<sup>200</sup> Interview with shopkeepers #1 and #2 (names withheld) and Elena Shtoda, head of Free Mayorsk, Mayorsk, September 24, 2016 (statement of shopkeeper #1); interview with Dmitri Shybalov, Responsible Citizens, Kramatorsk, September 18, 2016; interview with UNICEF officials (names withheld), Kiev, September 16, 2016.

<sup>201</sup> Interview with military paramedic (name withheld), ASAP; Dr. Igor Maidenko, head of pediatrics department, Dnipro Regional Child Hospital, and ASAP volunteer; and Aleksey Turchak, civilian paramedic and ASAP volunteer, ASAP camp near contact line crossing point, September 24, 2016 (statement of military paramedic).

<sup>202</sup> Interview with Dr. Viktoriya Nikolova, head of family services and therapy department, Avdiivka City Hospital, Avdiivka, September 21, 2016.

<sup>203</sup> Ibid.

<sup>204</sup> Interview with Dr. Vladimir Stepanov, head doctor, Slovyansk Central Hospital, Slovyansk, September 18, 2016.

<sup>205</sup> Interview with hairdresser, shopkeeper #2, and resident #2 (names withheld), Granitne, September 23, 2016 (statement of hairdresser).

## Center for Primary Medical Help in Maryinka



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The decision of some staff to escape the shelling is understandable, and it highlights how the use of explosive weapons in populated areas can adversely affect health services. Ministry of Health official Volodymyr Kolesnyk explained: “When medical staff leave the territory, those that live there can’t get medical care.”<sup>206</sup>

### *Impediments to Ambulance Response*

The use of explosive weapons in populated areas has also endangered on-duty ambulance drivers and paramedics and interfered with their ability to reach civilians in need. In some cases, shelling has slowed response times<sup>207</sup>; in other cases, it has prevented ambulances from leaving their stations.<sup>208</sup> These obstacles have interfered with both patient transport and crucial care by trained first responders.

Shelling has frequently prevented ambulance travel at night. For example, in Galytsinivka, ambulance staff were urged not to “visit patients during the night because of security [concerns],” most notably shelling.<sup>209</sup> In September 2016, residents of Granitne reported that ambulances had only



Dr. Victor Zinchenko of the Krasnohorivka ambulance substation stands in front of a damaged garage with scorched ambulance. He explained that the use of explosive weapons has often made it too dangerous for ambulances to reach residents in need.  
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<sup>206</sup> Interview with Volodymyr Kolesnyk, deputy director for Donetsk Oblast, Ministry of Health, Kramatorsk, September 19, 2016.

<sup>207</sup> Interview with Yanna Thay, humanitarian affairs officer, OCHA, Kramatorsk, September 19, 2016.

<sup>208</sup> See, for example, interview with Dr. Olga Tokmakova, deputy head of medical services for civilians and gynecologist, Center for Primary Medical Help, Maryinka, September 20, 2016; interview with Aleksandr Pasternak, chief engineer, Avdiivka Coke Plant, Metinvest, Avdiivka, September 21, 2016; interview with Aleksandr Kisil, paramedic, entry control point near Maryinka, September 22, 2016; interview with Marina Papuna, activist; Elena Horhulu, grandmother; and Maria Bero, mother, Starohnativka, September 22, 2016; interview with hairdresser, shopkeeper #2, and resident #2 (names withheld), Granitne, September 23, 2016.

<sup>209</sup> Interview with Dr. Lyudmila Tkachenko, head of clinic and general practitioner of family medicine, Galytsinivka Ambulatory Clinic, and paramedic (name withheld), Galytsinivka ambulance substation, Galytsinivka, September 21, 2016 (statement of paramedic).

recently been allowed to drive at night.<sup>210</sup> Because one ambulance served several villages in the Granite area, the restrictions imposed because of the shelling exacerbated the problems of an already stretched system.<sup>211</sup>

In other cases, the severity of the shelling rather than the time of day has dictated safety precautions. In Krasnohorivka, management ordered the ambulance team not to leave the station if shelling created an unwarranted risk.<sup>212</sup> When asked how team members decided which circumstances were too risky, Dr. Victor Zinchenko explained that they simply used their ears to determine the proximity of the shelling. He said, “Everybody became a military expert” regarding the whistling sounds of shells.<sup>213</sup> Even when Dr. Zinchenko and his driver were able to respond to calls, the trips took longer than usual, in large part because of the damage that explosive weapons had caused to the roads.<sup>214</sup>

Medical personnel and residents in other towns also reported that shelling had impeded the ability of ambulances to reach people in need. Marina Papuna, who worked at a local aid organization in Starohnativka, said, “We had situations where an ambulance couldn’t get to a location due to shelling.”<sup>215</sup> In those cases, residents relied instead on a retired doctor who lived in town and came to their homes.<sup>216</sup> A resident of Avdiivka, who worked at the coke plant, said ambulance drivers “didn’t want to drive through the city because of shelling,”<sup>217</sup> and Dr. Olga Tokmakova of the Center for Primary Medical Help in Maryinka, said there was “heavy shelling in the areas where ambulance[s] operated.”<sup>218</sup> One woman in Granite said that during particularly heavy shelling, ambulances could not reach those who called for help: “If you’re dying, nobody would come.”<sup>219</sup>

Shelling has compelled residents to find alternative ways to access health care. As will be discussed further in the next chapter, the sick and injured have often been left with three options. Some have tried to “evacuate themselves using regular transport.”<sup>220</sup> Some have called on military-run ambulance services for transport in areas inaccessible to civilian ambulances.<sup>221</sup> Others have simply gone without professional care.<sup>222</sup>

<sup>210</sup> Interview with hairdresser, shopkeeper #2, and resident #2 (names withheld), Granite, September 23, 2016 (statements of hairdresser and shopkeeper).

<sup>211</sup> Ibid. (statement of hairdresser).

<sup>212</sup> Interview with Dr. Victor Zinchenko, ambulance general assistance doctor, and staff member (name withheld), Krasnohorivka ambulance substation, Krasnohorivka, September 19, 2016 (statement of staff member).

<sup>213</sup> Ibid. (statement of Dr. Zinchenko).

<sup>214</sup> Ibid. (statement of Dr. Zinchenko).

<sup>215</sup> Interview with Marina Papuna, activist; Elena Horhulu, grandmother; and Maria Bero, mother, Starohnativka, September 22, 2016 (statement of Marina Papuna).

<sup>216</sup> Ibid.

<sup>217</sup> Interview with resident (name withheld), Avdiivka, September 21, 2016.

<sup>218</sup> Interview with Dr. Olga Tokmakova, deputy head of medical services for civilians and gynecologist, Center for Primary Medical Help, Maryinka, September 20, 2016.

<sup>219</sup> Interview with hairdresser, shopkeeper #2, and resident #2 (names withheld), Granite, September 23, 2016 (statement of hairdresser).

<sup>220</sup> Interview with Dr. Victor Zinchenko, ambulance general assistance doctor, and staff member (name withheld), Krasnohorivka ambulance substation, Krasnohorivka, September 19, 2016 (statement of Dr. Zinchenko).

<sup>221</sup> Interview with Dmitri Shybalov, Responsible Citizens, Kramatorsk, September 18, 2016.

<sup>222</sup> See, for example, interview with Dr. Viktoriya Nikolova, head of family services and therapy department, Avdiivka City Hospital, Avdiivka, September 21, 2016; interview with shopkeeper #1 (name withheld), Granite, September 23, 2016.

## 7. Consequences for Patient Care

The direct and indirect effects of explosive weapons on the health care system in the east of Ukraine have had serious consequences for the care provided to patients. Shelling has reduced the quality, availability, and accessibility of health care, three of the four essential elements of the right to health under international human rights law.<sup>223</sup> (For further discussion of the right to health, see Chapter 2.) The inadequacy of medical facilities and use of makeshift methods of treatment exemplify the decline in quality. The loss of hospitals and departments as well as reliance on outside help are signs of the decrease in availability. The inability of patients to reach care without endangering themselves indicates a problem of accessibility. The situation, largely a result of the use of explosive weapons in populated areas, has compromised the treatment of routine and emergency health problems and thus put the civilian population at risk.

### Quality of Health Care

Shelling has undermined the quality of hospitals and clinics and forced medical professionals to improvise in their treatment. Dr. Lyudmila Bagmut, an executive doctor and pediatrician, said, “If it was peacetime, we would definitely be prohibited to work in these conditions.”<sup>224</sup>

<sup>223</sup> The fourth element is acceptability. CESCR, General Comment No. 14, para. 12.

<sup>224</sup> Interview with Dr. Lyudmila Bagmut, executive doctor and pediatrician, Granite Ambulatory Clinic, Granite, September 23, 2016.

### Inadequate Facilities

The shelling's direct and indirect impacts have compelled some medical centers, including Dr. Bagmut's clinic in Granitne, to care for their patients in confined spaces. After shelling began to blow out the Granitne Ambulatory Clinic's windows, the staff "tried to work in halls because there were no windows there [and] we tried to work far away from windows."<sup>225</sup> As the conflict continued, the staff had to move the operations of the entire facility into one small room with only three beds and a desk. Although the room had a window, it was the only part of the clinic with a stove that could provide heat. Shelling had knocked out gas lines, leaving the facility dangerously cold. Showing the room to IHRC-PAX researchers, Dr. Bagmut explained that one bed was for testing patients with the EKG machine, another was for infusions, and the third served as a waiting area.<sup>226</sup> Dr. Bagmut said working in a one-room clinic with all the equipment and patients crowded together "was a disaster."<sup>227</sup>



Due to loss of heat, frequent power outages, and the risk of errant shells, Granitne Ambulatory Clinic limited its operations to this room, which used a wood stove for warmth. One doctor referred to the conditions as "a disaster."  
© Anton Skyba for International Human Rights Clinic at Harvard Law School and PAX / September 2016.

As discussed in Chapter 5, in 2015 Avdiivka City Hospital was forced to relocate all staff, patients, and equipment from its larger, five-story building into a smaller, three-story one after shelling caused structural damage and broke dozens of windows.<sup>228</sup> Lyudmila Buravleva, a neurology nurse who worked in the main building for 17 years, said the staff had "trouble fitting everything" into the smaller building.<sup>229</sup> In September 2016, the situation remained unchanged, and Buravleva

<sup>225</sup> Ibid.

<sup>226</sup> Ibid.

<sup>227</sup> Ibid.

<sup>228</sup> Interview with Lyudmila Buravleva, neurology nurse, Avdiivka City Hospital, Avdiivka, September 21, 2016.

<sup>229</sup> Ibid.

lamented the fact that "there is no room, no space."<sup>230</sup> The space restrictions attributable to the use of explosive weapons reportedly necessitated the closure of two departments and a loss of 70 patient beds.<sup>231</sup>

The Avdiivka hospital's X-ray machines could not be removed from the damaged main building, however, because they were permanently installed there.<sup>232</sup> As of September 2016, staff members still had to take patients outside to the otherwise abandoned building in order to perform X-rays.<sup>233</sup> Moving patients has been challenging and hazardous, particularly due to the bitterly cold temperatures in winter.

Explosive weapons have further compromised the quality of health care by forcing doctors to treat patients in frigid temperatures. Dr. Bagmut of the Granitne clinic explained that in 2015 blown-out windows and a lack of electricity, gas, and water to provide heat left patients and medical personnel "freezing" even though volunteers had delivered a wood stove.<sup>234</sup> To minimize the impact of the low temperatures, the "booking of patients was minute to minute. We didn't want them to wait and freeze."<sup>235</sup> At Avdiivka City Hospital, which had only one room with a heater, staff members attempted to warm patients with blankets,<sup>236</sup> and visited patients at home when possible. Neurology nurse Lyudmila Buravleva said in September 2016, "Why keep them at a cold hospital?"<sup>237</sup> As discussed in Chapter 6, an attack on January 30, 2017 left Avdiivka without electricity, water, and heat. Although the specific effects on Avdiivka City Hospital were not reported, OCHA wrote that "[w]ith temperature as low as -17C [1 degrees Fahrenheit] the systems are barely managing to maintain acceptable temperature inside people's houses as well as local hospital, schools and other critical social infrastructure."<sup>238</sup>

Medical personnel as well as patients suffered from the lack of heat because many had to spend the night at their workplace. For example, at the Krasnohorivka ambulance substation, staff had to work through temperatures that dropped to -2 degrees Celsius (28 degrees Fahrenheit) inside their building.<sup>239</sup> When the use of explosive weapons cut off electricity and gas to the adjacent Maryinka District Central Hospital, staff members turned to heating pellets. They had to carry 40 kilograms packages of pellets upstairs to warm the upper floors. Dr. Natalia Dolzhenko, head of the hospital's therapy department, described these pellets as "technology from a previous century."<sup>240</sup>

<sup>230</sup> Ibid.

<sup>231</sup> Interview with Dr. Viktoriia Nikolova, head of family services and therapy department, Avdiivka City Hospital, Avdiivka, September 21, 2016.

<sup>232</sup> Interview with Lyudmila Buravleva, neurology nurse, Avdiivka City Hospital, Avdiivka, September 21, 2016; interview with Dr. Viktoriia Nikolova, head of family services and therapy department, Avdiivka City Hospital, Avdiivka, September 21, 2016.

<sup>233</sup> Interview with Lyudmila Buravleva, neurology nurse, Avdiivka City Hospital, Avdiivka, September 21, 2016; interview with Dr. Viktoriia Nikolova, head of family services and therapy department, Avdiivka City Hospital, Avdiivka, September 21, 2016.

<sup>234</sup> Interview with Dr. Lyudmila Bagmut, executive doctor and pediatrician, Granitne Ambulatory Clinic, Granitne, September 23, 2016.

<sup>235</sup> Ibid.

<sup>236</sup> Interview with Dr. Viktoriia Nikolova, head of family services and therapy department, Avdiivka City Hospital, Avdiivka, September 21, 2016.

<sup>237</sup> Interview with Lyudmila Buravleva, neurology nurse, Avdiivka City Hospital, Avdiivka, September 21, 2016.

<sup>238</sup> OCHA, "Ukraine Update: Deterioration of the Humanitarian Situation in the East," Update No. 1, February 6, 2017, p. 1.

<sup>239</sup> Interview with Dr. Victor Zinchenko, ambulance general assistance doctor, and staff member (name withheld), Krasnohorivka ambulance substation, Krasnohorivka, September 19, 2016 (statement of staff member).

<sup>240</sup> Interview with Dr. Natalia Dolzhenko, head of therapy department, and nurse in therapy department (name withheld), Maryinka District Central Hospital, Krasnohorivka, September 20, 2016 (statement of Dr. Dolzhenko).



The Krasnohorivka ambulance substation relied on this stove for heat in temperatures that dropped to -2 degrees Celsius.  
© Anton Skyba for International Human Rights Clinic at Harvard Law School and PAX / September 2016.

### Improvised Care

Shelling has also caused a decline in the quality of services because it has forced medical personnel to improvise in their care. At Avdiivka City Hospital, which lost electricity and water for at least six months in 2015, doctors performed surgery by candlelight.<sup>241</sup> As described in Chapter 5, surgeons operated on an injured nurse under such conditions.<sup>242</sup> The hospital also had to send equipment to a private clinic at the nearby Avdiivka Coke Plant to be sterilized because it could not even boil water. The hospital relied on the plant's ambulance to return the equipment after sterilization, a process one doctor described as "crucial for survival."<sup>243</sup> The power outage that affected the whole city of Avdiivka in early 2017 likely created similar problems for the hospital.<sup>244</sup>

The Granitne Ambulatory Clinic also improvised in the wake of power and water outages caused by shelling. For example, medical staff used a stove to sterilize equipment,<sup>245</sup> and sent the EKG

<sup>241</sup> Interview with Dr. Viktoriya Nikolova, head of family services and therapy department, Avdiivka City Hospital, Avdiivka, September 21, 2016.

<sup>242</sup> Interview with Vera Ivanovna, nurse, Avdiivka City Hospital, Avdiivka, September 21, 2016.

<sup>243</sup> Interview with Dr. Viktoriya Nikolova, head of family services and therapy department, Avdiivka City Hospital, Avdiivka, September 21, 2016.

<sup>244</sup> For details of the power outage, see OCHA, "Ukraine Update: Deterioration of the Humanitarian Situation in the East," Update No. 1, February 6, 2017, p. 1; OCHA, "Ukraine Update: Deterioration of the Humanitarian Situation in the East," Update No. 2, February 13, 2017, p. 1.

<sup>245</sup> Interview with Dr. Lyudmila Bagmut, executive doctor and pediatrician, Granitne Ambulatory Clinic, Granitne, September 23, 2016.

machine home with anyone who had a generator in order to recharge it.<sup>246</sup> Nevertheless, there were obstacles to care that could not be overcome with improvisation.<sup>247</sup> According to Dr. Bagmut, the clinic had trouble dealing with illnesses, such as bronchitis and pneumonia, brought on by the cold. She explained that patients with such illnesses required breathing tubes, but the equipment could not function without electricity.<sup>248</sup>

Personnel at some hospitals have had to provide their own water because the use of explosive weapons has interrupted the regular supply. In September 2016, health workers at Maryinka District Central Hospital carried water to the hospital from a well on site. Dr. Dolzhenko said, "All the staff carries canisters every day. They promised the well will be connected to the hospital water system. . . . We're hearing only promises, but we need water."<sup>249</sup> Dr. Valentina Ksenofontova, head of the neurology department, added, "We will continue our duty by bringing water by our hands."<sup>250</sup> IHRC-PAX researchers observed large bottles of water lining the hallway of the hospital and the adjacent Krasnohorivka ambulance substation.



In September 2016, Maryinka District Central Hospital in Krasnohorivka depended on water that staff members carried from a well in bottles and buckets. At that time, the hospital had been without running water for about two years.  
© Anton Skyba for International Human Rights Clinic at Harvard Law School and PAX / September 2016.

<sup>246</sup> Ibid.

<sup>247</sup> Ibid.

<sup>248</sup> Ibid.

<sup>249</sup> Interview with Dr. Natalia Dolzhenko, head of therapy department, and nurse in therapy department (name withheld), Maryinka District Central Hospital, Krasnohorivka, September 20, 2016 (statement of Dr. Dolzhenko).

<sup>250</sup> Interview with Dr. Valentina Ksenofontova, head of neurology department, Maryinka District Central Hospital, Krasnohorivka, September 20, 2016.

The situation was similar in Avdiivka. Lyudmila Buravleva, the neurology nurse at Avdiivka City Hospital, explained in September 2016 that staff members had had to carry buckets of water from a nearby well.<sup>251</sup> Buravleva said, “We used every bucket and canister we had. Fire brigades brought us water, but when they didn’t, we had to get it [ourselves].”<sup>252</sup> When the attack on January 30, 2017, knocked out Avdiivka’s electricity, it in turn shut down the Donetsk Filtration Station, the area’s major supplier of water.<sup>253</sup> Although it did not report on the effects on the hospital in particular, on March 2 the ICRC said that the “water supply situation [in Avdiivka] is critical” and that the city had depleted key back-up reservoirs.<sup>254</sup> According to the OSCE, the station itself was shelled on March 5.<sup>255</sup>

Medical facilities have also turned to humanitarian aid organizations for help. UNICEF has supplied water and water tanks to medical facilities on both sides of the contact line<sup>256</sup>; IHRC-PAX researchers saw one of its tanks inside Avdiivka City Hospital.

## Availability of Health Care

Shelling has limited the availability of health care by compelling many facilities to reduce their operations. As a result, some residents have had to turn to *ad hoc* assistance from outside sources, especially the military.

### Loss of Services

Shelling has caused many medical facilities, including in Avdiivka, Granitne, Karlivka, Krasnohorivka, Mayorsk, and Slovyansk, to cut back their services.<sup>257</sup> For example, the combination of direct danger from shelling and lack of essential utilities forced Maryinka District Central Hospital to shut down entire departments. One administrator recalled how, prior to the armed conflict, “the hospital was a city” with 350 beds and at least a dozen departments.<sup>258</sup> Due to the shelling and its proximity to the front line, however, only the neurology and therapy departments and a general clinic remained operational as of September 2016.<sup>259</sup> Some of the departments were moved to Kurakhove, while others were closed indefinitely.<sup>260</sup> As of September 2016, patients were still being sent to other hospitals for treatment. Dr. Ksenofontova,

neurology department head, explained that her hospital has had to send stroke patients to Kurakhove to receive proper treatment.<sup>261</sup>

Patients have often had to travel hours to receive care. Because of the loss of services at Maryinka District Central Hospital, as of September 2016 ambulances from the neighboring Krasnohorivka ambulance substation regularly transported patients to distant hospitals along roads severely damaged by shelling. Dr. Victor Zinchenko said ambulances drove trauma and cardiology patients about two hours to Kurakhove and psychiatric patients five hours to Mariupol.<sup>262</sup> Dr. Zinchenko recalled that a paramedic had to deliver twins in the field due to the extended time of travel.<sup>263</sup> Delivering a baby in a vehicle without a well-equipped specialist can endanger both the mother and child if complications occur. Long journeys have not only posed health risks to the patients being transported but also interfered with the ambulance crews’ ability to respond to other people in need.<sup>264</sup>

### Outside Assistance

As the availability of regular medical services has declined, residents of communities along the contact line, especially those living within the gray zone, have had to rely on aid from outside sources, including units from the Civil-Military Cooperation system and ASAP.<sup>265</sup> CIMIC consists of Ukrainian military personnel whose duties include coordinating and supplying humanitarian and medical aid for civilians.<sup>266</sup> CIMIC has provided transportation, medications, and emergency services to civilians, including to residents of some gray zone villages where “access of medical assistance is limited [due] to constant shelling.”<sup>267</sup> ASAP units have both military and volunteer civilian medical personnel who have provided care and transport for the Ukrainian military and for civilians in the gray zone and along the contact line.<sup>268</sup>

While CIMIC and ASAP have helped the local population cope with the decrease in available health care, their services have been offered on a more *ad hoc* basis. For example, ASAP’s primary responsibility is to care for military personnel, so its staff members focus on urgent situations and may only provide medical aid to civilians when doing so does not conflict with their military duties.<sup>269</sup> In addition, ASAP staff members, and especially its civilian volunteers, rotate regularly. A military paramedic said ASAP has had a shortage of doctors and uses social media to try to recruit volunteers for one week at a time.<sup>270</sup> At the time of the IHRC-PAX visit, a civilian

<sup>251</sup> Interview with Lyudmila Buravleva, neurology nurse, Avdiivka City Hospital, Avdiivka, September 21, 2016.

<sup>252</sup> Ibid.

<sup>253</sup> OCHA, “Ukraine Update: Deterioration of the Humanitarian Situation in the East,” Update No. 1, February 6, 2017, p. 1.

<sup>254</sup> ICRC Ukraine twitter feed, March 2 and March 4, 2017, [https://twitter.com/ICRC\\_ua](https://twitter.com/ICRC_ua) (accessed March 7, 2017).

<sup>255</sup> OSCE SMM Ukraine twitter feed, March 5, 2017, [https://twitter.com/OSCE\\_SMM](https://twitter.com/OSCE_SMM) (accessed March 7, 2017).

<sup>256</sup> Interview with UNICEF officials (names withheld), Kiev, September 16, 2016; interview with Fatima Yandieva, education specialist, UNICEF, Kramatorsk, September 19, 2016.

<sup>257</sup> See, for example, interview with Dr. Viktoriya Nikolova, head of family services and therapy department, Avdiivka City Hospital, Avdiivka, September 21, 2016; interview with Dr. Lyudmila Bagmut, executive doctor and pediatrician, Granitne Ambulatory Clinic, Granitne, September 23, 2016; interview with Dr. Lyudmila Tkachenko, head of clinic and general practitioner of family medicine, Galytsinivka Ambulatory Clinic, and paramedic (name withheld), Galytsinivka ambulance substation, Galytsinivka, September 21, 2016 (statement of Dr. Tkachenko); interview with hospital official (name withheld), Maryinka District Central Hospital, Krasnohorivka, September 20, 2016; interview with shopkeepers #1 and #2 (names withheld) and Elena Shtoda, head of Free Mayorsk, Mayorsk, September 24, 2016 (statement of shopkeeper #1); interview with Dr. Vladimir Stepanov, head doctor, Slovyansk Central Hospital, Slovyansk, September 18, 2016.

<sup>258</sup> Interview with hospital official (name withheld), Maryinka District Central Hospital, Krasnohorivka, September 20, 2016 (saying the hospital could have “gotten the status of [an] intensive care hospital”).

<sup>259</sup> Ibid.

<sup>260</sup> Ibid.

<sup>261</sup> Interview with Dr. Valentina Ksenofontova, head of neurology department, Maryinka District Central Hospital, Krasnohorivka, September 20, 2016.

<sup>262</sup> Interview with Dr. Victor Zinchenko, ambulance general assistance doctor, and staff member (name withheld), Krasnohorivka ambulance substation, Krasnohorivka, September 19, 2016 (statement of Dr. Zinchenko).

<sup>263</sup> Ibid. (statement of Dr. Zinchenko).

<sup>264</sup> Ibid. (statement of Dr. Zinchenko).

<sup>265</sup> Interview with Dmitri Shybalov, Responsible Citizens, Kramatorsk, September 18, 2016.

<sup>266</sup> Interview with Col. Mykola Tsybulko, chief, and Col. Vadym Borysenko, CIMIC, Kramatorsk, September 19, 2016 (statement of Col. Tsybulko).

<sup>267</sup> Ibid. (statement of Col. Borysenko).

<sup>268</sup> Interview with military paramedic (name withheld), ASAP; Dr. Igor Maidenko, head of pediatrics department, Dnipro Regional Child Hospital, and ASAP volunteer; and Aleksey Turchak, civilian paramedic and ASAP volunteer, ASAP camp near contact line crossing point, September 24, 2016 (statement of military paramedic); interview with Olga Ivanenko, volunteer paramedic, ASAP, Avdiivka, September 21, 2016.

<sup>269</sup> Interview with military paramedic (name withheld), ASAP; Dr. Igor Maidenko, head of pediatrics department, Dnipro Regional Child Hospital, and ASAP volunteer; and Aleksey Turchak, civilian paramedic and ASAP volunteer, ASAP camp near contact line crossing point, September 24, 2016 (statement of military paramedic).

<sup>270</sup> Ibid. (statement of military paramedic).

pediatrician from a regional children's hospital was finishing his third short tour; he had volunteered to spend his vacation time with ASAP.<sup>271</sup> The lack of continuity and change in specialization means that the health care that ASAP can provide varies depending on the expertise of the medical professionals on call at the time.



ASAP volunteers Dr. Igor Maidenko and paramedic Aleksey Turchak provided care to military personnel and, when time allowed, civilians along the contact line in September 2016. ASAP's services have helped fill a gap left by the decrease in availability health care. © Anton Skyba for International Human Rights Clinic at Harvard Law School and PAX / September 2016.

## Accessibility of Health Care

The use of explosive weapons has impeded access to both routine and emergency medical services. Dr. Ksenofontova of Maryinka District Central Hospital described shelling as the “biggest problem” for access. “People are insecure about coming” to the hospital for treatment, she said.<sup>272</sup> Explosive weapons have also contributed to the closure of pharmacies in communities along the contact line.

### Routine Care

The risks of traveling in a region experiencing heavy shelling have deterred residents from seeking professional health care. Dr. Olga Tokmakova reported that patients frequently faced difficulties in getting to the Center for Primary Medical Help in Maryinka as a result of the shelling.<sup>273</sup>

<sup>271</sup> Ibid. (statement of Dr. Maidenko).

<sup>272</sup> Interview with Dr. Valentina Ksenofontova, head of neurology department, Maryinka District Central Hospital, Krasnohorivka, September 20, 2016.

<sup>273</sup> Interview with Dr. Olga Tokmakova, deputy head of medical services for civilians and gynecologist, Center for Primary Medical Help, Maryinka, September 20, 2016.

Dr. Tokmakova explained, “We [have] had some days, physically, where you cannot leave your place. It's too dangerous.”<sup>274</sup>

Because of the danger, many local people have chosen to forsake non-emergency health care. In Avdiivka, which has weathered several periods of intense shelling, Dr. Viktoria Nikolova told IHRC-PAX researchers that “people didn't ask for help for light diseases, like flu or headache. [They asked] only for heavy diseases.”<sup>275</sup> Some residents have not even attempted to obtain treatment for more significant ailments. A Granitne shopkeeper, whose husband did not seek professional help for a heart problem after the armed conflict began, said, “During the war everyone dealt with diseases on their own.”<sup>276</sup>



The use of explosive weapons has hindered Maria Bero's access to proper health care for her young daughter who has cerebral palsy. © Anton Skyba for International Human Rights Clinic at Harvard Law School and PAX / September 2016.

Shelling presented obstacles to treatment for one young girl with cerebral palsy, whose story exemplifies how inadequate access to medical care has in certain cases exacerbated serious, pre-existing conditions. The use of explosive weapons prevented the girl, who lived near the contact line in the village of Starohnativka, from reaching her cerebral palsy specialist and from continuing her regular treatment of massages and physical therapy. The girl's mother, Maria Bero, and grandmother Elena Horhulu recalled that during the first six months of the armed conflict, they tried to reach the girl's doctor in Donetsk in the non-government controlled areas, but shelling of both the contact line crossing point and local villages along the way forced them

<sup>274</sup> Ibid.

<sup>275</sup> Interview with Dr. Viktoria Nikolova, head of family services and therapy department, Avdiivka City Hospital, Avdiivka, September 21, 2016.

<sup>276</sup> Interview with shopkeeper #1 (name withheld), Granitne, September 23, 2016.

to stay at home. Bero said, “We couldn’t find the proper moment to go. We couldn’t put the baby in the car and drive. It was unsafe.”<sup>277</sup>

In February 2015, the family evacuated the girl so that she could receive some medical care, but it merely maintained her health and the lack of treatment by a specialist slowed the girl’s development. “Lots of progress has been lost,” Bero said. In particular, the girl, who was 6 years old in September 2016, started learning to walk much later than many children with cerebral palsy. Her mother said she also believed that the use of explosive weapons caused psychological stress that exacerbated the girl’s medical problems. She suffered from sleep deprivation and panic, and “if someone shut the door loudly, she would cry and start to panic.”<sup>278</sup>

#### *Emergency Care*

Emergency situations have sometimes compelled residents to expose themselves to danger in order to receive health care. A paramedic at the Galytsinivka ambulance substation said she and her colleagues have done phone consultations with patients when they could not reach villages due to shelling or roadblocks. She added, however, that “some people tried to evacuate themselves because they knew we weren’t going out at night.”<sup>279</sup>

For example, when Valentina Kurkchi sustained serious injuries from explosive weapons that landed on Starohnativka in January 2015, her husband and a local doctor had to drive her 30 kilometers, through intense shelling, to the hospital.<sup>280</sup> Kurkchi told IHRC-PAX researchers that she remembered going out to close her barn on a quiet evening and then waking up, unable to move and buried under rubble. While the bricks of her destroyed barn had protected her to a degree, weapons fragments penetrated her leg. No ambulances were available so her husband sought help from Dr. Andrey Markevich, who worked at the Granitne Ambulatory Clinic but lived in Starohnativka.<sup>281</sup> Dr. Markevich recalled that the husband arrived “worried and terrified” at around 10 p.m., and when they returned to the barn, they found Kurkchi bleeding but conscious.<sup>282</sup> The doctor stopped the blood flow, used a stick to make a splint for her leg, and bandaged the wound.<sup>283</sup> The two men then carried Kurkchi, who had lost consciousness, to the backseat of the family car and sped to the hospital in a neighboring district.<sup>284</sup> Dr. Markevich could only provide a light painkiller,<sup>285</sup> and he had to sit in the front seat and was therefore unable to treat the injured

<sup>277</sup> Interview with Marina Papuna, activist; Elena Horhulu, grandmother; and Maria Bero, mother, Starohnativka, September 22, 2016 (statement of Maria Bero).

<sup>278</sup> Ibid. (statement of Maria Bero). Activist Marina Papuna, who lived in the same town, said that the use of explosive weapons has interfered with the health care of her husband, a Chernobyl liquidator who was exposed to radiation during cleanup of the nuclear disaster. Shelling prevented him from receiving his regular treatment until he relocated to Donetsk, on the other side of the contact line from his wife. Papuna noted that she believed the psychological stress caused by explosive weapons exacerbated his pre-existing psychological problems. Interview with Marina Papuna, activist; Elena Horhulu, grandmother; and Maria Bero, mother, Starohnativka, September 22, 2016 (statement of Marina Papuna).

<sup>279</sup> Interview with Dr. Lyudmila Tkachenko, head of clinic and general practitioner of family medicine, Galytsinivka Ambulatory Clinic, and paramedic (name withheld), Galytsinivka ambulance substation, Galytsinivka, September 21, 2016 (statement of paramedic).

<sup>280</sup> Interview with Dr. Andrey Markevich, ambulatory doctor, Granitne Ambulatory Clinic, Granitne, September 23, 2016.

<sup>281</sup> Interview with Valentina Kurkchi, resident, Starohnativka, September 22, 2016.

<sup>282</sup> Interview with Dr. Andrey Markevich, ambulatory doctor, Granitne Ambulatory Clinic, Granitne, September 23, 2016.

<sup>283</sup> Ibid.

<sup>284</sup> Interview with Valentina Kurkchi, resident, Starohnativka, September 22, 2016; interview with Dr. Andrey Markevich, ambulatory doctor, Granitne Ambulatory Clinic, Granitne, September 23, 2016.

<sup>285</sup> Interview with Dr. Andrey Markevich, ambulatory doctor, Granitne Ambulatory Clinic, Granitne, September 23, 2016.

woman during the journey.<sup>286</sup> Kurkchi said her husband later told her that “the main problem was the rockets—they were falling the whole time we were driving.”<sup>287</sup> While Kurkchi acknowledged that “it’s more important they saved my leg,” she has lost mobility and experienced ongoing pain. In addition, she said, she could no longer crouch down or carry heavy objects, and she felt “stressed” and “nervous” when she recalled what happened.<sup>288</sup>

In some cases, the people of the east of Ukraine have had to risk their lives just to communicate with an ambulance station. Residents in Granitne said that after shelling destroyed the landline network on one of the first days of the conflict, they had to rely on their cell phones for emergency calls.<sup>289</sup> Cellular reception was only available at the top of the hills surrounding the town, but a shopkeeper said, “It is dangerous to go up on the hills. You never know when shelling or shooting will start.”<sup>290</sup> Because of the uncertainty, another woman explained, residents stayed near their homes all day.<sup>291</sup> Even if a person in need found a signal on the hilltop, the response could be delayed because calls were routed to a dispatcher in distant Mariupol who then radioed a local ambulance.<sup>292</sup>

#### *Medications*

Civilians in the region have had limited access to necessary prescriptions. Some pharmacies along the contact line have closed, temporarily or indefinitely, at least in part because of the dangers of shelling. Volodymyr Kolesnyk, the Ministry of Health’s deputy director for the Donetsk Oblast, said, “The medical supply chain has been broken because all pharmacies in the grey zone left due to security.”<sup>293</sup> For example, a pharmacy near one of the crossing points along the contact line reportedly closed for two weeks in February 2016 due to the heavy use of explosive weapons. A woman working at the pharmacy said, “We were forced to close because of the shelling. Villagers couldn’t reach here . . . and the road was blocked.”<sup>294</sup>

Local people have improvised by turning to each other to obtain their medications. In September 2016, several residents of Granitne described how they depended on a bread deliveryman to bring medications from other areas of Ukraine.<sup>295</sup> One woman explained that customers came to her shop to place orders, which she then relayed to a friend at a city hospital via the bread deliveryman.<sup>296</sup> When the deliveryman stopped at her store, he brought the medicines the residents

<sup>286</sup> Interview with Valentina Kurkchi, resident, Starohnativka, September 22, 2016.

<sup>287</sup> Ibid.

<sup>288</sup> Ibid.

<sup>289</sup> Interview with hairdresser, shopkeeper #2, and resident #2 (names withheld), Granitne, September 23, 2016; interview with resident #1 (name withheld), Granitne, September 23, 2016.

<sup>290</sup> Interview with hairdresser, shopkeeper #2, and resident #2 (names withheld), Granitne, September 23, 2016 (statements of hairdresser and shopkeeper). See also interview with Dr. Lyudmila Bagmut, executive doctor and pediatrician, Granitne Ambulatory Clinic, Granitne, September 23, 2016.

<sup>291</sup> Interview with hairdresser, shopkeeper #2, and resident #2 (names withheld), Granitne, September 23, 2016 (statement of hairdresser).

<sup>292</sup> Ibid. (statement of shopkeeper).

<sup>293</sup> Interview with Volodymyr Kolesnyk, deputy director for Donetsk Oblast, Ministry of Health, Kramatorsk, September 19, 2016.

<sup>294</sup> Interview with pharmacy staff member (name withheld), Logistical Center of Humanitarian Services, near contact line crossing point, September 24, 2016.

<sup>295</sup> Interview with hairdresser, shopkeeper #2, and resident #2 (names withheld), Granitne, September 23, 2016 (statement of shopkeeper #2); interview with shopkeeper #1 (name withheld), Granitne, September 23, 2016.

<sup>296</sup> Interview with hairdresser, shopkeeper #2, and resident #2 (names withheld), Granitne, September 23, 2016 (statement of shopkeeper #2).

requested as well as bread.<sup>297</sup> During their interview with this woman, IHRC-PAX researchers observed an elderly woman coming into the shop to pick up her medications.

Shelling compelled the people of Mayorsk, located in the gray zone, to adopt a similar approach to obtaining medicines. A shopkeeper explained that during the heavy period of shelling in 2014, few people, and especially not elderly, immobilized residents, could enter or exit their village.<sup>298</sup> Despite the risks, the shopkeeper would travel to Bakhmut (formerly Artemivsk), “take a huge list of medicines for grandmothers, buy them, and bring them back here.”<sup>299</sup> She was still performing this service in September 2016. “Everyone with transport takes a list and buys medicine” as long as there is no shelling, the shopkeeper said.<sup>300</sup> The residents of Mayorsk have also relied on ASAP, the military medical unit stationed nearby, for medical assistance. ASAP personnel have distributed medicines and provided paramedic training, bandages, and other supplies to the shopkeeper for the times when ASAP cannot come and assist.<sup>301</sup> In the end, due to the harm explosive weapons have inflicted on Ukraine’s health care system, civilians in this village—and other communities along the contact line—have often had to treat themselves.



The pharmacy at Avdiivka City Hospital was closed when damage from explosive weapons shut down the facility’s main building.  
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<sup>297</sup> Ibid. (statement of shopkeeper #2).

<sup>298</sup> Interview with shopkeepers #1 and #2 (names withheld) and Elena Shtoda, head of Free Mayorsk, Mayorsk, September 24, 2016 (statement of shopkeeper #1).

<sup>299</sup> Ibid. (statement of shopkeeper #1).

<sup>300</sup> Ibid. (statement of shopkeeper #1).

<sup>301</sup> Ibid. (statement of shopkeeper #1).

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## **Operating under Fire: The Effects of Explosive Weapons on Health Care in the East of Ukraine**

**May 2017**

The armed conflict in the east of Ukraine has significantly affected the region's health care system and the people who depend on it. The use of explosive weapons in populated areas has caused much of the harm. This report, based on field research along the contact line between government and non-government controlled areas, documents the humanitarian impact of this method of warfare and calls on countries to commit to minimizing this impact in the future.

Explosive weapons encompass a range of munitions, including air-dropped bombs, artillery projectiles, rockets, and missiles. When such weapons have wide area effects and are used in cities and towns, they are likely to hit civilians and the infrastructure upon which their lives depend.

Since 2014, the use of explosive weapons in Ukraine has directly damaged hospitals, destroyed ambulances, and killed or injured health workers. It has also indirectly inflicted harm on the health care system by shutting down infrastructure—causing loss of electricity, water, heat, and communications—and creating travel risks for ambulances, medical personnel, and civilians in need.

The harm attributable to explosive weapons' use in populated areas has had serious consequences for patient care. It has infringed on quality, accessibility, and availability, which are three elements of the right to health.

*Operating under Fire* spotlights the conflict's impact on Ukraine's health care system and its people. It also makes the case for an international political commitment to prevent the harm caused by the use of explosive weapons in populated areas.



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