

Physicians for
Human Rights

November 2015

Aleppo Abandoned

A Case Study on
Health Care in Syria

PHR

Physicians for
Human Rights



A medic carries a wounded child following a government airstrike on the opposition-held al-Maghair district of Aleppo.
Photo: Karam al-Masri/AFP/Getty Images

About Physicians for Human Rights



For nearly 30 years, Physicians for Human Rights (PHR) has used science and medicine to document and call attention to mass atrocities and severe human rights violations.

PHR is a global organization founded on the idea that health professionals, with their specialized skills, ethical duties, and credible voices, are uniquely positioned to stop human rights violations.

PHR's investigations and expertise are used to advocate for persecuted health workers and medical facilities under attack, prevent torture, document mass atrocities, and hold those who violate human rights accountable.

Acknowledgements

This report was written by Elise Baker, program associate at PHR, and Michele Heisler, MD, MPA, PHR volunteer medical advisor, PHR board member, professor of internal medicine and of health behavior and health education at the University of Michigan Medical School.

This report benefited from review by PHR leadership and staff, including Widney Brown, director of programs, DeDe Dunevant, director of communications, and Donna McKay, executive director.

This report also benefited from external review by Deborah D. Ascheim, MD, PHR board chair and chief medical officer of Capricor

Therapeutics, Inc., and professor of medicine in the Department of Medicine and Heart Institute at Cedars Sinai Medical Center; and Donna Shelley, MD, MPH, associate professor of medicine and population health, vice chair for research, and co-director of the Section on Tobacco, Alcohol and Drug Use in the Department of Population Health at the New York University School of Medicine.

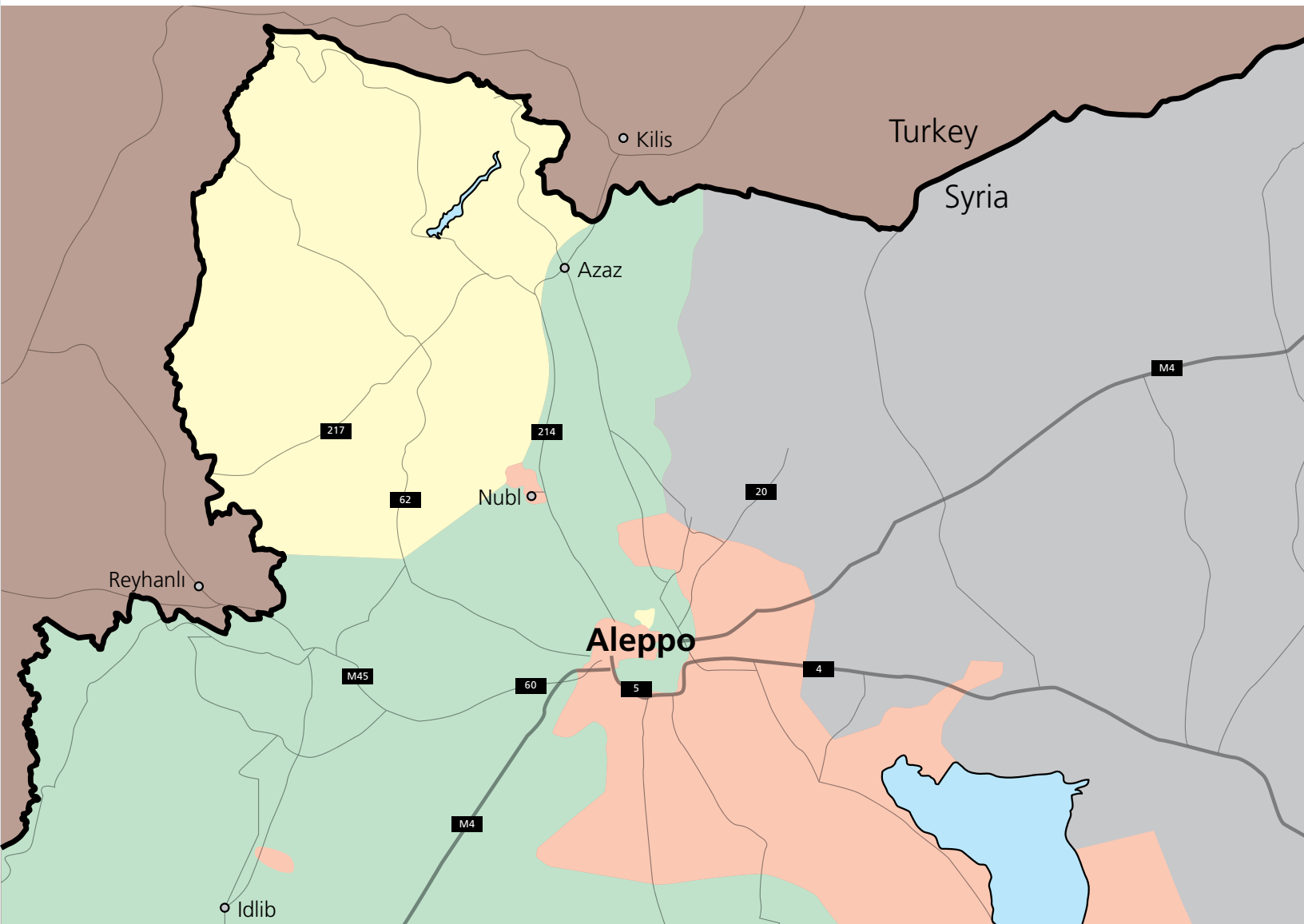
PHR intern Trip Eggert assisted in the report's production.

PHR is deeply indebted to the Syrian doctors who were willing to share their experiences with us. PHR is also grateful to the Syrian American Medical Society for the invitation to its annual conference in Gaziantep and for its continued partnership and support.

PHR is grateful to Palantir Technologies for their continued support and the donation of their Gotham platform, through which PHR is able to integrate, analyze, and visualize data on attacks on health care. Palantir's tools have supported the research and analysis included in this report. PHR is also grateful for The Carter Center's collaboration and data sharing on conflict events, which help contextualize PHR's documentation within the broader context of the Syrian conflict.

The research protocol for this report was approved by PHR's Ethics Review Board.

Aleppo Areas of Control Map



Source: The Carter Center
using Palantir Technologies

Key

Government Control

Opposition Control

Kurdish Control

Islamic State Control

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Introduction

**"You must be safe to save others ...
If you kill the physician or destroy
the hospital, the medicine doesn't
benefit any people."¹**

*Dr. D, a urologist working in
a trauma hospital in Aleppo*



A barrel bomb falls from the sky, tumbling through the air toward civilians in markets and homes. It shatters when it hits the ground. Shrapnel and nails filling the barrel fly in all directions, causing catastrophic injuries. Minutes later, after the first responders and medics have rushed to the scene to provide emergency aid, another bomb falls – targeting them. This is a double tap strike. Those left standing transport the injured and dying to a nearby hospital, where doctors race to save lives knowing at any moment they could be bombed. When the last casualty is treated, it is time to count the dead. Doctors and first responders pick up body parts and wonder whose mothers, fathers, and children the mangled limbs belong to.

The doctors, nurses, medics, and other health workers in Syria's opposition-controlled areas have been abandoned by the international community and UN Security Council. They cannot fathom how the world can stand passively by and watch as a quarter of a million people die, millions more are displaced, and civilian homes and workplaces are obliterated. They are left standing in their barren, makeshift hospitals with nothing but sandbags protecting them from the next airstrike, wondering how much longer they have left to live. They know that as long as the world's indifference continues, the odds are against them.

Welcome to Aleppo.

*Rescue workers cover a corpse
under the debris outside Dar al-Shifa
hospital in Aleppo.*

*Photo: Francisco Leong/AFP/
Getty Images*

**"I never expected to see doctors tortured, to see what we saw.
It's probably best that we didn't know this would happen.
Otherwise, we may not have started the revolution."**²

*Dr. M, an orthopedist working for an
organization supporting health care in Aleppo*

The conflict in Syria is well into its fifth year, and as of October 2015, Physicians for Human Rights (PHR) has documented the deaths of 687 medical personnel and 329 attacks on medical facilities. The Syrian government is responsible for nearly 90 percent of these attacks.³ Each attack, whether the bombing of a hospital or the detention and torture of a doctor for providing health care, is a war crime. Given the systematic nature of these attacks by Syrian government forces, these violations constitute crimes against humanity. The Syrian government's ongoing assault on health care is one of the most egregious the world has ever seen.

International humanitarian laws (IHL) were negotiated more than 150 years ago and have since been ratified by 196 countries, including Syria, in an attempt to protect civilians in conflict. They prohibit parties to conflict from targeting non-combatants and require that special measures be taken to prevent harm to civilians or civilian objects. In addition to these protections, medical personnel and facilities are awarded even greater protection under the Geneva Conventions. IHL requires that all parties protect and ensure the functionality of medical facilities, transport, and personnel; all parties protect and ensure unbiased treatment for both wounded civilians and combatants; and that medical personnel provide impartial care to both civilians and wounded combatants, in keeping with medical ethics. States established these laws because they agreed that anyone injured in a conflict – civilians and combatants alike – should have guaranteed access to health care in a safe space.

While the self-declared Islamic State (IS), also called ISIS or ISIL, has grabbed headlines with its exhibitionist violence, the Syrian government has systematically violated every international law aimed at protecting civilians. Its strategy is to bomb its citizens into submission – destroying hospitals, markets, and mosques in order to punish the opposition and its supporters for their political views and make life unbearable outside of the areas it controls. The Syrian government has forced health workers to risk their lives to save others and left its well-established health care system – one of the best in the region – in ruins that will take decades to rebuild. It has also compelled millions of civilians injured in bombardment on their homes, markets, mosques, and schools to weigh the risks of dying from treatable conditions versus dying in a hospital attack while seeking life-saving care.

This report focuses on the state of health care in eastern Aleppo city⁴ – the city hit hardest by these attacks⁵ – and tells a story of courage and resilience in the face of tremendous human suffering and loss. PHR's findings illustrate that the unlawful attacks have significantly degraded Aleppo's health care system; more than two-thirds of the hospitals no longer function and roughly 95 percent of doctors have fled, been detained, or killed. However, the remaining medical personnel have persevered and manage to provide health care in the midst of a horrific war, despite minimal access to equipment and medication. They have learned to rebuild hospitals after their own have been bombed and provide lifesaving care without adequate personnel, medications, supplies, and equipment, while risking their own lives. This report also points to the failure of the international community to stop these violations. The UN Security Council has failed to do its duty for more than four years, and, as a result, hundreds of Syrian medical personnel

and thousands of their patients have lost their lives. Health workers in Aleppo understand the UN Security Council's failure all too well. They live with the reality of disappeared colleagues and hospital attacks every day. Yet they have not given up hope, and they continue to ask for one simple thing: an end to the attacks on hospitals, medical personnel, patients, and civilians. If the international community will enforce these protections, as mandated by international law, Aleppo's medical workers are confident their colleagues who fled will return, and together they can begin rebuilding their country's health care system. But first, the attacks must stop.

Syrian forces must immediately stop attacking medical facilities and personnel in Syria. If they do not and these war crimes continue, the UN Security Council must implement further measures (as prescribed in Resolutions 2139⁶ and 2165⁷) to ensure that the Syrian government and all other parties to the conflict end all unlawful attacks on civilians and respect medical neutrality, the principle under IHL that health care is protected and must be provided impartially.

The consequences are clear: failing to stop attacks on medical professionals and infrastructure has resulted in and will continue to result in devastating health outcomes for civilians living in conflict zones. Syria's unprecedented assault is not only disrupting emergency aid, but also depriving communities of routine health care and threatening their very capacity to survive. It will take decades to rebuild Syria's health care system, but the effects go far beyond the country's borders. The longer the UN Security Council continues to shirk its responsibility of maintaining international peace and security, the greater the chance these violations will become the new normal in armed conflicts around the world.

Background on Syria and the Conflict in Aleppo



Syrian rescue workers carry body parts in a shroud following a reported barrel bomb attack by Syrian government forces on the opposition-held al-Shaar district of Aleppo.

Photo: Karam al-Masri/AFP/Getty Images

Background on Syrian Conflict

On March 15, 2011, five young Syrian men gathered in Damascus's central Hamidiya market and shouted, "We sacrifice our blood and souls for you, Syria!"⁸ These men were just a few of the hundreds of people who stood up that day and demanded the release of 15 children who had been arrested and tortured for spray-painting anti-government graffiti on their school's wall in Daraa, southern Syria. In the coming months, hundreds of thousands of Syrians joined peaceful demonstrations demanding human rights and democracy from the authoritarian government of President Bashar al-Assad. They were part of a movement sweeping through the region that began with Tunisia's successful and largely peaceful revolution. But the Syrian government did not cede to protesters; while trumpeting false

promises of reform, it increased repression and deployed security forces to crush protests.

On July 29, 2011, seven Syrian military officers defected and announced the formation of the Free Syrian Army (FSA), the first anti-government armed group aimed at overthrowing the Assad government.⁹ The opposition gained momentum as military and government defectors joined the FSA's local militias and took control of neighborhoods and towns sympathetic to their aims.¹⁰ By the end of 2011, Syria was engulfed in a protracted conflict, bifurcated between government- and opposition-controlled territories.

The conflict intensified over the next year as opposition groups increased in size, strength, and control. The Syrian government responded by ignoring IHL and deliberately targeting civilians

— bombing markets, schools, mosques, and hospitals and besieging opposition-controlled towns. This brutality, combined with the country's power vacuum, encouraged more Syrians to form armed groups with their own agendas, many founded upon Islamist ideologies. By early 2014, extremist groups such as IS had gained traction, and the Syrian civil war had grown into a sectarian war.

Now, four and a half years into the conflict, more than 12 million Syrians are displaced from their homes, an estimated 240,000 have been killed, and civilian deaths continue to mount.¹¹ Fighting is escalating among opposition groups, and all parties to the conflict are violating human rights and humanitarian law. Yet the UN Security Council remains paralyzed by politics. Left with no other option but to be killed at home or live in chronically underfunded refugee

camps along their country's border, Syrians are now fleeing. Hundreds of thousands have chosen to risk their lives at sea in the hope of reaching Europe, contributing to the largest refugee crisis since World War II.¹²

Among the list of egregious IHL violations is the Syrian government's systematic assault on medical personnel and facilities, the scope and scale of which is unprecedented since the adoption of the modern Geneva Conventions. Attacks have continued unabated since the start of the conflict and in recent months have increased in number. PHR has already documented over 90 attacks on medical facilities since the start of 2015, making it the worst year yet for attacks on hospitals in Syria. Aleppo (Syria's most populous city, located on a strategic trading route between the Mediterranean Sea and Mesopotamia, which served as a melting pot for many cultures and religions) is one of the areas hardest hit by these attacks, with 45 attacks on medical facilities in the past three years.

Timeline of Conflict in Aleppo

The revolution came to Aleppo later than to other parts of Syria. In 2011, as pro-democracy protests and violence engulfed much of the country, Aleppo's residents held rallies in support of the Syrian government.¹³ This support stemmed mainly from affluent western Aleppo, while lower-income eastern Aleppo quietly supported the opposition.¹⁴

But the conflict eventually swept across the country, and on February 10, 2012, two car bombs were detonated outside a military security headquarters and a police compound in western Aleppo, killing 28 military and security personnel and civilians and bringing the first

significant violence to the city.¹⁵ Over the next five months, public protests and discontent with the government increased, and opposition fighters seized territory from government forces in the areas surrounding Aleppo. Finally, on the night of July 19, approximately 6,000 opposition fighters invaded Aleppo from the city's northern and eastern countryside and gained control of eastern and southwestern neighborhoods.¹⁶ The Syrian government responded to the opposition (which was armed with rifles and machine guns) by firing mortar shells, launching rockets from helicopters, and sending additional troops from other parts of the country to defend the city's western half. Government forces did not send ground troops to retake lost neighborhoods, but strafed them with helicopters and warplanes.¹⁷ Despite being outgunned, the opposition forces remained in control of a significant part of the city.

Over the next few months, fighting reached a stalemate. Government forces controlled the western half of the city while opposition forces controlled the eastern half, and the 2.5 million residents were split roughly evenly down the middle. Throughout this stalemate, each side indiscriminately attacked the other – opposition forces with mortar fire and government forces with rockets and missiles – in violation of IHL. Government forces also targeted civilian spaces such as schools, markets, bakeries, and hospitals. Their aim was simple: make living in opposition-controlled areas unbearable. While some residents fled to rural areas, to Turkey, or even to government-controlled territory, hundreds of thousands remained.

From December 2013 through the summer of 2014, government forces employed a new tactic, showering Aleppo daily with barrel bombs –

improvised explosive devices dropped from helicopters.¹⁸ When this assault first began in late 2013, Aleppo was still densely populated, and a single barrel bomb falling on a residential area could injure 100 people. But intensified attacks caused an exodus from the city, and months into the barrel bombing campaign, each attack took a smaller human toll.¹⁹

By August 2014, barrel bomb attacks slowed to just a few each day and remained at these lower levels until April 2015. Many residents who had previously fled the city returned during this period, as decreased attacks inside the city coincided with increased airstrikes in parts of rural Aleppo governorate (including by U.S.-led coalition forces) and the growing threat of IS east of the city. Over the summer of 2014, IS forces advanced west from their stronghold in Raqqa governorate and took over villages only 30 miles north of Aleppo. Many residents of these and neighboring villages were displaced to Aleppo.²⁰

The most recent period of the conflict has again seen more numerous attacks on the city. Beginning in April 2015, after government forces lost territory in neighboring Idlib governorate, they began a renewed assault on Aleppo with barrel bombs. According to doctors we spoke with, this assault was even more intense than the last. The bombing was compounded by an IS advance that threatened to cut off the main supply route to Turkey and effectively besiege the city.²¹ While IS has not succeeded, Aleppo's residents are fearful that the situation could change rapidly with either an advance by government forces from the west or IS forces from the east.

Background on Syria and the Conflict in Aleppo

continued

Barrel Bombs: Weapons that Terrorize and Maim

Barrel bombs are a crude, low-cost weapon made by filling empty barrels or cylinders with explosives, shrapnel, nails, and oil and dropping them from helicopters. These weapons weigh between 200 and 2,000 pounds and can decimate an entire city block. They are indiscriminate and extremely destructive, as they tumble through the air and break into thousands of fragments upon impact, resulting in an enormous blast radius. They annihilate anything and anyone in their path, tearing flesh apart and leaving just body parts in their wake. In addition to the physical destruction, barrel bombs have a tremendous psychological impact on those living in their path. There is no way to protect oneself from them; residents live in constant fear of blue skies, which often bring barrel bomb assaults.



Syrian rescue workers look up to the sky in search of warplanes in the al-Jallum neighborhood of Aleppo, following a reported barrel bomb attack by Syrian government forces. Photo: Karam al-Masri/AFP/Getty Images

Aleppo as a Case Study of the Syrian Conflict

Aleppo has faced three years of unrelenting attacks that have killed and maimed thousands of residents. The city has also been under threat of siege, both by Syrian government forces and IS, for much of that time. But rather than surrender to their murderous government or the terrorizing tactics of IS, many of Aleppo's residents have chosen to stay in their city and try to maintain their lives. They rebuilt their

homes and reestablished hospitals in basements, and they have founded organizations to support medical care in one of the most dangerous cities in the world. PHR chose Aleppo as a case study because it illustrates what a dedicated and resilient medical community can achieve in some of the worst circumstances. The story of Aleppo exemplifies the ingenuity and resolve of the many Syrians who have chosen to stand up for human rights and international law rather than surrender to tyranny.

Methodology and Limitations

Methodology

The findings in this report are based primarily on interviews conducted by PHR in Gaziantep and Kilis, Turkey from July 22 to July 30, 2015. The research team conducted semi-structured interviews with 24 individuals providing health care, supporting the health care system, or documenting events in Aleppo. They interviewed staff working in or supporting each of the 10 currently functioning hospitals, the main aid and medical organizations supporting hospitals, and the leading organizations documenting violations and providing health assessments in Aleppo. PHR determined the number of physicians remaining in Aleppo by compiling data on the number of staff at each hospital, which PHR received from each hospital's physicians or organizational staff. PHR selected interviewees from contacts developed through its documentation efforts in the region, from attendees of the Syrian American Medical Society's 15th International Conference in Gaziantep from July 23 to July 26, 2015, and through snowball sampling methods.²²

The PHR team interviewed 13 medical doctors (one ear, nose, and throat (ENT) specialist, one emergency medicine doctor, three general surgeons, two neurosurgery residents, one ophthalmologist, one orthopedist, two pediatricians – one resident, one fully trained – and two urologists), two pharmacists, one dentist, one forensic pathologist, two lawyers, and five

individuals without specialized training who work for organizations supporting health care in Aleppo. Eleven of the medical personnel interviewed were either currently working in hospitals in Aleppo or had stopped in the past three months. They have worked at eight of the 10 hospitals currently functioning in Aleppo. The interviewees came from 13 organizations and coordinating bodies, of which 11 were Syrian-run and two were international.

PHR obtained informed oral consent prior to each interview and written informed consent prior to taking any photographs. For security purposes, this report does not identify any interviewees by given names or commonly used pseudonyms. Instead, it refers to each individual interviewed by a randomly assigned letter, their profession, and when necessary, the hospital or organization for which they work.

The information collected through these interviews is supplemented by secondary research conducted by PHR through its ongoing work documenting attacks on medical facilities and personnel in Syria.

PHR's Ethics Review Board (ERB) approved this research. PHR has had an ERB since 1996 to ensure protection of human subjects in its research and investigations. PHR's ERB regulations are based on Title 24 CRF Part 46 provisions (see: <http://ohsr.od.nih.gov/guidelines/45cfr46.html>), which are used by academic Institutional Review Boards (IRBs). All of PHR's research and investigations involving human subjects must be approved by the ERB and conducted in accordance with the Declaration of Helsinki as revised in 2000.

Limitations

Due to the ongoing conflict, PHR researchers were unable to travel to Syria to conduct interviews. This limited the number and type of medical personnel interviewed, primarily to those who were able to travel to Turkey. Medics, nurses, and other lesser-paid health professionals are often not able to travel to Turkey as frequently and easily as doctors, and the few female physicians left in Aleppo do not travel as much as their male colleagues. Thus PHR's interviews with personnel currently working in Aleppo were limited to male doctors, dentists, and pharmacists; consequently, they do not capture the experiences of other vitally important health workers and female physicians who are also risking their lives to provide health care in Aleppo.

Findings

“Within the same period of time, five hospitals were targeted and the targets were very precise. It’s not a coincidence.”²³
Dr. A, a young pediatric resident working in a trauma hospital in Aleppo

Aleppo’s Health Care Infrastructure and Personnel

Systematic attacks – both targeted and indiscriminate – have degraded Aleppo’s health care infrastructure and decimated the medical workforce. More than two-thirds of the city’s hospitals are no longer functioning as a direct result of the conflict, and more than 95 percent of the city’s doctors have fled, been detained, or killed. The fact that Aleppo’s health care system (a skeletal version of what existed just five years ago) is able to function at all demonstrates the resourcefulness and dedication of Syrians both inside and outside the country. When their government destroyed the city’s infrastructure, killed dozens of medical personnel, and forced hundreds of their colleagues to flee for their lives, Aleppo’s remaining health workers did not give up. Feeling a sense of duty toward their neighbors and understanding their departure would result in further loss of lives and decreased access to health care, they rebuilt a health care system and saved thousands of lives. But the few health workers who remain cannot treat many of the numerous life-threatening injuries they confront every day.

Attacks on Hospitals

PHR documented the first attack on a medical facility in Aleppo on July 30, 2012, one week after the opposition gained control of the city. Over the next seven months, government forces launched 17 attacks on 10 medical facilities in Aleppo, the majority with mortar fire, missiles, rockets, and other aerial bombardment (see Figure 1).

The attacks on Dar al-Shifa Hospital, a private hospital located in the densely populated al-Shaar neighborhood, make evident the deliberate nature of these attacks. On August 12, 2012, Syrian government forces attacked Dar al-Shifa Hospital with artillery shells fired from a helicopter. Two days later, on August 14, the hospital was again damaged in an airstrike. The first week in October saw the hospital’s third, fourth, and fifth floors damaged by a series of rocket strikes. Finally, on November 21, a missile hit the hospital and put it out of service. Dr. E, a urologist who was working at the hospital during the final attack and the other hospital staff worked from 7 p.m. to 3 a.m. trying to save civilians stuck under the rubble. They eventually transported four injured

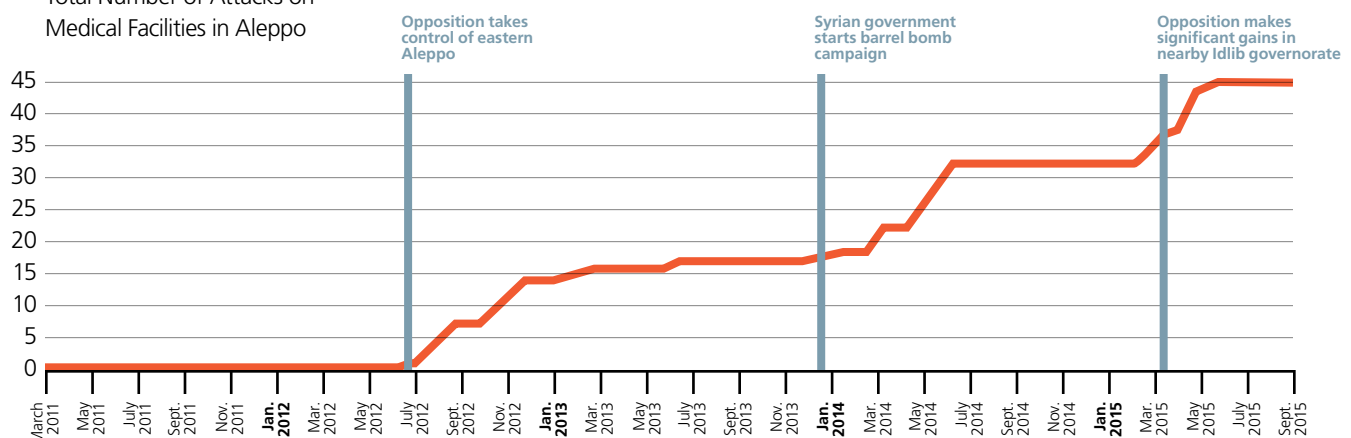
and 13 dead to another nearby hospital. Two members of the medical team died in the attack.²⁴

As attacks on the city continued, electricity and phone lines were cut, leaving radio and walkie-talkies as the only means of communication. Medical staff feared the Syrian government could easily intercept this communication, making it easier for them to target hospitals, so they created code names for facilities. Hospitals were labeled M1, M2, etc. (M stands for *mashfa*, the Arabic word for hospital), and medical points, which often provide first aid, were labeled N1, N2, etc. (N stands for *nuqta tibiya*, the Arabic term for medical point).²⁵ Physicians recognized that this naming system did not increase protection for long; the Syrian government would likely figure out which hospital was which. Medical staff discussed changing the names in 2014 but decided it was not a high priority.²⁶

March to December 2013 was a period of relative calm in Aleppo. PHR only documented one attack on a medical facility there during this time period; al-Jaban Hospital was destroyed after

Figure 1

Total Number of Attacks on Medical Facilities in Aleppo



Source: Physicians for Human Rights, “Anatomy of a Crisis: A Map of Attacks on Health Care in Syria.”



Zahri Azrak Hospital, located in the Trab al-Hellok neighborhood in Aleppo city, was attacked on August 25, 2012. The American Association for the Advancement of Science (AAAS) obtained imagery of the hospital that was collected on August 18, 2012 and September 1, 2012, just days before and after the reported attack. The before and after images clearly show damage to the rear entrance of the southern wing of the hospital. The damage observed is consistent with shelling. Photo: Digital Globe Analysis: AAAS

"I call 2014 the barrel bomb era."²⁷
Dr. D

sustaining several mortar and aerial assaults by Syrian government forces.

Then, in mid-December 2013, Syrian government forces launched an intense barrel bomb campaign on Aleppo. PHR documented the first of such attacks on a medical facility on January 30, 2014. Syrian government forces barrel bombed a clinic in Mayasar neighborhood, killing a doctor and member of the Polio Control Task Force who were vaccinating children. Since then, Syrian government forces have launched an additional 26 airstrikes on medical facilities in Aleppo, 23 of them with barrel bombs.

Between April and July 2014, Syrian government forces perpetrated at least 13 attacks on seven medical facilities in Aleppo. Of these attacks, 12 were with barrel bombs and one was with a rocket. Multiple medical facilities were attacked repeatedly, forcing them to reduce service or close completely.

M10, one of the main trauma hospitals, was attacked with barrel bombs four times in just 11 days. On June 23, 2014, Syrian government forces attacked the hospital, damaging its emergency room, operating room, intensive care unit (ICU), and generators. The following day, the hospital was struck again, causing damage to the building, oxygen equipment, and generators. On July 1, government forces again bombed the hospital, killing four civilians and injuring seven medical personnel. After another attack on July 3 that wounded seven, the hospital was put out of service for nearly three months as staff made repairs and moved the facility underground.

Following this series of attacks during the summer of 2014, the health care system in Aleppo adapted. Where possible, workers moved facilities underground to protect them from future attacks. In other cases, they stopped working on the top floors of their buildings, which are the most likely to be destroyed in an airstrike. In addition to the threat of death, barrel bombs cause enormous psychological

harm. Many of Aleppo's physicians and residents have fled the city because of these attacks. Dr. E estimated that prior to the barrel bomb attacks, there were 10 times as many doctors in Aleppo as there are today.²⁸

There was a brief respite from attacks on health facilities from August 2014 through March 2015 in Aleppo. But beginning in April 2015, a month after the Syrian government faced major setbacks across nearby Idlib governorate, attacks increased. From April through July 2015, PHR documented 13 aerial attacks on 10 medical facilities, of which 11 were by barrel bombs and two by rockets and missiles.

The underground architecture undoubtedly increases medical facilities' protection, but "that is still not enough," said Dr. D, a urologist who works at M10.²⁹ On April 28, Syrian government forces again barrel bombed his hospital, the same facility that moved underground in July 2014 following four devastating attacks. Dr. L, a neurosurgery resident at M10,

Findings

continued

One Doctor's Courage

Dr. L is one of the few physicians who chooses to live with his wife and young son in Aleppo rather than commute from Turkey. He described their lifestyle in the city: "Our house is normal. It has rooms, a garden, a fountain... We have trees and flowers. It's not as bad as we imagine. But the fear when the airplanes come, it's the most important fear. We have no way to manage that." There have been numerous attacks near his house but no direct hits yet. He said about the most recent attack, "We woke up with a bvvvvvv," imitating the sound of a warplane. "We had no time to escape or hide under the bed or behind the door. It was a very terrible and horrible experience." When asked how he takes care of himself psychologically, he responded, "Like the others, we try to be normal. We try to adapt to the situation and protect ourselves, so we live our lives as normal and forget we are in danger. When we are attacked, we laugh and sing, 'We will stay here, we will stay here.'"

was there during the April attack. "In the first few moments, I couldn't concentrate on anything. I only heard the sound of the barrel falling. It's a very high sound and horrible, actually. It makes you fear; a very big amount of fear you see in the faces of others."³⁰ The attack damaged generators, the outpatient clinic, and medical equipment including an ICU monitor and oxygen cylinders. The following day, Syrian government forces again barrel bombed the hospital, causing additional damage. The hospital was out of service for 20 days as staff made repairs and reinforced the building. They surrounded it with bags and barrels filled with sand, trying to protect themselves from the shrapnel-filled barrels they are certain will fall again. Dr. D said, "The old building is close to being destroyed. Maybe in the next strike, I don't know."³¹

To date, the Syrian government has been the only perpetrator of attacks on medical facilities in eastern Aleppo city. However, some physicians noted that opposition groups have interfered with medical work in the city. Dr. L explained that armed groups have come into hospitals with weapons and demanded that their patient receive treatment immediately. "We always manage this by calming the atmosphere and explaining the injury and what the treatment is."³² Such coercion is a violation of medical neutrality, the principle under IHL that health care is protected and must be provided impartially.

Survival Techniques

Over the past three years, Aleppo's residents have learned how to mitigate the impact of aerial attacks. The city now has a warning system to alert people of an impending attack. When a helicopter is spotted, people will notify the system, which then blasts an alarm. "When you hear the

alarm sound, you have maximum two minutes" before a barrel bomb will fall, Dr. L explained. But there are no alarms for warplanes.³³ Hackers also intercept radio communication from the Syrian government. In a few cases, hackers have overheard reports of impending attacks on hospitals, physicians said, and hospitals have been alerted via walkie-talkies.³⁴

Ideally, hospitals should be evacuated when there is warning of an attack, but in practice, that is very difficult. There is often no time and no place to transfer patients, and closing a hospital would limit access to health care for those injured in the impending attacks. Even when hospital directors have recommended that staff evacuate a hospital, many have chosen to remain and risk their own lives in order to save others.³⁵

Hospitals in Aleppo have also adopted techniques that cars were using early on in the conflict – turning off lights at night. Dr. R, a general surgeon who recently stopped working at a trauma hospital in Aleppo, explained that cars cannot use lights at night because, "it's a sign for the plane to bomb." Hospitals started adopting the practice as well. "Sometimes we turn off the lights in the hospital if we feel that there may be some attack coming. Sometimes light is a problem."³⁶

Despite developing and adopting survival techniques, hospitals in Aleppo continue to be attacked, severely damaged, and destroyed. Most hospitals still functioning today have been attacked repeatedly, M10 up to seven times. With such frequent attacks, physicians in Aleppo have no doubt that the government is targeting their hospitals.

“Maybe we are only a few physicians in a simple hospital and with simple equipment, but we save a lot of lives.”³⁷
Dr. D

Organizing bodies, funders, and medical staff sometimes have different definitions of facility types. PHR defines the different medical facilities as follows.³⁸

Figure 2
 Definitions of Types of Medical Facilities

Field Hospital ³⁹	A medical facility equipped to provide surgery or other inpatient services
Medical point and first aid point	A medical facility staffed with medics and volunteers, equipped to provide first aid, stabilize patients, and refer cases to nearby hospitals; are often closer to frontlines than hospitals and serving as the first point of contact for patients
Clinic and medical center	A medical facility equipped to provide outpatient services; often specializing in specific treatments, such as pediatrics, dental, and obstetrics and gynecology
Polyclinic	A group of clinics with multiple specializations
Mobile clinic	A small clinic run out of a vehicle such as an ambulance or a van
Ambulance network	A medical facility with ambulances equipped to provide first aid, triage patients, and refer patients to hospitals; patients can come to this facility for treatment, or teams from this facility can provide first aid in the field
Blood bank	A medical facility that stores blood and products for transfusions
Dispensary	A medical facility equipped to provide medication and vaccines

Medical Infrastructure that Exists Today

As of August 2015, there were 10 hospitals⁴⁰ functioning in Aleppo – just 30 percent of the 33 functioning hospitals in 2010,⁴¹ which included some of the city’s largest with specialized services.⁴² Today’s functioning hospitals include seven field hospitals for trauma surgery, an ophthalmology hospital, an obstetrics and gynecology hospital, and a specialized children’s hospital. Hospitals range in size and capacity, with some facilities having as few as two or four doctors and another having as many as 13.⁴³ The equipment available in each hospital also varies widely; some hospitals have no ICU beds while others may have several.

What is clear from interviews is that there is a significant lack of sophisticated medical equipment in Aleppo. At the time of writing, there were only three dialysis clinics, and one was out of service.⁴⁴ There were also no functioning computerized tomography (CT) or magnetic resonance imaging (MRI) machines for over a year, and there is still no MRI machine at the time of writing.⁴⁵ A CT scanner was delivered to one of the large trauma hospitals in August 2015, but it broke after two weeks of use and was undergoing repairs at the time of writing.⁴⁶ Maintaining a CT scanner (or any other specialized equipment) in Aleppo is extremely costly and resource prohibitive, requiring specialized tools and a trained technician for constant repairs.⁴⁷ Even when the equipment is available, it is often substandard. For example, an ICU bed could be anything from a bed equipped with respirators and cardiac monitors to simply a bed with an IV attached.

Most, if not all, of Aleppo’s field hospitals are located in buildings that served as medical facilities before the conflict. While this puts the facilities at greater risk of attack because the Syrian government knows their locations, this is a risk the medical community in Aleppo is forced to take. It is very costly to outfit a non-medical building with specialized wiring for oxygen, water, and electricity, among other things, and funding organizations cannot afford to effectively build new hospitals.⁴⁸ Dr. K, a dentist working in Aleppo, also recognized that relocating medical facilities to different buildings would only increase protection for a short time. “A single massacre is enough to expose the [hospital’s] location,” as the Syrian government could just track the flow of injured patients to the hospital’s new location.⁴⁹

In addition to field hospitals, Aleppo has a number of clinics and centers for specialized services, medical points to

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provide first aid and perform triage for trauma patients, and other medical facilities to provide specialized care. Many of the clinics are in geographically fixed locations, but medical points can change locations based on needs and the security situation, as they require less specialized equipment. PHR estimates that there are 20 clinics and medical centers, three dental clinics (the only source of dental care), four medical points, and a blood bank in Aleppo. While these facilities are numerous, they, like all facilities in Aleppo, are likely under-equipped and understaffed.

Aleppo does not have a centralized health care system with one organization coordinating operations, services, and personnel throughout the city. The Aleppo City Medical

Council, Free Medical Association, and Union of Free Syrian Doctors are three of the main coordinating bodies that help to run health facilities in Aleppo, in addition to the Aleppo Health Directorate. The supporting and funding organizations – which include (among others) the Syrian American Medical Society, Union Internationale des Organisations de Secours et Soins Médicaux, Médecins Sans Frontières, and Medical Relief for Syria – provide facilities with money, medical supplies, and equipment and also help run them. This lack of organization among the numerous coordinating bodies and funding organizations is inefficient and has likely led to both overlaps and gaps in coverage, communication, and aid deliveries throughout the city.

Medical Personnel Who Remain Today

Physicians in Aleppo

PHR estimates that there are a maximum of 70 to 80 physicians⁵⁰ who work in Aleppo over the course of one month. However, as most physicians only work 15 to 20 days each month (and spend the rest of their time in Turkey with their families), the total number of physicians working at one time is only 50 to 66 percent of the total number. Thus, at any given time, it is estimated that there are only 37 to 50 physicians working. Put into perspective, approximately 5 percent of Aleppo's pre-war physician population remains today.^{51, 52} Although the city's population has decreased to approximately 300,000 residents, nearly a quarter of what it was in 2010, there is now approximately one doctor for every 7,000 residents compared to one doctor for every 800 residents in 2010, as illustrated by Figure 3.⁵³

Figure 3

One Doctor for Every 7,000 People
in Eastern Aleppo City



In 2010 there were approximately 800 people for every doctor.

= 200



In 2015 there are approximately 7,000 people for every doctor.

"I lost many of my faithful friends as they worked to save others' souls."⁵⁴

Dr. D



Elise Baker, PHR program associate interviews a doctor from Aleppo whose identity has been obscured for security purposes.

Figure 4 provides a breakdown of the number of physicians in Aleppo according to their specialty.^{55, 56} The best-represented specialties in Aleppo are internal medicine, general practice, emergency medicine, general surgery, orthopedic surgery, and pediatrics. There are three or four of each of these specialists working in the city at any given time, along with one or two urologists, ENTs, and gynecologists. However, with only one thoracic surgeon, plastic surgeon, renal surgeon, neurologist, and cardiologist, there are guaranteed gaps in coverage for these specialties.

Dr. K told PHR there is only one female obstetrician/ gynecologist that he knows of working in the city, and she has stayed throughout the conflict because, "she knows women will die if she leaves."⁵⁷ Dr. H, a general surgeon working with an organization that documents health issues in Aleppo, thought there might be two or three other female physicians at most. As Syria had relatively equal numbers of male and female physicians before the conflict, this gender ratio is indicative of the large number of female physicians who have fled the country.⁵⁸

Figure 4

Breakdown of Physicians' Specialties in Aleppo, July 2015

Specialty	Total
General	22-25
Internal medicine and general practitioners	15-18
Emergency medicine	7
Surgeons	26-27
General surgeons	7-8
Orthopedic surgeons	7
Vascular surgeons	2
Thoracic surgeons	1
Urologists	5
Plastic surgeons	1
Renal surgeons	1
Neurosurgeons	2
Other Specialists	22-25
Neurologists	1
Cardiologists	1
Ear, Nose and Throat (ENT) doctors	4
Pediatricians	9-10
Obstetricians/Gynecologists	4-5
Ophthalmologists	2
Anesthesiologists	1-2
Total	70-77

Another Colleague Lost

On July 25, 2015, the only urologist working in a hospital in northern Aleppo governorate was killed when the car in which he was traveling was bombed by Syrian

government forces. Many of the physicians PHR interviewed the next day had been friends with him. Dr. D said in his interview, "Our colleague who was killed yesterday worked

in Azaz hospital – we won't find another surgeon to work there. We need help to protect our people. Every physician, doctor, nurse killed, we haven't another."

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Conditions for Physicians

Aleppo's health professionals have learned to provide care in a dangerous and low-resource setting. They live in constant fear of the next attack and with the grim reality that none of the protections for medical facilities and personnel, mandated by international law, are enforced for them.

Because there are so few of them, physicians working in Aleppo explained that they don't have shifts at their hospitals. When they are in Aleppo, physicians remain in medical facilities almost 24/7, working, eating, and sleeping there in order to respond immediately when there is an attack. Dr. A said he's been unable to take days off in the city because the need is so great. In order to take a break, he leaves and travels to Turkey.⁵⁹

Several physicians noted the high rate of burnout among their colleagues. Said Dr. S, a general surgeon working in Aleppo: "In Arabic there is a phrase, 'There are some working fuses still in your head.' If all your fuses are out, you can't take any more. There are many colleagues who worked so hard and then had to leave and stop because they got so depressed and couldn't sleep. This moment can happen at any time – you can't know when it might happen

"My family respects my choice to live and work in Aleppo, but they live in fear. It is not an easy thing."⁶⁰

Dr. K

to you. You need to care for yourself to keep going."⁶¹ When asked about the psychological trauma they face every day in Aleppo, some physicians were able to discuss their mental health while others were not. After describing a barrel bomb attack on his hospital, Dr. A, the pediatric resident working in a trauma hospital in Aleppo, said, "Don't even ask me about the shock."⁶² It was clear that all physicians have struggled with and continue to struggle with the trauma inherent in providing health care in a war zone.

The physicians PHR interviewed acknowledged that they could leave at any time and find work in Turkey or Europe, as many of their colleagues have done. The low and often infrequent salaries are certainly not an incentive to stay. While a number of organizations provide support for surgical equipment and medication, fewer groups provide money for salaries, hospital maintenance, and repairs. "We find it shameful and insulting that we have to worry about finances when we are risking our lives and saving lives, and there are no salaries for people," said Dr. K. "Donors will not provide money for running costs and salaries."⁶³ With insufficient and sporadic funding, hospitals are left with low quality and sometimes ineffective medication and equipment, lack of oil for generators, little material to reinforce hospitals after attacks, and inadequate salaries for nurses, medics, and other lesser-paid medical personnel who struggle to work in Aleppo and support their families.⁶⁴

Still, these doctors and other health workers stay, knowing that if they leave, nobody will replace them. Dr. L, the neurosurgical resident, said: "Our people need us. When every man leaves his country and goes outside, who will stay in the city and give the services to the people?"⁶⁵ Dr. B, one of the few ophthalmologists in the city, echoed this sentiment: "It's obvious we're not going to leave. This is our duty. We're not getting any new doctors. If I leave, there will be too big of a gap. If they get a patient with a foreign object in his eye, where will he go?"⁶⁶

Other Medical Personnel

PHR estimates that there are approximately 180-190 nurses working in field hospitals, in addition to the many more working in clinics, medical points, and other medical facilities around the city. Prior to the start of the conflict, there were nearly three doctors for every two nurses.⁶⁷ Now, there are more than two nurses for every doctor. This shift is likely due to the exodus of so many physicians, who often have more financial means and a greater ability to find work outside Syria than other health professionals. In addition, a nursing school was established in Aleppo after the start of the conflict.⁶⁸ This initiative is yet another example of Syrian health workers' ingenuity and resolve. It has increased the number of staff and thus access to health care in Aleppo, but it suffers from the same lack of resources that the hospitals do.⁶⁹

A Commitment to His People

Dr. A was completing his pediatric residency when the conflict broke out. Despite his family's wishes, he has remained working in Aleppo. "It's natural for a family to be against the decision because they care about their child's development

as an individual, especially when the person has the potential to continue elsewhere. That's the opinion of 95 percent of mothers and fathers in Syria." When asked what keeps him in the city, he laughed. "It's a difficult question that I'm dealing

with myself. It's our country and if we leave, it will fall apart. I think maybe I will leave and specialize and come back with better skills. But then I see how much the people need me. Maybe that's the biggest thing that's keeping me inside."

**"There are weapons we didn't
imagine and injuries we didn't
see in the books."⁷⁰**

Dr. L

Provision of Health Care for Traumatic Injuries

Despite greatly diminished staff, equipment, and facilities, health workers have found ways to provide treatment, ensuring that Aleppo is still a somewhat livable city. But the abundance of severe trauma injuries, especially from barrel bombs, is stressing the available emergency care far beyond its capacity and resulting in countless civilian deaths.

Injuries Seen

Medical personnel in Aleppo have seen a range of injuries, from textbook broken bones and lacerations to previously unimaginable wounds. The most common injuries are on the abdomen, chest, and limbs.⁷¹ Dr. H, a general surgeon, explained, "It's human instinct to hold your hands up and protect yourself, so that's where the injuries are."⁷²

While the types of injuries have largely remained the same, the weapons used and extent of injuries have changed over time. Physicians in Aleppo described seeing typical injuries from bullets, knives, mortar fire, and rockets early on in the fighting. These weapons would most often cause a single injury on an individual – a broken bone, laceration, or rarely, a severed limb.⁷³

There were also many injuries from sniper attacks. After fighting split the city in half, with opposition forces controlling the east and government forces controlling the west, there was a single crossing between the two sides named the "corridor of death." This two-block street was the only way to travel between the two sides of the

city, which was part of daily life for those with homes, family, and work on either side of the city. Snipers would position themselves on towers and in buildings and target people – mostly civilians – as they crossed.⁷⁴ This practice became a game for the snipers, and physicians started noticing patterns each day – shots only in the groin one day, in the neck the next day, the stomach of pregnant women the next.⁷⁵ As the urologist Dr. D explained, "Sometimes snipers attacked children or pregnant ladies. But that does not happen anymore because the death corridor is closed."⁷⁶

After the Syrian government started using barrel bombs in late 2013 and reduced its use of mortar fire, rockets, and missiles, the number of injuries resulting from a single attack – and their severity – increased.⁷⁷ Barrel bombs obliterate anything and anyone they hit directly and inflict head to toe injuries on anyone in their large blast radius.⁷⁸ Dr. E, the urologist from Dar al-Shifa Hospital who moved to a field hospital after his original hospital was destroyed, estimated that barrel bombs cause three times as many injuries on a single patient as rockets and missiles cause.⁷⁹ These patients with multiple injuries are sometimes impossible to treat, as there is rarely enough time for multiple specialized surgeons to dedicate themselves to a single patient in need of numerous operations.⁸⁰ Dr. S described the horrific nature of these weapons and their resultant injuries: "I felt well-trained, but nobody could be prepared for the complexity of the wounds we see. None of us felt prepared. We just do the best we can."⁸¹ The extent of these injuries illustrates why the use of indiscriminate weapons in civilian areas constitutes a war crime.

A Mother and Her Daughter

Dr. D recounted the story of a barrel bomb attack in a residential area. "There was one case where a mother's and daughter's home was struck by a barrel bomb. The daughter caught the mother's hand, and that was all that was left of them. The rest of their bodies were not found. I saw that." Following his interview, the doctor e-mailed PHR a photo of the two hands clasped together. The mother is wearing a gold watch on her wrist, and her child's hand is half the size of hers. Midway down their forearms, their flesh is shredded. Doctors and first responders never found the rest of their bodies.

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“We joke that our complications range between paralysis and death. It’s very bad.”⁸²

Dr. L



Treating Traumatic Injuries

Due to a large number of patients with life-threatening traumatic injuries requiring surgery, doctors working in Aleppo do far more than their medical school and residency training prepared them for. They frequently are forced to act as general surgeons or emergency medicine physicians, even though many were not formally trained in these fields. Dr. L, who was in the middle of his residency in neurosurgery when the conflict broke out, most often assists in general surgery and rarely performs any neurosurgery because there are seldom any functioning CT scanners in Aleppo.⁸³ Dr. D, the urologist who works as the director of one of the largest trauma hospitals in Aleppo, performs not only urology surgery but also trauma surgery.⁸⁴ Dr. A, who was in his pediatric residency when the conflict broke out, works as an emergency

medicine doctor and a surgery assistant at the largest trauma hospital in Aleppo. He also provides pediatric services in specialized clinics in his spare time.⁸⁵

These doctors learned to perform surgeries outside of their expertise by observing other surgeons in Aleppo and at hospitals along the Syrian-Turkish border, attending lectures and trainings in Turkey, and then assisting in surgeries.⁸⁶ Physicians also learned new skills and operations from foreign doctors – mainly trauma surgeons – who came to work in Aleppo early on in the conflict. Dr. N, an emergency medicine doctor working in a trauma hospital in Aleppo, explained that thoracic and cardiovascular injuries went untreated until a British cardiologist visited a year and a half ago and trained doctors.⁸⁷ Later, physicians on staff were able to successfully repair a patient's

Syrians carry a wounded man on a stretcher following a reported barrel bomb attack by government forces on the opposition-held area of al-Maadi in Aleppo.

Photo: Karam al-Masri/AFP/Getty Images

left ventricle, even without a thoracic specialist at the hospital.⁸⁸ These visiting physicians greatly improved health care in the city. But, says Dr. D, “Foreign doctors don’t come anymore. This is a big problem because there are only a few surgeons [left].”⁸⁹

Physicians have also had to learn to perform new operations on the spot. Dr. K, a dentist who was never trained in maxillofacial surgery,⁹⁰ was the only doctor available one day to operate on a patient whose jaw was completely destroyed by a sniper shot. “I had to do deep sutures of the muscle, which was my first time, so I learned by doing that. I closed the patient and hoped that I had done a good job.”⁹¹

After an attack, patients are most often sent to the closest hospital in the city, as all of Aleppo’s hospitals are able to provide emergency care. If the hospital is overcrowded, or if the patients need specialized services, they’re likely transferred to other hospitals in ambulances, which are also frequently attacked.⁹²

A large influx of patients after an attack presents even greater challenges, as a doctor must quickly determine who might survive with immediate treatment, who could wait for treatment, and which cases are hopeless.⁹³ “When a massacre happens, you have hundreds of people being rushed to the hospital with horns honking outside, relatives screaming, and everything covered in dust,” Dr. S explained. “Everyone wants their patient to be the first treated. We leave them on the floor and try to start the triage. It is very complicated to figure out who should go first.”⁹⁴ The staff try to treat everyone, but as Dr. D added, “If the prognosis is not good, we do not operate.”⁹⁵

Services Not Provided

Although medical staff have been remarkably successful at providing services outside their expertise and making do with the limited equipment and supplies they have, many injuries are beyond treatment in Aleppo. In some cases, a hospital might have the appropriate specialist but not the necessary equipment, as is the case with neurological injuries. Although there are two neurosurgeons in the city (Dr. L and an Egyptian neurosurgeon who works part-time), neurosurgery has been impossible without a functioning CT scanner. Spinal injuries, too, are nearly impossible to treat without a CT or MRI machine.⁹⁶ Ophthalmologist Dr. B can provide emergency care and remove foreign objects and blood clots from eyes, but he can’t perform most eye surgeries since the ophthalmology hospital in which he works does not have the specialized microscopes required for such procedures.⁹⁷ The lack of well-equipped ICU beds also limits the number of intensive and invasive surgeries that can be performed at one time.⁹⁸

In addition to equipment, the lack of specialized staff limits the type of surgeries that can be performed. As there are very few vascular surgeons, thoracic surgeons, and cardiologists, most of those cases cannot be treated adequately inside Aleppo.⁹⁹ Dr. A said he has seen many patients with treatable vascular injuries hemorrhage to death.¹⁰⁰ Other specialties are completely absent from the city, making

“If you see brain matter coming out or crushed limbs, you know you can’t treat them.”¹⁰¹

Dr. H

treatment impossible. There are no pathologists to diagnose cancers and provide pre-op and post-op services, no nephrologists to treat renal failure, and no dermatologists to provide specialized services (although dermatological medicine is available).¹⁰² Endocrinologists are also unavailable. According to Dr. R, “Four months ago, a doctor entered [Aleppo] to work with us and was killed one week later on the road. He was the only endocrinologist.”¹⁰³

Even when initial operations and treatment are possible, follow-up care may not be. With post-operative care often unavailable, serious infections after surgeries, often resulting in amputations, are common. Severe burns are also difficult to treat, as patients require intensive follow-up care in specialized facilities. And rehabilitation services are non-existent. “When a patient doesn’t die from these injuries, he will have a difficult life without limbs, or [his] sphincter muscles will stop working,” said Dr. R, a general surgeon. “Sometimes they become paraplegic or quadriplegic. These patients survive, but they need constant care and can’t get better. Psychologically, they are hurt. It’s becoming a social or community problem. Rarely do you see organizations adopting and addressing these issues... Wheelchairs and walkers exist, but nothing beyond that.”¹⁰⁴

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Referrals to Hospitals in Turkey

When asked how they deal with patients who require services not available in Aleppo, every physician PHR interviewed said that patients are referred to hospitals in Turkey. When questioned further, it became obvious that the referral system is not a workable solution, and some patients refuse to be transferred.¹⁰⁵ Patients must be driven to Turkey in ambulances (as they require stabilizing medical services), which are in short supply in Aleppo, and the drive is extremely dangerous.¹⁰⁶ There is only one road in and out of Aleppo: Castello road. It is about 20 meters wide, sandwiched between Syrian government- and IS-controlled territories, and frequently bombed by government forces. According to Dr. F, a physician working with an organization in Turkey that supports health care in Aleppo, “If a jet is in the sky, nobody will go in or out [of the city].”¹⁰⁷ It is also unsafe to drive at night, as government forces will bomb cars they see traveling with their lights on.

If transportation is possible and patients survive the few-hours drive to the Turkish border, the patients may face difficulties crossing into Turkey. When border crossings are closed to the general public, Turkish authorities will still allow emergency medical cases and 50 “cold cases” (non-emergency cases) to enter the country each day. However on these days, Dr. F said that Syrians without medical conditions (who are not allowed to cross into Turkey when the borders are closed) sometimes cross as some of the 50 daily cold cases. The lucky few who arrive in Turkey then face additional complications – language barriers, long wait times, and unclear legal status.¹⁰⁸

While no physician interviewed knew how many patients referred to Turkey survived – they do not have the capacity to follow up with and monitor patients referred elsewhere – one physician estimated that 10 percent of patients referred to Turkey with neurological injuries survive, and perhaps 60 to 70 percent of patients with other injuries survive.¹⁰⁹

Because the referral system is imperfect, especially for patients needing immediate intensive care, many patients die simply from a lack of medical care inside Aleppo.¹¹⁰ Dr. A explained that neurological injuries result in the highest proportion of deaths compared to any other injury.¹¹¹ But multiple trauma wounds on one patient (common in barrel bomb attacks) cause the largest total number of deaths.¹¹² Dr. N stated, “Sometimes when there are multiple injuries, especially abdominal injuries, the odds are against survival.”¹¹³

Provision of Health Care for Chronic and Acute Illnesses

Shortages of personnel, equipment, medicine, and necessities such as clean water and electricity have caused a breakdown in Aleppo’s health care system, resulting in an increase in chronic and acute illnesses. Provision of care for these illnesses ranges from inadequate to nonexistent, and, as a result, patients are dying from treatable conditions.

Illnesses Seen

Hospitals are inundated with patients requiring emergency care for conflict-related traumatic injuries, so most patients with chronic and acute illnesses receive medical care in clinics, where some doctors volunteer.¹¹⁴ While doctors report they have not seen any new illnesses in Aleppo since the

conflict began, they are seeing increases in rates of pre-existing illnesses. This rise, they explained, is largely due to the breakdown of the health care system. The most commonly seen illnesses include acute diarrhea, influenza, dermatological diseases (scabies, lice, leishmaniasis, and fungal infections on the scalp and skin), respiratory illnesses, and Hepatitis B.¹¹⁵ The rates for these illnesses also tend to fluctuate depending on the season; diarrhea increases in the summer, and respiratory illnesses increase in the winter.¹¹⁶ Rates of water-borne diseases have also risen significantly, as access to clean water is limited, and chlorination tablets for purification are not readily available.¹¹⁷ Rates of malnutrition and resulting dwarfism are rising, especially in children.¹¹⁸

Services Provided

As the ability to treat traumatic injuries has decreased, so too has the ability to treat chronic illnesses.¹¹⁹ Provision of care depends upon the available personnel, equipment, and medicine. While services and medication are available for many chronic illnesses, the quality and adequacy of supply are often severely lacking. “There is no such thing as enough,” Dr. A said. Doctors and nurses often can only give patients medication for a few days.¹²⁰

Small amounts of medication are available for patients with heart disease, diabetes, and asthma.¹²¹ Only the most basic forms of hypertension medication are available for patients with renal failure.¹²² Some antibiotics, such as vancomycin, are available, but not in large enough quantities.¹²³ The Free Medical Association recently held a campaign to treat scabies and lice, but they did not have sufficient medicine and had to place an emergency request for more.¹²⁴



Storage presents another limitation. Many medications need to be refrigerated, but frequent electricity outages from fighting make maintaining cool temperatures nearly impossible. Large quantities of medications such as insulin and vaccines have been ruined from substandard storage. This has led to increases in preventable contagious diseases, as was the case with polio in southwestern Deir ez Zor governorate in 2013.¹²⁵

A lack of clean water further complicates some treatments. Aleppo's two functioning dialysis clinics (staffed by technicians rather than physicians, as there are no nephrologists remaining in Aleppo) are equipped with the necessary machines and medication. But the machines require purified water, which is not easily accessible.¹²⁶ Access to clean water in Aleppo has ranged from spotty to nonexistent since early 2013 due to frequent electricity cuts, damage to the water system from bombing, decreasing sanitation and hygiene, and a lack of access to and availability of purification methods.¹²⁷

Services Not Provided

A large number of services and medications are unavailable for chronic illnesses. Aleppo lacks newer generations of cardiac and asthma medicines and antibiotics.¹²⁸ While there is now a center to provide blood transfusions, which is essential for the treatment of certain blood diseases such as thalassemia, the city largely lacks the vaccines and medication necessary to accompany the transfusions.¹²⁹ Aleppo is also severely lacking in diagnostic services for liver disease, which is increasing in prevalence from breakdowns in the health care system. Its symptoms are similar to other illnesses, so it is difficult to diagnose, said Dr. C, a pathologist. "It's a silent disease and a slow execution."¹³⁰ Kidney failure is increasing in diabetics due to limited quantities of medication, improper storage, and lack of follow-up care.¹³¹ And, in general, a lack of services is leading to the spread of treatable and preventable illnesses.

A Syrian boy suffering from the 'Aleppo button' (a welt caused by leishmaniasis) stands with family members at a clinic. The latest affliction to hit weary residents of Aleppo is written on their faces.

Photo: Bulent Kilic/AFP/Getty Images

There are also profound unmet mental health needs in Aleppo, as there are no psychiatrists or psychologists.¹³² With the amount of death and destruction Aleppo's residents and health workers have witnessed, there is great need for psychological services. However, none of those interviewed knew of organizations or individuals assessing needs or providing these services in the city. Dr. N said that services were provided to staff at his hospital after they treated victims of a massacre at a nearby school, but the services were only available temporarily.¹³³

Few, if any, organizations are collecting comprehensive data on chronic and acute illnesses. However, physicians told PHR that the lack of available services for these illnesses is a predominant cause of death in Aleppo.

Conclusion

"The whole world can see, but they don't want to do anything. The barrels aren't precise. They're killing civilians. Nobody in the history of the world has struck their civilians with this vicious, barbaric weapon. Forget political ideologies and religious beliefs, these barrels are killing civilians."¹³⁴

Dr. B

When asked whether he wanted his children to become doctors, Dr. E, a urologist, responded, "No. Anything except doctors. Maybe engineers or lawyers."¹³⁵ With the Syrian government's unprecedented assault on health care, it is no surprise that he does not want his children to follow in his footsteps in choosing a life-threatening career.

The consequences of these repeated attacks, which amount to crimes against humanity, are rippling throughout the country. Civilians are being targeted with devastating weapons, creating an enormous need for emergency medical care. However, these services, along with routine medical care, are often unavailable as the health care system has itself been ravaged. Syria's humanitarian crisis, the worst in this generation, was created and is maintained by the Syrian government. With limited access to lifesaving medication, treatment, vaccines, health care providers, and safe spaces to access health care, Syrians are dying of treatable wounds and illnesses.

Aleppo's medical community agrees that the only way to improve health care and begin to restore the system is to address security. "If it weren't for the shelling and bombing, we'd have five to six times more doctors in Aleppo," said Dr. R.¹³⁶ PHR heard the same refrain from every person interviewed. "If the barrels stop, doctors will come back. We just need to stop the barrels; it's the first and the last thing we need,"¹³⁷ said Dr. E. Dr. N agreed, "Stop the barrel bombs. That is the only thing the world can help us with."¹³⁸

Syrian health workers have spent the past four years desperately urging the international community to enforce laws and protect them. The international community has heard these cries and yet continues to watch hundreds of health workers die and hard-won norms erode while offering only conciliatory food baskets and polio vaccinations. The UN Security Council has utterly failed in its mission to maintain peace and security. It has succumbed to politics, and millions of Syrian civilians are suffering as a result. While it continues to sit on its hands, the international community is complicit in each additional civilian death.

The limited lifesaving action the UN Security Council has taken on Syria was to pass Resolutions 2139 and 2165 more than a year ago. Resolution 2139 expressly called for an end to attacks on civilians and civilian objects, use of indiscriminate weapons (including barrel bombs), and attacks on health facilities and medical professionals. Resolution 2165 called for direct delivery of humanitarian aid – including medical supplies and equipment – to opposition-controlled areas, where the Syrian government was refusing to send lifesaving aid. Despite these resolutions, the Syrian government continues to bomb hospitals, kill health workers, and block critical humanitarian aid deliveries to opposition-controlled areas. With the Syrian government's well-documented non-compliance, the UN Security Council must take additional measures to enforce Resolutions 2139 and 2165.

When asked why he stayed working in Aleppo, Dr. N responded: "I lost a brother in Aleppo, and I can't give up on a city where my brother gave up his life."¹³⁹ The international community cannot give up on Syria and its people's demand for human rights and dignity, which has cost hundreds of thousands of lives.

Epilogue

The situation in and around Aleppo has changed considerably since late July, when PHR conducted research for this report. In early September, after four years of supporting the Syrian government with weapons shipments and financial backing, the Russian government began a significant military buildup inside Syria, expanding existing air bases, sending combat aircraft and weapons, and deploying troops.¹⁴⁰ On September 30, Russian forces launched airstrikes in Syria allegedly against IS, marking the country's first direct engagement in hostilities.¹⁴¹ These airstrikes were coupled with ground offensives by Syrian government forces and their allies across central, western, and northern Syria.¹⁴²

The Russian Ministry of Defense announced that as of November 3 its aircraft had carried out a total of 1,631 combat sorties targeting IS and terrorist locations.¹⁴³ Analysis by The Carter Center, however, illustrates that 85 percent of Russian airstrikes targeted areas controlled by opposition groups, rather than by IS.¹⁴⁴ The Russian government appears to be following President Assad's lead in labeling all opposition groups as terrorists and attacking them and their civilian supporters. The Russian military has also followed in the Syrian military's footsteps by attacking the health care system, an explicit violation of IHL. Through the end of October, PHR has documented 10 attacks on medical facilities by Russian airstrikes in Syria.¹⁴⁵ While PHR has not documented any Russian airstrikes on medical facilities inside Aleppo city through October 31, PHR has documented five attacks on facilities in the city's suburbs and southern countryside. Four of these medical facilities were forced to close following the attacks. These airstrikes were launched alongside a ground offensive by the Syrian government and



Children in front of tents housing displaced Syrians in a camp on the outskirts of Aleppo. Tens of thousands of Syrians have fled their homes in Aleppo since a government offensive there began on October 17, 2015 backed by Russian airstrikes.

Photo: Fadi al-Halabi/AFP/Getty Images

have resulted in the displacement of an additional 100,000 Syrians from Aleppo governorate's southern countryside.¹⁴⁶ The increased displacement, attacks, and closure of medical facilities nearby have certainly increased pressure on Aleppo city's already overwhelmed health care system.

As this report indicates, the greatest threat to health care in Syria is continued aerial bombardment. The past month of airstrikes illustrates that Russia's involvement in the conflict has increased this threat and significantly degraded an already dire situation. The UN Security Council, as the body charged with maintaining international peace and security, must promptly take action to save lives by ensuring the Syrian and Russian governments cease all attacks on medical facilities and civilian spaces, as required by IHL and Security Council Resolution 2139.

The pain, suffering, and death stalking Syrians is a direct result of the UN Security Council's repeated failure to overcome powerful states' self-interest and stop attacks on civilians and medical spaces. Millions of Syrians are paying the price of a morally bankrupt system of international governance. They, who have been utterly abandoned, are asking the international community and UN Security Council for protection from their government and now Russia – a permanent member of the Security Council that first protected the murderous Syrian government with its veto power and is now compounding violations. If the UN Security Council and international community have any hope of regaining credibility in the future and preventing these violations from becoming the new normal in armed conflicts around the world, they must heed Syrians' calls by immediately and decisively taking action to save lives. They must prioritize civilian protection and human rights over power politics.

Recommendations

To the UN Security Council:

Immediately publish and implement additional measures to address the Syrian and Russian governments' non-compliance with Resolution 2139 in a manner that will, at a minimum, end attacks on civilians, health professionals, and medical facilities, and ensure the full implementation of Resolution 2165.

To the Syrian and Russian governments:

Immediately cease and desist attacks on medical facilities, health professionals, and other elements of the health care system.

To all parties to the conflict:

Immediately stop all attacks that violate the Geneva Conventions and other international humanitarian laws.

To donor governments:

Increase funding for humanitarian assistance so that the UN Office for the Coordination of Humanitarian Affairs and other humanitarian organizations can increase direct cross-border aid to ensure that medical facilities in opposition-held areas have adequate equipment and supplies to address the acute and long-term health needs of the people living in these areas. Also increase funding for salaries and other operational costs to ensure that health professionals are able to remain working in Syria.

To the international community:

Given the failure of the UN Security Council to refer the situation in Syria to the International Criminal Court, support other credible justice initiatives to ensure that perpetrators of war crimes and crimes against humanity are held accountable. These initiatives could include the creation of an ad-hoc or special court and the prosecution of appropriate cases under universal jurisdiction.



A Syrian man mourns his father following a reported barrel bomb attack by government forces in the al-Muasalat area of Aleppo. Photo: Tamer al-Halabi/AFP/Getty Images

Endnotes

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3. Physicians for Human Rights, "Anatomy of a Crisis: A Map of Attacks on Health Care in Syria," accessed November 18, 2015, <http://www.phr.org/syria-map>.
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26. Interview with Dr. A, Gaziantep, Turkey, July 26, 2015.
27. Interview with Dr. D, Gaziantep, Turkey, July 26, 2015.
28. Interview with Dr. E, Gaziantep, Turkey, July 25, 2015.
29. Interview with Dr. D, Gaziantep, Turkey, July 26, 2015.
30. Interview with Dr. L, Gaziantep, Turkey, July 25, 2015.
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38. These definitions are based on interviews with various medical personnel, organizing bodies, and funding organizations. The list of facilities is not meant to be comprehensive; it only covers the main types of facilities functioning in Aleppo during the summer of 2015.
39. The terms "field hospital" and "hospital" are used interchangeably within this report. Generally, all hospitals in opposition-controlled territory are considered "field hospitals."
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44. Interview with Dr. L, Gaziantep, Turkey, July 25, 2015; Interview with Dr. B, Gaziantep, Turkey, July 26, 2015.
45. Interview with Dr. L, Gaziantep, Turkey, July 25, 2015; Interview with Dr. S, Gaziantep, Turkey, July 26, 2015; Interview with Dr. F, Gaziantep, Turkey, July 27, 2015.

Endnotes

continued

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47. Interview with T, Gaziantep, Turkey, July 29, 2015.
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50. This total number of “physicians” includes those who completed all formal training in addition to those who completed medical school but did not complete their residencies before the conflict broke out. A number of individuals who have not completed their residency training are now effectively working as physicians. At the beginning of the conflict, they acted as residents by observing operations and learning from fully trained physicians, but as the conflict went on, these doctors had enough practice to work on their own, thus PHR has included them in the total count of physicians.
51. Doctors interviewed estimated that prior to the conflict, there were approximately 1,500 doctors practicing in what is now opposition-controlled eastern Aleppo city.
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60. Interview with Dr. K, Gaziantep, Turkey, July 26, 2015.
61. Interview with Dr. S, Gaziantep, Turkey, July 26, 2015.
62. Interview with Dr. A, Gaziantep, Turkey, July 26, 2015.
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89. Interview with Dr. D, Gaziantep, Turkey, July 26, 2015.
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