Ukraine

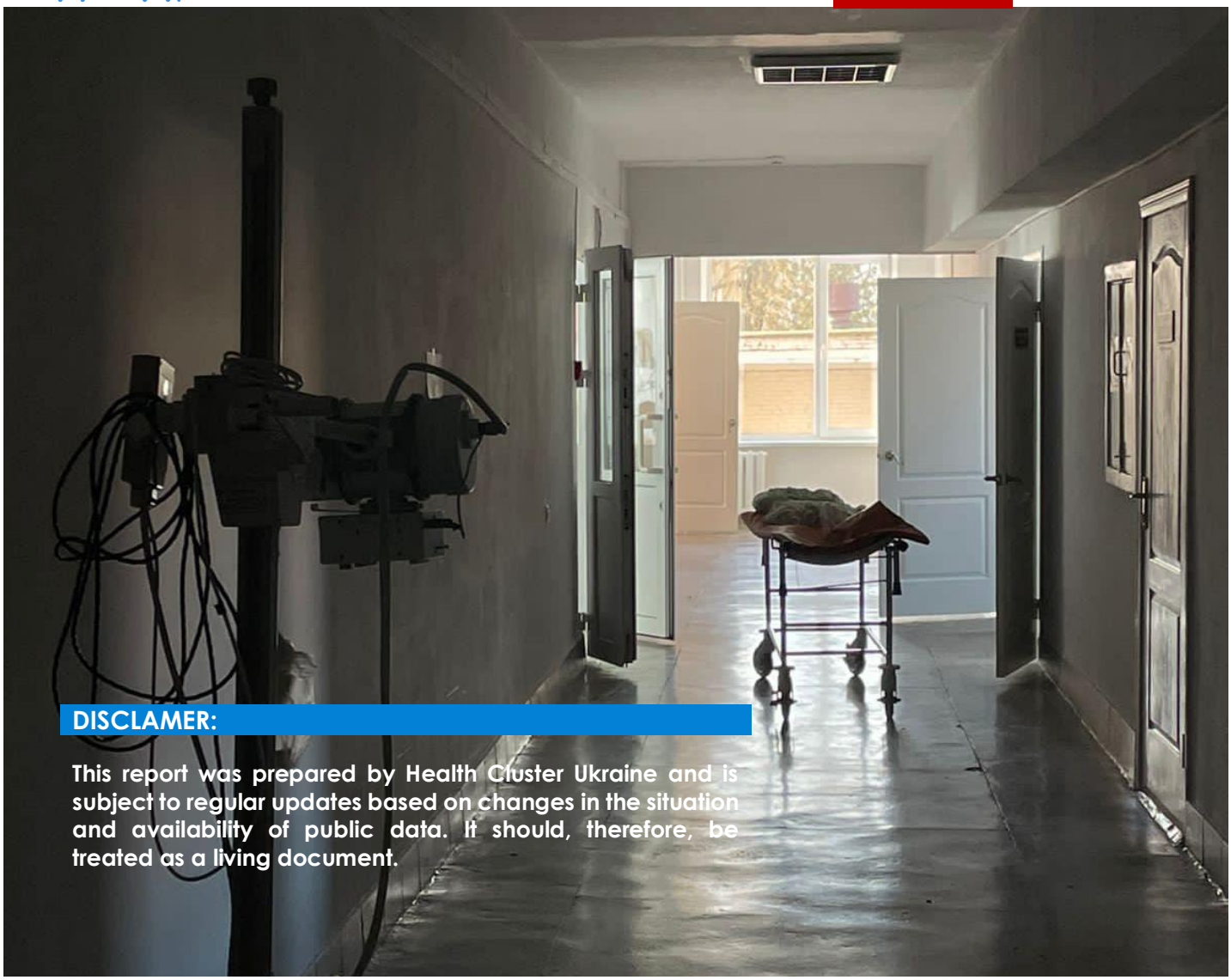
Last update:
April 2022

Public Health Situation Analysis

(PHSA) – Long-form

EXTERNAL VERSION

Typologies of emergency	Main health threats	WHO grade	Security level	INFORM risk (rank)
	Trauma COVID-19 NCDs/MHPSS Infectious diseases	3 (for regional crisis)	5 (High)	4.5/10 (61) 2022



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Data which change on a near-daily basis (e.g., number of casualties) unavoidably become outdated quickly; for such data, it is recommended that this report be read in conjunction with regularly published situation reports.

Some data are repeated in more than one section in order to facilitate quick reference.

Health Cluster Ukraine is the Lead Agency for this report.

Executive Summary

Note: This update to the Public Health Situation Analysis (PHSA) builds upon the rapidly-developed document published on 3 March 2022. The update adds depth to the information presented in the previous version, tracks changes in the situation, considers additional threats, and incorporates data from assessments.

There are an estimated 15.7 million people affected by the war in Ukraine in need of humanitarian assistance, of which 12.1 million are considered in need of humanitarian health care.[1]

This analysis has identified the priority health threats to the conflict-affected population based on the current situation and their expected evolution over the next three months. In areas of active fighting, facilities struggle to cope with number of casualties. The number of COVID-19 cases and deaths has substantially decreased globally and in Ukraine, with weekly decreasing trends. Since the beginning of the war, it is important to note that testing and reporting capacities in Ukraine have been limited. It is important to note that since the beginning of the war the testing and reporting capacities have been limited. However, COVID-19 remains a substantial threat, particularly given low vaccination rates.[2] The recently reported case of diphtheria in an internally displaced person, highlights the threat of outbreaks of vaccine preventable diseases. Despite childhood vaccination coverage reportedly being close to WHO targets in 2021,[3] disruptions to immunization programmes due to hostilities and displacement, coupled with historical coverage gaps, place both adults and children at risk. TB and HIV programmes have been disrupted, impeding access to medicines, potentially delaying treatment due to unreported infections and risking further disease transmission in a country known to have higher rates of TB and HIV/AIDS than its regional neighbours.[4],[5] Non-communicable diseases (NCDs), such as cardiovascular disease, are the leading cause of death in Ukraine.[6] Reduced access to health care and medicines due to hostilities is likely to worsen the health status of the population, impacting quality of life and life expectancy.[7] Mental health and psychosocial support needs of the affected population are intensifying as a result of the significant distress and socio-economic effects caused by the war.

Vulnerable groups are disproportionately impacted by health threats and barriers to accessing health care. Of particular concern are the elderly. It is estimated that 20% of the population of Ukraine are 60 years and older – the highest proportion of elderly persons in a humanitarian setting in the world.[8] Other vulnerable groups identified in this analysis are people with disabilities (PwD), children and youth, women and girls, Roma, health care workers, and internally displaced persons (IDPs). Each of these groups has distinctive humanitarian health care needs which demand attention.

Many of the social determinants of health, such as water, sanitation and hygiene (WASH), food security, shelter, security, restriction of movement, impact the health of displaced and non-displaced populations. Having an understanding of the status of these determinants gives context to the health issues faced by those affected and can help inform intervention planning.

[1] OCHA, 2022 Flash Appeal April Revision, 25 April 2022.
[2] WHO, Ukraine Coronavirus disease, accessed 13 April 2022.
[3] Ukraine Ministry of Health, Implementation of vaccination volumes in 2021 according to the UKRVAC database, 1 January 2022.
[4] Ukraine Public Health Center, TB Statistics, accessed April 2022; WHO, Global Tuberculosis Report 2021, 14 October 2021.
[5] Ukraine Public Health Center, Registered HIV infection, AIDS, and deaths 2021.
[6] State Statistics Service of Ukraine, Databank, accessed April 2022.
[7] WHO, Steps Prevalence of Noncommunicable disease risk factors in Ukraine 2019, 2020.
[8] IOM, Ukraine Internal displacement report, 1 April 2022.

The needs of the health system are highlighted by describing the disruptions and challenges experienced by key health system components and their predicted impact over the next three months. The assessed areas include access to health care, health system management, supply chains, alert and response systems, health workforce, health facilities, and attacks on health care.

To address the needs of the conflict-affected population and the health system, Health Cluster Ukraine serves as a link between 106 partners planning or engaged in humanitarian health activities in Ukraine to better coordinate the response. The Health Cluster gathers and shares information to guide partners' response planning. This PHSA is one of the resources developed by the Health Cluster secretariat to promote a common understanding of the public health situation in Ukraine.

Key public health situation updates to the previous PHSA (released on 3 March)

Outbreaks

- Diphtheria: A suspected case of diphtheria among IDPs was confirmed by laboratory testing in Ternopil on 5 April 2022. The case is a 29-year-old female, internally displaced from Donetska Oblast with unknown vaccination status. As of 21 April, 79 contacts have been identified; all contacts have tested negative for Corynebacterium. Laboratory investigation, clinical observation, antibiotic prophylaxis and terminal disinfection were implemented.[9]
- Leptospirosis: Between 1 January and 31 March 2022, local authorities of the Khmelnystky region, western Ukraine reported three confirmed cases of leptospirosis, of all of whom are IDPs.[10,11]
- Tuberculosis (TB): On 13 April, local health authorities in Rivnenska oblast reported the number of cases of TBs increased in the first quarter of 2022 (113) compared with the same period during 2021 (104). The increase is predominantly reported in children; ten in 2022 and four in 2021. As of 1 April, five people from the Armed Forces and the Ministry of Defense and four internally displaced persons were hospitalized with TB.[12]

Health Needs

- Medicines and health services have been the most commonly reported needs after cash (financial support).[13]
- Roughly 30% of households have at least one person with a chronic disease who reported challenges in accessing care for their condition. Two out of five households (39%) have at least one member with a chronic illness, such as cardiovascular disease, diabetes or cancer.[14]

Access to health care

- Lack of medicines in health care centres or pharmacies was the most commonly reported barrier to health care.[15,16,17]

[9] 24TV, A case of diphtheria has been recorded in Ternopil region: more than 70 people are in contact, 6 April 2022.
[10] TCH, Since the beginning of the year, five cases of leptospirosis have been detected in the Khmelnytsky region: two of them among migrants, 5 April 2022.
[11] Yampil community, Leptospirosis: What is the danger and how to prevent the disease, 4 April 2022.
[12] Rivne regional Council, Incidence of tuberculosis is growing in Rivne region: doctors call for preventive examination, 13 April 2022.
[13] IOM, Ukraine Internal Displacement Report Round 1, Round 2, Round 3, 2022.
[14] WHO, Ukraine: People with chronic diseases face massive challenges in accessing health care, according to new WHO survey, 22 April 2022.
[15] IOM, Ukraine Internal Displacement Report Round 1, Round 2, Round 3, 2022.
[16] REACH/OCHA, Rapid Needs Assessment of Conflict-Affected Areas, 22-25 March - Eastern Oblasts 6 April 2022.
[17] REACH/OCHA, Rapid Needs Assessment of IDP-hosting Areas, 22-25 March - South and East Oblasts, 21April 2022.

Key completed assessments – health-related findings

IOM

General population survey - rapid representative assessment of internal displacement and needs

Round 1 – 9-16 Mar[18]

- Top needs: cash (financial support) and medicines and health services
- 1% of non-displaced respondents say they cannot leave due to a health issue or disability
- 35% of IDPs and 27% of non-displaced respondents reported a lack of medicines and health care services
- The proportion of IDPs who report some of their current HH members are: 32% chronically ill, 56% elderly, 20% disabled, 28% infants, 61% children, 10% pregnant or breastfeeding

Round 2 - 24 Mar - 1 Apr[19]

- Top needs: (financial support) and medicines and health services
- Medicines and health services was the most pressing need identified by 19% of those in northern Ukraine.
- In Kyiv, 23% reported that very few or no pharmacies were open in their area.
- Lack of medicines in health care centres or pharmacies was the most commonly reported barrier to health care.

Round 3 – 11-17 Apr[20]

- Top needs: (financial support) and medicines and health services
- 26% of IDPs and 28% of non-displaced respondents reported being in need of medicines and health services
- 22% of respondents indicated that they or someone in their household had to stop using their medication because of the war; 85% of whom indicated they were not able to secure the medicines due to availability; 44% stated that they could not afford to buy the medicines.
- The most reported barrier to health care was no medicines available in healthcare centres or pharmacies, experienced by 10% of IDPs and 13% of non-displaced respondents.

REACH/OCHA

Rapid Needs Assessment of IDP-hosting Areas, 22-25 March

Southern and Eastern Oblasts[21]

- Mykolaiv - disruption to healthcare services was reported as a concern; emergency healthcare services had been very inaccessible within the 7 days prior to data collection; over 75% of people in the settlement were affected by healthcare inaccessibility.
- 80% of settlements reported access to medication was a concern.

Northern Oblasts[22]

- 48% of settlements reported disruption to healthcare services was a concern; 25% reported that emergency healthcare services had been inaccessible within the seven days prior to data collection. Services were reported to be very inaccessible in Irpin (Kyivska oblast).
- In Chernihiv and Irpin, over 75%, and in Malyn, over 50% of people in the settlement were reportedly affected by healthcare inaccessibility.
- 76% of settlements reported that access to medication was a concern.

[18] IOM, Ukraine Internal Displacement Report Round 1, 2022.
[19] IOM, Ukraine Internal Displacement Report Round 2, 2022.
[20] IOM, Ukraine Internal Displacement Report Round 3, 2022.
[21] REACH/OCHA, Rapid Needs Assessment of IDP-hosting Areas, 22-25 March - South and East Oblasts, 21 April 2022.
[22] REACH/OCHA, Rapid Needs Assessment of IDP-Hosting Areas, 22-25 March - Northern Oblasts, April 2022.

Rapid Needs Assessment of Conflict-Affected Areas, 22-25 March
Eastern Oblasts[23]

- In 50% of settlements, disruption to healthcare services was reported as a concern; among which 63% reported that emergency healthcare services had been inaccessible in the seven days prior to data collection. Of these, 75% reported that more than half of the population was affected by lack of access.
- Services were reported to be very inaccessible in Mariupol, Izium, Popasna, and Rubizhne.
- It was also reported in all settlements that access to medication was a concern.

Rapid Needs Assessment of IDP-hosting areas, 23-31 March
Western Oblasts[24]

- 16% of respondents reported that IDPs faced difficulties in accessing health services.
- Of the 10 most cited priorities, provision of medicines was 5th overall, psychosocial support 8th, and healthcare services 10th.
- Access to medicines (21%) and psychological support (28%) was a high concern for most of assessed settlements in western oblasts.
- 75% of assessed settlements in Rivnenska and 40% in Lvivska reported that the IDP population in the settlement faced concerns regarding access to medicines.

CARE

Rapid Gender Analysis – Ukraine, 1 March[25]

- Ukrainian women outlive men by about 10 years on average
- Access to sexual and reproductive health care fell during the pandemic and the conflict situation creates additional barriers
- Gender-based violence (GBV) affects at least one fifth of women

WHO/Premise

Household Health Needs Assessment (crowd-sourced data), 7-21 April – Preliminary Results[26]

- One in three (30%) households have at least one person with a chronic disease who reported challenges in accessing care for their condition. The survey also shows that two out of five households (39%) have at least one member with a chronic illness, such as cardiovascular disease, diabetes or cancer.
- Less than a third (30%) of respondents sought out health-care services recently; of those, 39% cited the security situation as the main barrier, while 27% reported that no health-care services were available at all in their area.
- Most households (70%) surveyed are sheltering in their own homes at this time, while 11% are staying with friends and family members in relatively safer areas, 8% are on the move within Ukraine, and 3% are in a shelter or camp for internally displaced persons.

[23] REACH/OCHA, Rapid Needs Assessment of Conflict-Affected Areas, 22-25 March - Eastern Oblasts 6 April 2022.
[24] REACH/OCHA, Rapid Needs Assessment of IDP-Hosting Areas – Western Oblasts, April 2022.
[25] CARE, Rapid Gender Analysis, 1 March 2022.
[26] WHO, Ukraine: People with chronic diseases face massive challenges in accessing health care, according to new WHO survey, 22 April 2022.

Key health threats

Table 1 summarizes the key anticipated or known health threats. This assessment is based on the known epidemiological and disease profile of the population, and crisis-related factors known to drive mortality and morbidity.

Table 1: Key health risks for conflict-affected population in the course of the next three months.

Key health risks over the coming 3 months			
Public health risk	**Level of risk**		**Rationale**
Months starting now	**May**	**Jun-Jul**	
COVID-19			Current surveillance is limited. Decreasing trends prior to the war, but from very high level of incidence and bed occupancy for ICU care. Limited oxygen supplies substantially impact capacity to treat severe patients. Unsanitary, crowded living conditions with poor ventilation; low vaccination coverage in vulnerable groups.
Influenza and other acute infectious respiratory diseases			Poor hygiene and sanitation, overcrowding, poor shelter, H3 dominant – with low potential for increased vaccine uptake in priority groups in Ukraine. Risk of influenza-associated morbidity is expected to decrease as summer approaches.
Poliomyelitis			Ongoing outbreak of circulating vaccine-derived poliovirus type-2 (cVDVP2), and low uptake mass immunization campaign (22%). Risk of spread into surrounding countries.
Measles			Increased risk of transmission in areas with high concentrations of IDPs living in crowded conditions with poor ventilation; prior endemicity; and reduced vaccine coverage in recent years, particularly in new-borns. Seasonality - higher incidence in late winter and spring.
Mumps			Increased risk of transmission in areas with high concentrations of IDPs living in crowded conditions with poor ventilation; reduced vaccine coverage in recent years, particularly in new-borns.
Rubella			Increased risk of transmission in areas with high concentrations of IDPs living in crowded conditions with poor ventilation; reduced vaccine coverage in recent years, particularly in new-borns. Risk of congenital rubella syndrome to infants born to women infected during pregnancy.
Pertussis			Increased risk of transmission in areas with high concentrations of IDPs living in crowded conditions with poor ventilation; vaccination coverage below targets in some oblasts. May require isolation of patients. Adults in Ukraine not routinely vaccinated for pertussis.
Tetanus			Conflict-related injuries, unvaccinated infants, and vaccination coverage below targets in some oblasts. Antitoxin supplies now widely-available in health facilities.
Diphtheria			Confirmed case in an IDP. DTP3 coverage in Ukraine was among the lowest in the Region in recent years (2016-2020) at 19-81%. Potential for high mortality.

Key health risks over the coming 3 months			
Public health risk	**Level of risk**		**Rationale**
Months starting now	**May**	**Jun-Jul**	
Varicella			Increased risk of transmission with poor hygiene and in areas with high concentrations of IDPs living in crowded conditions; mixing of vulnerable populations (e.g., children and elderly). The varicella vaccine is not part of the vaccination schedule.
Pneumococcal disease			Increased risk of transmission in areas with high concentrations of IDPs living in crowded conditions with poor ventilation. Vaccine not part of national schedule;
Rabies			Many stray animals, interruption to vaccination programs for domestic and agricultural animals, and inadequate vaccine stock for post-exposure prophylaxis.
Leptospirosis			Confirmed cases in IDPs. Poor hygiene and sanitation, overcrowding, untreated water. Risk may increase in summer.
Hepatitis A and Hepatitis E			Some levels of endemicity have been observed in Ukraine and surrounding countries for hepatitis A; no known endemicity of hepatitis E. Increased risk of outbreaks in confined places, including collective centres and military barracks. Potentially large impact on health system.
Typhoid			Lack of access to safe water and appropriate sanitation, poor hygiene, and overcrowding. Prior outbreaks in Odeska and Donetska oblasts in 2015.
Cholera			Lack of access to safe water and appropriate sanitation, poor hygiene, and overcrowding. A cluster of cholera was identified in Ukraine in 2011.
Vector-borne diseases (CCHF, WNF, epidemic typhus)			Crimean Congo haemorrhagic fever cases have been reported in southern affected areas. Risk of West Nile fever increases in late spring in the bordering countries. Epidemic typhus may spread in crowded, unsanitary conditions and was a cause of high mortality in Eastern Europe during WWII. Low surveillance capacity.
TB			High prevalence of MDR-TB; interruption to access to diagnostic services and treatment – likely worsening of disease and development of resistance if treatment interrupted for a number of weeks.
HIV			Interruption to access to diagnostic services and treatment – increase of viral load and disease if treatment interrupted for a number of weeks. Limited access to health care for acute flare ups and opportunistic infections may result in excess deaths; increased risk to health work force.
HBV and HCV			HBV vaccination coverage does not meet targets. Interruption to access to diagnostic services and treatment; low levels of surveillance; increase in long-term morbidity/mortality with increase in prevalence; increased risk to health work force.

Key health risks over the coming 3 months			
Public health risk	**Level of risk**		**Rationale**
Months starting now	**May**	**Jun-Jul**	
STIs			Lack of access to condoms, interrupted or limited access to treatment, insufficient diagnostic capacity, crowded social conditions, and increase in sexual and gender-based violence.
Maternal and neonatal health			Caesarean deliveries accounted for roughly one quarter of all deliveries in 2019; access is likely to be limited. Substantial risk for perinatal health in the immediate term, including of unsafe deliveries. Pre-term births have reportedly increased, increasing the need for interventions. Reports of unattended and ill-equipped births in shelters.
Malnutrition			Interruptions to supply chains and population displacement may impact food security, both in terms of reduced production and limited access. Risk expected to be higher in regions under siege and in populations recently evacuated.
Cardiovascular disease (CVD) (e.g., heart attack, stroke)			Interruption in supply of medicines and limited access to health care; critical for people with uncontrolled blood pressure and/or people at higher risk of stroke.
Chronic non-infectious respiratory diseases (e.g., COPD, asthma)			Reduction in medical supplies, limited oxygen availability, and potential stressors from increased risk of respiratory infections due to the living conditions (overcrowding, cold, poor hygiene).
Cancer			Disruption of screening, treatment and health care capacity leading to increased risk of negative outcome for oncology patients. Particularly high risk for individuals under immunosuppressive therapy given increased risk of infection in the context of the crisis.
Diabetes			Disruption to essential services and supplies of medicines, particularly insulin; most mortality expected in immediate term. High risk for people in kidney failure requiring dialysis. Supplies of insulin and other medicines are expected to stabilize.
Mental health			Exacerbation of chronic mental health problems and high levels of acute psychological effects among affected populations of all ages (see Table 2 below).
Injury/trauma and sequelae (wound infections, anti-microbial resistance)			Increase in injuries and trauma from violence in areas of active conflict, particularly in the East. Increase in number of injured; short and long-term rehabilitation support needs, including assistive technologies, likely to be extensive. Antimicrobial resistant infections likely to increase due to challenges in adherence to treatment exacerbated by scarcity of medicines and difficult socioeconomic conditions.

Key health risks over the coming 3 months			
Public health risk	**Level of risk**		**Rationale**
Months starting now	**May**	**Jun-Jul**	
Sexual and gender-based violence (SGBV)			Increasing numbers of reports; unaccompanied children, women travelling alone, interim care arrangements, limited access to protection/treatment/support, and many vulnerable populations (including men, elderly). Insufficient clinician training in health sector. Physical injury, psychological distress and long-term mental health problems, pregnancy, STIs, and negative coping strategies, such as addictions.
Biological hazards			Low risk of accidental exposures to biological hazards, as country not known (not likely) to have collections of high consequence pathogens. High risk if biological weapons deployed.
Chemical hazards			High risk if sites are damaged or chemical weapons are deployed during conflict. Higher risk in East due to higher concentration of industrial sites and intense conflict.
Radio-nuclear hazards			Very high risk (low probability, severe impact) if radio-nuclear facilities are significantly damaged or nuclear weapons are deployed during conflict.

Red: **Very high risk**. Could result in high levels of excess mortality/morbidity.
Orange: **High risk**. Could result in considerable levels of excess mortality/morbidity.
Yellow: **Moderate risk.** Could make a minor contribution to excess mortality/morbidity.
White: **Low risk.** Unlikely to make a contribution to excess mortality/morbidity.
Grey: No plausible assessment can be made at this time.

Notes:
The levels of risk for the above health threats were arrived at through considering the extent to which each threat could have an impact on the health of the population in Ukraine (i.e., the magnitude of crisis-attributable excess mortality and/or excess mental health problems). Parameters, such as the baseline and increases to the burden of disease, the probability and extent risk factors will have an impact, current access to preventive and curative health services, and the impact of disruptions to health services. The projections on the level of risk are estimated given the current situation remains relatively constant. Further details on the methods used for this risk assessment are available here.

Key threats to mental health and psychosocial support

Table 2: Magnitude of expected impact on mental health and psychosocial support problems and their expected evolution over time.

MENTAL HEALTH AND PSYCHOSOCIAL SUPPORT			
Months from now	**May**	**Jun -Jul**	**Rationale**
Acute psychological distress			Stressors continue; access to psychological and psychiatric support limited; likely increase in negative coping mechanisms, including abuse and self-harm.
Exacerbation of chronic mental health problems			Stressors continue; access to psychological and psychiatric support limited; limited access to medicines; likely increase in negative coping mechanisms, including abuse and self-harm.
Psychosocial support problems			Extreme needs; limited access to support; changed family and community structures; likely increase in negative coping mechanisms.
Addiction problems			Reduced access to addiction services, such as opioid substitution therapy; likely increase in negative coping mechanisms, including abuse and self-harm.

Red: Could result in high levels of excess mental health/psychosocial support problems.
Orange: Could result in considerable levels of excess mental health/psychosocial support problems.
Yellow: Could make a minor contribution to excess mental health/psychosocial support problems.
White: Will very probably not result in any excess mental health/psychosocial support problems.
Grey: No plausible assessment can be made at this time.

Disruptions and challenges to key health system components

Various disruptions and challenges impact the local health system and continue to affect delivery of preventive and curative health services (Table 3). There is considerable geographic variability in these disruptions (see body of text).

Table 3: Disruptions and challenges impacting the health system

DISRUPTION/CHALLENGE			
Months starting now	**May**	**Jun-Jul**	**Rationale**
Access to health care			Security concerns, movement restrictions, damage to infrastructure.
Health system management			MOH and NHSU continue to operate; workforce relocation and infrastructure damage impact management.
Supply (including pharmaceutical) chain disruption			Production reduced/halted at many facilities; delivery physically impeded by damage to infrastructure.
Degraded alert and response			Disruptions to health care and laboratory testing capacity, particularly in areas of active conflict.
Health workforce shortages			Many health workers have changed their place of residence.
Damage to health facilities			157 verified reports of attacks on health care impacted health facilities (28 Apr); MOH reported 21 hospitals were destroyed (9 Apr).
Attacks against health			175 verified reports of attacks on health care (28 Apr)

Red: The majority of the health system feature / health service has been or could be rendered non-functional. Most people / patients do not have access to health care. A major reduction in health service coverage or quality could occur.
Orange: A substantial minority of the health system feature / health service has been or could be rendered non-functional. A substantial minority of people / patients do not have access to health care. A moderate reduction in health service coverage or quality could occur.
Yellow: A small minority of the health system feature / health service has been or could be rendered non-functional. A small minority of people / patients do not have access to health care. A small reduction in health service coverage or quality could occur.
White: The vast majority or entirety of the health system feature / health service is very probably still as functional as before the crisis. No risk factors for reduction in health service coverage or quality have been identified
Grey: No plausible assessment can be made at this time.

Acronyms and abbreviations

AFP	acute flaccid paralysis
Ag-RDT	antigen-based rapid diagnostic test (for SARS-CoV-2)
ART	antiretroviral therapy
CVD	cardiovascular disease
DOT	directly observed therapy
DR-TB	drug-resistant tuberculosis
ECA	eastern conflict area
EECP	entry/exit crossing point
EHS	essential health services
ERW	explosive remnants of war
FAO	Food and Agriculture Organisation
GBV	gender-based violence
GCA	government-controlled area
HIV	human immunodeficiency virus
IDP	internally displaced person
ILI	influenza like illness
IPC	infection prevention and control
LGBTI	lesbian, gay, bisexual, transgender, intersex
LoC	line of contact
MDR-TB	multi drug-resistant tuberculosis
MHPSS	mental health and psychosocial support
MICS	multiple indicator cluster survey
MoH	Ministry of Health
NCD	non-communicable disease
NGCA	non-government-controlled area
NGO	non-governmental organization
NSDC	National Security and Defense Council
OCHA	Office for the Coordination of Humanitarian Affairs of the United Nations
OHCHR	United Nations Office of the High Commissioner for Human Rights
OSCE	Organization for Security and Co-operation in Europe
PHCF	primary health care facility
PHSA	public health situation analysis
PLHIV	people living with HIV
Polio	poliomyelitis
PPE	personal protective equipment
PTSD	post-traumatic stress disorder
PwD	people with disabilities
SHCF	secondary health care facility
SMM	Special Monitoring Mission to Ukraine
SSS	State Statistics Service
STI	sexually transmitted infection
TB	tuberculosis
UNFPA	United Nations Population Fund
UNHCR	Office of the United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
WASH	Water, sanitation and hygiene
WHO	World Health Organization

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Preface

Public health threats represent a significant challenge to those providing health-care services in a crisis. The health issues and risk factors addressed in this document have been selected, through secondary data review, on the basis of the known burden of disease in this context, crisis-emergent health issues, and their potential impact on morbidity, mortality, response and recovery. It is hoped that this PHSA will create a common understanding of the public health situation and Ukraine and facilitate the evidence-based coordination of activities among all agencies working with the populations affected by the crisis. The document contains a short summary of the crisis, health status of and threats to the affected population, health system needs, humanitarian health response, and information gaps. This PHSA update builds upon the rapidly-developed PHSA for Ukraine published on 3 March 2022. The update adds depth to the information presented in the previous version, tracks changes in the situation, considers additional threats, and incorporates data from assessments. This document presents the best available data at the time of publication, and may be updated, as needed.

1. Summary of the crisis

Key features

Location (country, region):	Ukraine (Eastern Europe)
Start date of crisis:	Feb/Mar 2014; Invasion: 24 Feb 2022
Typology:	Conflict, displacement, Insecurity
Brief description of event:	Since 24 February 2022 and the invasion of the sovereign territory of Ukraine, there have been devastating effects to the country, including massive civilian displacement and casualties. Attacks have occurred across Ukraine, including in the capital, Kyiv. The fighting continues to be concentrated in the eastern and southern oblasts of Ukraine (Donetska, Kharkivska, Luhanska, Mykolaivska, and Khersonska oblasts), causing damage and civilian casualties and driving humanitarian needs. Rockets strikes were also reported in central, western and northern Ukraine.[27] As of 28 April 2022, at least 6009 civilian casualties had been confirmed, including 2829 deaths (205 children) and 3180 injured (303 children) the actual toll is likely higher.[28] The current number of internally displaced persons (IDPs) is estimated at 7.7 million[29] and more than 5.4 million[30] people have crossed into neighbouring countries, fleeing the ongoing hostilities. According to the latest estimates from OCHA, 15.7 million people are in need of humanitarian assistance, of whom 12.1 million are in need of humanitarian health care. The COVID-19 pandemic continues to pose a threat, given the low vaccination coverage among vulnerable populations. Non-communicable diseases (NCDs) are the leading cause of death in Ukraine, while infectious disease outbreaks are also a source of concern: a case of diphtheria was notified in April, recent outbreaks of polio and measles are reminders of the epidemic threat, and the prevalence of HIV and TB/MDR-TB are among the highest in Europe. The Ministry of Health (MoH) and National Health Services of Ukraine (NHSU) continue to operate. Health facilities suffer from lack of maintenance and ageing medical equipment, shortages of medicines and medical supplies, displacement of their workforce, and disruptions to management due to recent health reforms and decentralization.[31] Shortages of medicines and medical supplies, combined with challenging access to health care facilities and pharmacies, will exacerbate the burden of chronic disease. Despite the large-scale displacement, and in some cases, poor shelter and overcrowded living conditions, large outbreaks of infectious disease have not yet been reported. At the start of the war, limited oxygen supplies compromised the clinical management of patients with severe respiratory distress, including patients with COVID-19; however, oxygen production and supply chains have been largely re-established and oxygen concentrators provided through humanitarian aid. To help cope with this crisis, the conflict-affected population remains in urgent need of mental health and psychosocial support services (MHPSS).
Operational constraints:	Active conflict continues to prevent humanitarian actors from accessing vulnerable populations, particularly in the East, where humanitarian corridors negotiations are attempted on a daily basis to facilitate the safe movement of supplies and personnel. Martial law, curfews and damage to infrastructure (e.g., roads, public transport) also impose movement restrictions, limiting access to health services, essential medicines, and market goods.

[27] OCHA, Ukraine: Humanitarian Impact Situation Report, 21 April 2022.
[28] OHCHR, Ukraine: civilian casualty update 28 April 2022.

Humanitarian profile

15.7 million[32]

PEOPLE IN NEED

12.1 million[33]

PEOPLE IN NEED OF HUMANITARIAN HEALTH CARE

6009[34]

CASUALTIES (APPROX)

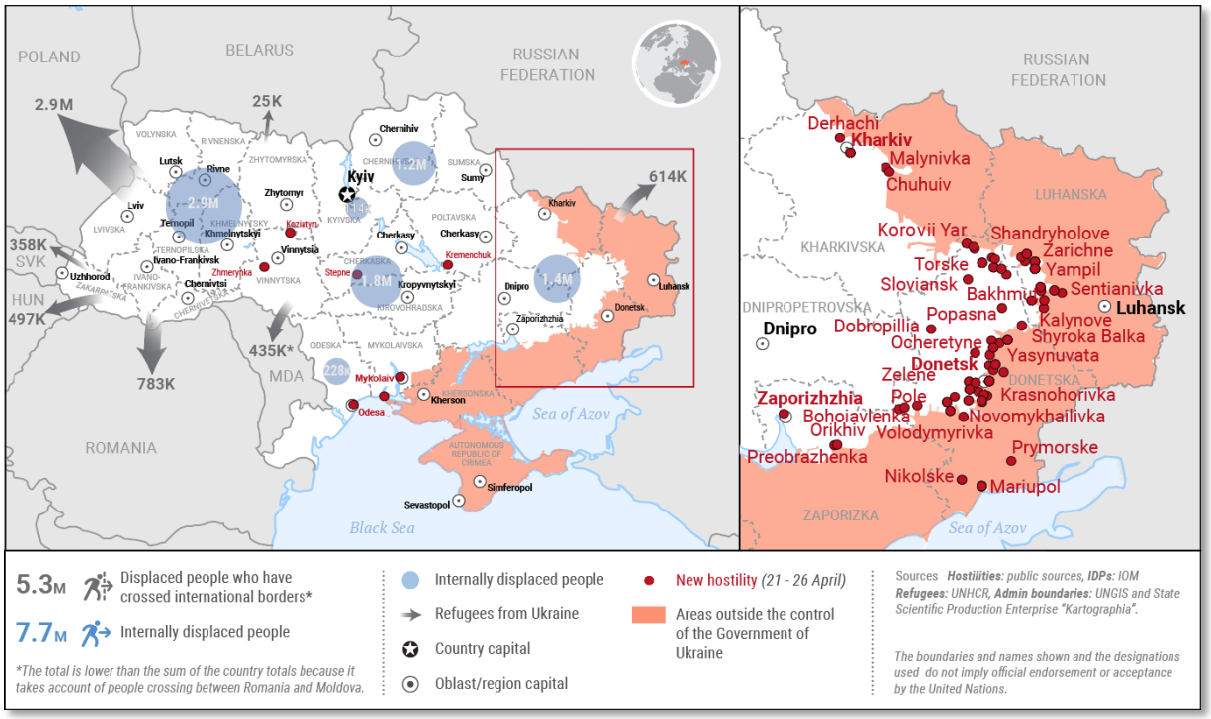
7.7 million[35]

IDP POPULATION (APPROX)

5.4 million[36]

LEFT UKRAINE (APPROX)

Fig. 1 – Map of Ukraine highlighting population displacement and hostilities[37]



[29] IOM, Ukraine Internal Displacement Report – General Population Survey Round 3, 17 April 2022.
[30] UNHCR, Ukraine Refugee Situation, accessed 28 April 2022.
[31] Médicos del Mundo, Impact of Health Reform on the Primary Healthcare Level in Conflict-Affected Areas of Donetsk and Luhansk Oblasts, June 2021. Médicos del Mundo, Role of the decentralization reform, June 2021.
[32] OCHA, 2022 Flash Appeal April Revision, 25 April 2022.
[33] OCHA, 2022 Flash Appeal April Revision, 25 April 2022.
[34] OHCHR, Ukraine: civilian casualty update 28 April 2022.
[35] IOM, Ukraine Internal Displacement Report – General Population Survey Round 3, 17 April 2022.
[36] UNHCR, Ukraine Refugee Situation, 28 April 2022.
[37] OCHA, Ukraine: Humanitarian Impact - Situation Report, 26 April 2022.

2. Health status and threats

Population mortality

Life expectancy

In Ukraine, the average life expectancy at birth was 71.4 in 2020, however, it differs widely between women and men (76.2 for women and 66.4 for men).[38] By comparison, in 2015, the average life expectancy at birth for countries in the WHO European region was 77.8 (81.1 for women and 74.6 for men).[39]

Mortality rates

The national crude mortality rate (number of deaths per 1000 people) for 2020 was 15.9.[40] The under-5 mortality rate in Ukraine has been gradually decreasing from 20 deaths per 1000 live births in 1990 to 8.1 deaths per 1000 live births in 2020.[41]

Conflict-related mortality

Between 24 February and 28 April 2022, the Office of the UN High Commissioner for Human Rights (OHCHR) recorded 6009 civilian casualties; 2829 civilians had been killed (932 men, 626 women, 62 girls, and 75 boys, as well as 68 children and 1066 adults whose sex is yet unknown) and 3180 injured (368 men, 302 women, 66 girls, and 73 boys, as well as 164 children and 2207 adults whose sex is yet unknown). The real toll is likely higher. Most of the civilian casualties recorded were caused by the use of explosive weapons with a wide impact area, including shelling from heavy artillery and multiple launch rocket systems, and missile and air strikes.[42] Between 2014 and 28 April 2022, OHCHR recorded more than 6000 civilian deaths in Ukraine as a result of conflict. Prior to the outbreak of the war in February, the majority of recent casualties were due to mines, unexploded ordnance and other explosive objects.[43]

Non-conflict-related mortality

NCDs are the leading cause of premature death (death occurring before the age of 70 years) in Ukraine; they accounted for 91% of the total number of deaths in 2017;[44] with deaths from the five major NCDs (cardiovascular diseases, diabetes, cancers, chronic respiratory diseases and mental health conditions) making up almost 84%.[45] In 2020, cardiovascular disease (CVD) was the leading cause of death, accounting for two-thirds of all deaths. The next leading cause, cancer, accounted for approximately 13% of all deaths.

[38] State Statistics Service of Ukraine, Databank, accessed 9 April 2022. Note: Estimates do not include data from Donetska and Luhanska oblasts.
[39] WHO EURO, European Health Information Gateway, accessed 9 April 2022.
[40] State Statistics Service of Ukraine, Databank, accessed 14 March 2022. Note: Estimates do not include data from Donetska and Luhanska oblasts.
[41] UNICEF, Country Profile: Ukraine, accessed 14 March 2022.
[42] OHCHR, Ukraine: civilian casualty update 28 April 2022.
[43] OHCHR, Conflict-related civilian casualties in Ukraine, 30 January 2022.
[44] Ukraine. In: Noncommunicable diseases (NCD) country profiles, 2018. Geneva: World Health Organization; 2018:209.
[45] Dumcheva A, Habicht J, Mikkelsen B, Farrington J, Mauer-Stender K, Bigot A *et al.* Tackling noncommunicable diseases in Ukraine 2015–2019. Copenhagen: WHO Regional Office for Europe; 2020.

Table 4: 2020 Death rates for selected NCDs in Ukraine[46]

	Ukraine	% of all deaths	Per 100 000
All deaths	616 835	100	1620
CVD	408 163	66	1072
Cancer	77 880	13	204
Diabetes	2122	<1	6
Mental health disorders	971	<1	3

Ukraine also has high death rates for several notable infectious diseases. In 2021, 1923 deaths were attributed to HIV/AIDS (5.0 per 100 000).[47] In 2020, 2927 deaths were attributed to TB, (7.7 per 100 000). [48] COVID-19 mortality rates have been steadily decreasing since mid-November 2021.[49] By 13 April 2022, there had been 108 167 deaths attributed to COVID-19 since the start of the pandemic (245 deaths per 100 000 population).[50] There has been a steady decline in mortality due to COVID-19 since February, however absolute numbers need to be interpreted with caution given the sharp decline in the number of samples tested after 23 February.[51]

In terms of maternal and child mortality, Ukraine has some of the highest rates in Europe. Although the maternal mortality ratio (MMR) declined from 32 to 19 deaths per 100 000 live births between 2003 and 2017,[52] it remains among the highest levels of neighbouring countries, and was nearly 10 times that of neighbouring Poland. The infant mortality rate (IMR) in Ukraine has been declining from 17 deaths per 1000 live births in 1996 to seven deaths per 1000 live births in 2020.[53] By comparison, Poland had an IMR of 3.9 per 1000 live births in 2020. The under-5 mortality rate has been gradually decreasing from 20 deaths per 1000 live births in 1990 to eight deaths per 1000 live births in 2020.[54] In the EU, the under-5 mortality rate in 2020 was less than half of Ukraine's at 3.9 deaths per 1000 live births.[55]

Conflict-related drivers of mortality and morbidity

Disruption to medical services and supplies

The conflict is impacting access to medical services and supplies in several ways. There are reports, both verified and under investigation, of health facilities being damaged or destroyed. As of 28 April, 157 attacks on health care had impacted health facilities and been verified though WHO's surveillance system for attacks on health care.[56] The MOH has reported that between 24 February and 9 April, 307 health care facilities, including primary health care centres, had been damaged; and 21 hospitals had been completely destroyed.[57] Stock ruptures have occurred due to supply chain disruption. Health services throughout Ukraine have been disrupted, with closures of facilities for security reasons; and many health care workers have been displaced, either internally or to neighbouring countries. Lack of medicines in health care centres or pharmacies was the most commonly reported barrier to health care and the most common concern in recent

[46] State Statistics Service of Ukraine, Databank, accessed March 2022.
[47] Public Health Centre of the Ministry of Health of Ukraine, Registered HIV infection, AIDS, and deaths, December 2021.
[48] State Statistics Service of Ukraine, Databank, accessed March 2022.
[49] WHO EURO, COVID-19 situation in the WHO European Region, accessed 2 April 2022.
[50] Public Health Centre Ministry of Health, accessed 9 April 2022.
[51] WHO, COVID-19 situation in the WHO European Region, 9 April 2022.
[52] UNICEF, Country Profile: Ukraine, accessed 2 February 2022.
[53] UNICEF, Country Profile: Ukraine, accessed 2 February 2022.
[54] UNICEF, UNICEF Data Warehouse, accessed 2 February 2022.
[55] World Bank, World Development Indicators, accessed 9 April 2022.
[56] WHO, Surveillance System for Attacks on Health Care, accessed 28 April 2022.
[57] UKRInform, In Ukraine, 307 health facilities were damaged by shelling, 9 April 2022.

assessments.[58],[59],[60] Finally, accessibility to health services continues to be severely disrupted within areas experiencing active conflict, as well as due to physical and geographical barriers. For trauma patients in particular, first aid in the field and rapid transfers to hospitals are vital to avoiding excess morbidity and mortality.

Population displacement

At the time of writing, over 5.4 million refugees have already been displaced to neighbouring countries.[61] Population displacement may increase for the risk of disease, due to closer and more intense social mixing, poor quality shelter and WASH (water, sanitation, and hygiene) conditions, greater exposure to the elements, and exacerbating factors such as nutritional stress. Discontinuation of treatment during displacement may increase morbidity and mortality from communicable and noncommunicable diseases (NCDs, e.g., hypertension, diabetes). NCDs are particularly prevalent in the older population, many of whom have not been able to flee the hostilities due to reduced mobility and financial means. Even among IDPs, Round 1 of the IOM population survey found that 30% respondents reported having a chronic disease and 57% were elderly.[62] In the first three rounds of the same IOM survey, access to medicines and health services was the most commonly reported need, second to cash (financial support).[63] According to a WHO/Premise household national survey, one in three (30%) households have at least one person with a chronic disease who reported challenges in accessing care for their condition. The survey also shows that two out of five households (39%) have at least one member with a chronic illness, such as cardiovascular disease, diabetes or cancer.[64]

Water, sanitation and housing

The conflict has caused significant infrastructural damage, leaving at times millions of people without electricity or water; dilapidated water and sanitation infrastructure will be a further impediment to reconstruction. In addition to individual consumption and hygiene, water is also an essential resource for electricity production and centralised heating.

Frequent attacks have forced many people to seek temporary shelter in basements, bomb shelters, and metro stations underground with poor ventilation, heating, provisions, and access to sanitation. Many people have left their homes and travelled to other parts of the country; most are sheltering in private accommodations and/or with families. The WHO/Premise national household survey found that most households (70%) surveyed are sheltering in their own homes at this time, while 11% are staying with friends and family members in relatively safer areas, 8% are on the move within Ukraine, and 3% are in a shelter or camp for internally displaced people.[65]

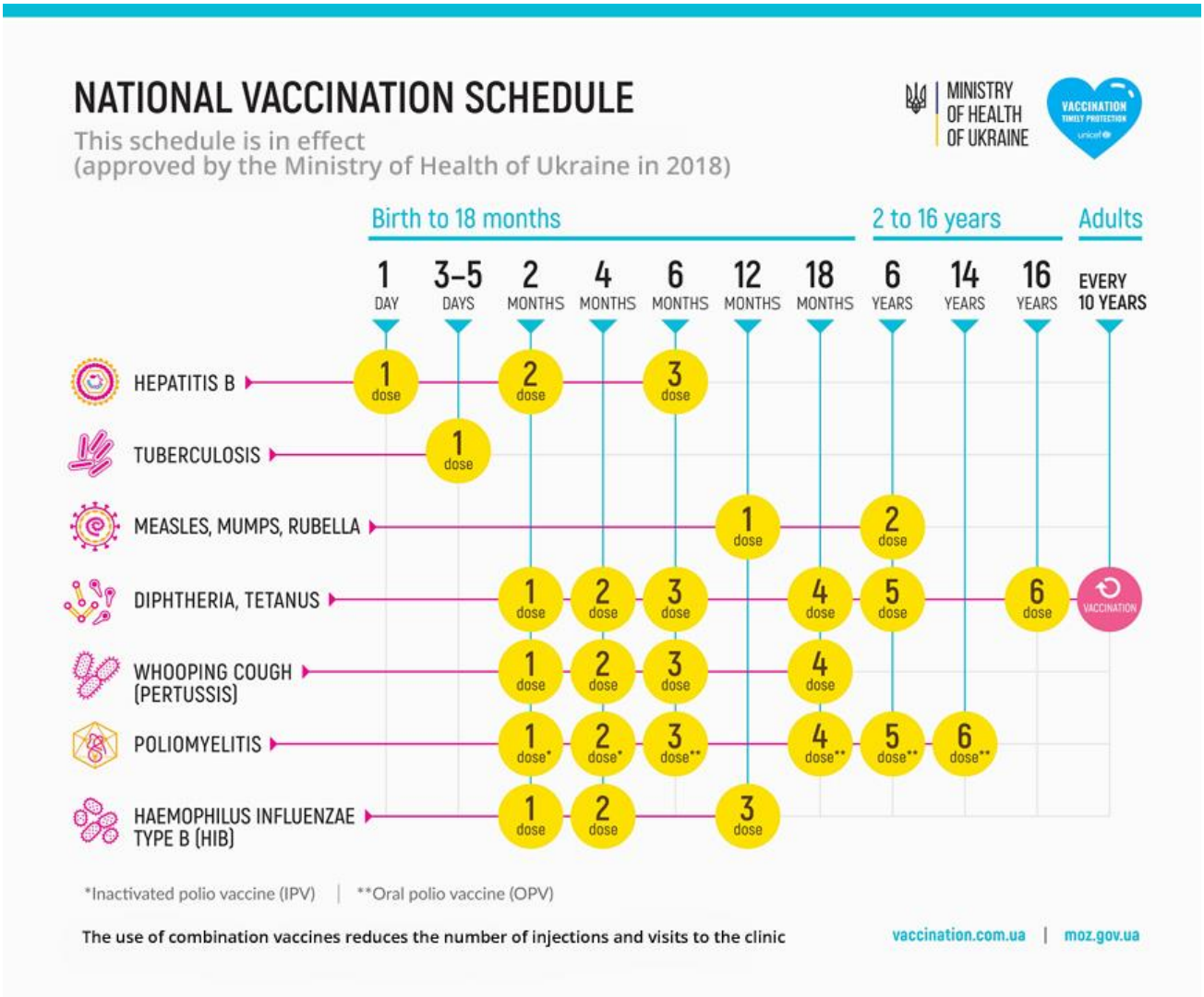
[58] IOM, Ukraine Internal Displacement Report Round 1, Round 2, Round 3, 2022.
[59] REACH/OCHA, Rapid Needs Assessment of Conflict-Affected Areas, 22-25 March - Eastern Oblasts 6 April 2022.
[60] REACH/OCHA, Rapid Needs Assessment of IDP-hosting Areas, 22-25 March - South and East Oblasts, 21April 2022.
[61] UNHCR, Ukraine Refugee situation, accessed 28 April 2022.
[62] IOM, Ukraine Internal Displacement Report, 1 April 2022.
[63] IOM, Ukraine Internal Displacement Report Round 1, Round 2, Round 3, 2022.
[64] WHO, Ukraine: People with chronic diseases face massive challenges in accessing health care, according to new WHO survey, 22 April 2022.
[65] WHO, Ukraine: People with chronic diseases face massive challenges in accessing health care, according to new WHO survey, 22 April 2022.

Vaccination coverage

Childhood vaccinations

Under the National Vaccination Schedule, children are protected against ten infectious diseases: pertussis, diphtheria, tetanus, measles, mumps, rubella, tuberculosis, *Haemophilus* type b (HIB infection), hepatitis B and polio.[66]

Fig. 2 Ukraine National Vaccination Schedule[67]



Vaccination coverage in Ukraine is among the lowest in the WHO European Region, and is at or below the target threshold for BCG, DTP3, Pol3, MCV, and HepB3 (Table 5). Rotavirus vaccine is not included in the routine vaccination schedule. Despite a substantial increase in routine vaccination coverage from 2017 (e.g., DTP3 – 50%) to 2021 (e.g., DTP3 – 80%) the country has not yet reached regionally targeted 95% coverage rate for any antigen under routine vaccination and has not implemented at the required scale the supplementary immunization activities on measles, polio and diphtheria. Insufficient vaccine coverage at the national level has been further compromised by inequities observed at sub-national level, and particularly low routine vaccination coverage rates reported in western regions.

[66] UNICEF, Vaccination is a superpower against diseases. Make time to vaccinate children before the start of the school year!, 25 August 2021.
[67] Ministry of Health of Ukraine, National Vaccination Schedule, 2018.

Ukraine's vaccination coverage has been hindered by challenges on the demand side, with anti-vaccination disinformation spreading on social media and high vaccine distrust among the population in general.[68] A survey conducted by the Wellcome Trust in 2019 revealed that just 29% of Ukrainians thought vaccines are safe and only 50% believed they are effective. According to UNICEF, vaccine hesitancy poses major challenges.[69]In research conducted by UNICEF, up to 40% of health care workers were found to be vaccine hesitant.[70,71]

Routine vaccines are still available in areas away from active fighting, but there are many barriers to access. A nationwide vaccination campaign to protect 140 000 unvaccinated children throughout the country was disrupted just weeks after its launch on 1 February this year.[72] Ukraine had 76% DPT vaccination coverage in 2012, but it fell sharply to 19% in 2016 after the 2014 Ukraine conflict. A similar, or worse, outcome is feared during the current conflict.[73] NGOs are providing vaccination services for IDPs in western Ukraine through mobile clinics.

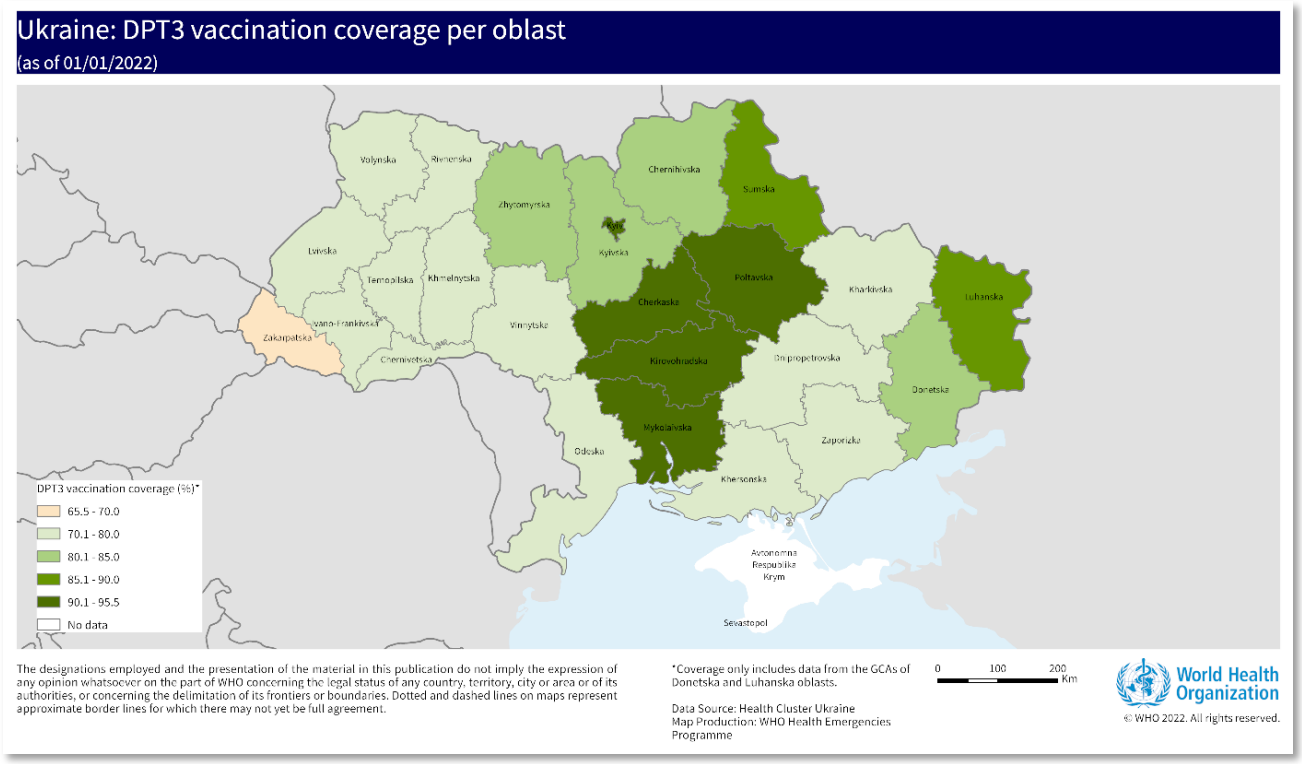
Table 5: Coverage estimates for immunizations administered in 2021 for Ukraine[74]

Vaccine	Ukraine %	Target*[75] %
BCG (Tuberculosis)	82	>79
DTP3 (Diphtheria, Tetanus, Pertussis - 3rd dose)	80	>79
Pol3 (Polio - 3rd dose)	80	>89
MCV1 (Measles - 1st dose)	89	
MCV2 (Measles - 2nd dose)	87	>95
HepB3 (Hepatitis B - 3rd dose)	79	>90
Hib3 (Haemophilus influenzae type b - 3rd dose)	87	>79
RCV1 (Rubella - 1st dose)	89	>79

* Coverage needed for immunity sufficient to likely confer either herd (community) protection or a high level of individual protection.

[68] Kelland K, Polityuk P. Measles and mistrust in Ukraine weaken world's defenses, 4 November 2019.
[69] UNICEF, Vaccination is a superpower against diseases. Make time to vaccinate children before the start of the school year!, 25 August 2021.
[70] Fenn A, Ukraine's anti vaccine crisis: '40% of healthcare workers are skeptical', CGTN, 14 Feb 2021.
[71] Holt E. COVID-19 vaccination in Ukraine. Lancet Infect Dis. 2021 Apr; 21(4): 462.
[72] UNICEF, Vaccines – a vital support for long life and the good of all, 24 April 2022.
[73] Okwo-Bele JB, *et al.* Tackling inequalities in immunization outcomes in conflict contexts, Dec 2018.
[74] Ukraine Ministry of Health, Implementation of vaccination volumes in 2021 according to the UKRVAC database, 1 January 2022.
[75] WHO, Vaccination in Acute Humanitarian Emergencies, May 2017. WHO, Vaccination in Acute Humanitarian Emergencies, May 2017. WHO, Vaccination in Acute Humanitarian Emergencies, May 2017. WHO, Vaccination in Acute Humanitarian Emergencies, May 2017.

Fig. 3: Ukraine DPT3 Vaccination Coverage by Oblast[76]



[76] Ukraine Ministry of Health, Implementation of vaccination volumes in 2021 according to the UKRVAC database, 1 January 2022.

Table 6: Estimates of National Ukraine immunization coverage provided by the WHO vaccine-preventable diseases monitoring system 2020[ZZ]:

Vaccine coverage for Ukraine, by year

Provided by WHO vaccine preventable diseases monitoring system

Vaccine	Coverage in percent			
	2017	2018	2019	2020
BCG (Tuberculosis)	84	90	84	93
DTP1 (Diphtheria, Tetanus, Pertussis - 1st dose)	65	87	92	93
DTP3 (Diphtheria, Tetanus, Pertussis - 3rd dose)	50	69	80	81
Pol3 (Polio - 3rd dose)	48	71	78	84
IPV1 (Inactivated Polio - 1st dose)	43	92	83	87
MCV1 (Measles - 1st dose)	86	91	93	85
MCV2 (Measles - 2nd dose)	84	90	92	82
HepB BD (Hepatitis B - birth dose)	49	60	60	69
HepB3 (Hepatitis B - 3rd dose)	52	67	76	81
Hib3 (Haemophilus influenzae type b - 3rd dose)	39	58	80	85
RCV1 (Rubella - 1st dose)	86	91	93	85

COVID-19 Vaccination

Vaccination roll-out before the war had been slow and services have since been disrupted. Data on vaccinations was last reported on 27 February 2022. Compared to all current reports, Ukraine still has the seventh lowest rate of vaccine uptake in Europe as it did before the start of the war, with 36% uptake of at least one dose and 34% uptake of a complete vaccine series, increasing the risk of severe disease, particularly given the high burden of comorbidities in the population.[78] WHO has set a target of 70% coverage by mid-2022.

Table 7: COVID-19 vaccination coverage for Ukraine, as of 27 February 2022[79]

Vaccinated with at least one dose			Fully-Vaccinated			Booster dose		
#	%	per 100 000	#	%	per 100 000	#	%	per 100 000
15 774 300	36	35 797	15 153 080	34	34 387	741 197	2	1682

[77] WHO/UNICEF. Ukraine: WHO and UNICEF estimates of immunization coverage: 2020 revision, 8 July 2021.

[78] WHO, EURO COVID-19 Monitor, accessed 9 April 2022.

[79] WHO, Ukraine Ministry of Health, Ukraine Public Health Center, Ukraine COVID-19 Daily Situation Report, 13 April 2022.

Influenza Vaccination

As of 3 April 2022, 171 252 people had been vaccinated against influenza this season. Vaccines against influenza are available for free for health care workers and at cost from pharmacies for the general public.[80]

Epidemic-prone diseases

Surveillance/early warning, alert and response capacity

In Ukraine the public health surveillance system is unified. Surveillance is primarily coordinated through the Ukraine Public Health Centre (UPHC) and Regional Centres for Disease Control (RCDCs). There is a list of dangerous and especially dangerous infectious diseases that are subject to immediate notification when only one case is registered; in addition, there is a list of infectious diseases to be registered for routine reporting. Additionally, there are separate surveillance procedures for selected vaccine-preventable infections (polio, diphtheria, measles, rubella, hepatitis B, pertussis), enteroviruses, influenza, HIV, and TB. The Ministry of Defense of Ukraine, the Ministry of Internal Affairs, the Security Service of Ukraine, and other law enforcement agencies are not connected to the reports of UPHC, but rather report directly to the Ministry of Health. The UPHC regularly publishes reports for the public (weekly reports on health risks, influenza infection bulletins; monthly reports on disease morbidity, vaccination coverages; annual HIV and TB bulletins, etc.).[81]

The Public Health Response Monitor (PHRM), a tool launched in October 2020 as part of the country's COVID-19 response, is used to assess polices and the epidemiological situation across the different regions of the country. The PHRM collects data on regional management and coordination, funding, planning of services, case management and supporting essential health services. Public health data are supplemented with data on the epidemiological situation in each specific region and are accessible through an electronic portal.[82]

Key diseases

COVID-19

Disease surveillance

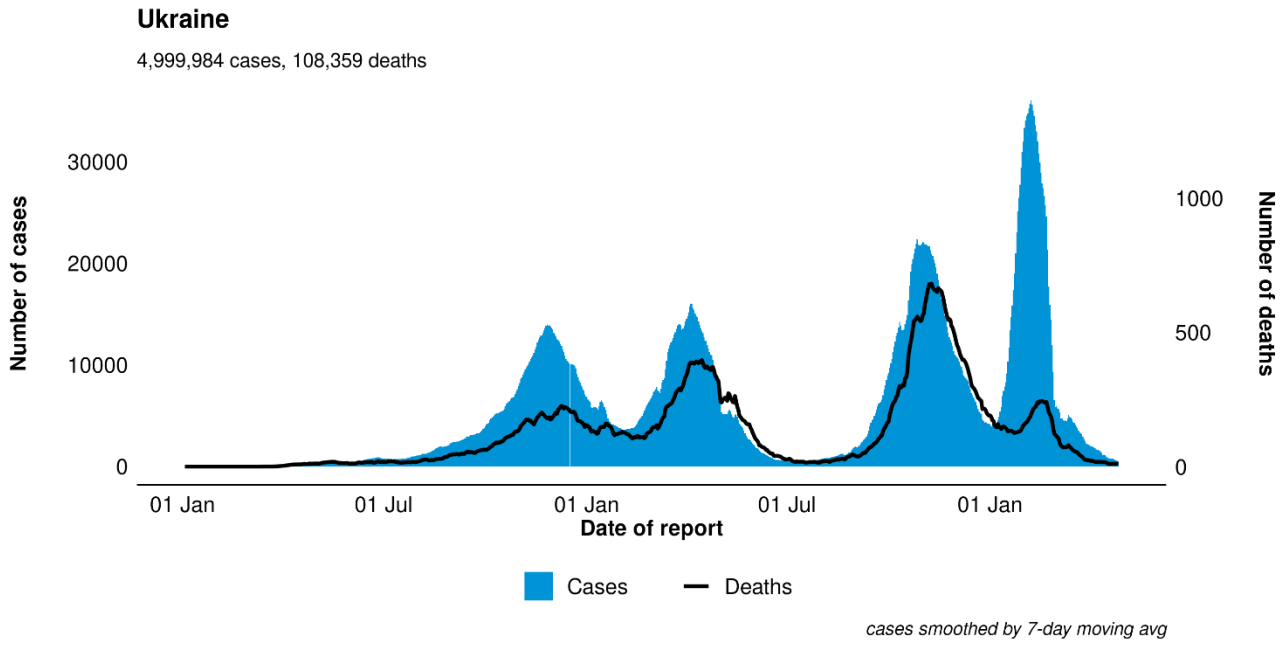
During the weeks of 4 April 2022 and 11 April 2022, 11 752 new cases were reported; the number of weekly cases continues to decrease. The decrease in the number of reported COVID-19 cases has been dramatic compared with the numbers before 24 February 2022. As of 13 April 2022, 2135 new COVID-19 cases were reported, down from 25 789 new cases on 24 February 2022[83]. While a decrease in the case incidence of around 22% was reported during the week 4 – 11 April 2022 compared to the previous week, the numbers should be interpreted with caution as PCR and Ag-RDT testing reduced by over 90% during this time, coinciding with the start of the conflict.[84] More than 80% of COVID-19 deaths in Ukraine have been among individuals aged 60 and over.[85]

[80] Ukraine Public Health Centre, accessed 9 April 2022.
[81] WHO, Public Health Surveillance in Ukraine – National Surveillance System – presentation to National Health Cluster Meeting on 13 April 2022.
[82] WHO EURO, WHO analytical tool helps Ukraine monitor how regions respond to COVID-19, 17 December 2020.
[83] Public Health Centre Ministry of Health, accessed 13 April 2022
[84] WHO, Ukraine Coronavirus disease, accessed 11 April 2022.
[85] WHO, Ukraine Ministry of Health, Ukraine Public Health Center, Ukraine COVID-19 Weekly Situation Report, accessed 11 April 2022.

Table 8: Cases of COVID-19 in Ukraine, as of 13 April 2022[86]

Cases	#	per 100 000
Confirmed	4 987 285	11 318
Deaths	108 167	245
Recovered	4 757076	10 795
Active	122 042	277

Fig. 4: COVID-19 confirmed cases and deaths, as of 13 April 2022[87]



Testing

The Ministry of Health of Ukraine reports, as of 12 April 2022, 19 689 519 SARS-CoV-2 PCR tests and around 11 218 268 Ag-RDTs have been performed in laboratories and health facilities (Table 9).[88] The average 7-day PCR testing rate as of 23 February (42 460 per 100 000) was already considered low compared to other European countries; testing has been drastically reduced since the start of the current conflict (1578 per 100 000).[89]

Table 9: SARS-CoV-2 testing rates in Ukraine[90]

Date	# PCR tests	# PCR tests per 100 000	# Ag-RDT tests	# Ag-RDT tests per 100 000	Total number of tests	Total number of tests per 100 000
24 February	24 330	55	39 928	91	64 258	146
12 April	1614	4	5742	13	7356	17

[86] Ukraine Public Health Center, Coronavirus infection COVID-19, accessed 14 April 2022.
[87] WHO, Ukraine COVID-19 Situation Report, 13 April 2022.
[88] WHO, Ukraine Ministry of Health, Ukraine Public Health Center, Ukraine COVID-19 Daily Situation Report, 13 April 2022.
[89] Our World in Data, Coronavirus testing, 15 January 2022.
[90] WHO, Ukraine Ministry of Health, Ukraine Public Health Center, Ukraine COVID-19 Daily Situation Report, 12 April 2022.

COVID-19 vaccination

Vaccination roll-out in Ukraine has been slow. Vaccination against SARS-CoV-2 in Ukraine began on 24 February, 2021. Data on vaccinations were last reported to WHO on 27 February 2022, however, the MOH reports 350 000 people were vaccinated in March, and about 90 000 were vaccinated in April.[91] As of 27 February, Ukraine had the seventh lowest rate of vaccine uptake in Europe, with 36% uptake of at least one dose and 34% uptake of a complete vaccine series, increasing the risk of severe disease, particularly given the high burden of comorbidities in the population.[92] WHO has set a target of 70% coverage by mid-2022. On 20 April, the MOH reported that it had stopped purchasing COVID-19 vaccines and redirected the funds to other medical supplies.[93]

Table 10: COVID-19 vaccination coverage, as of 27 February 2022[94]

Date	Vaccinated with at least one dose			Fully-Vaccinated			Booster dose		
	#	%	per 100 000	#	%	per 100 000	#	%	per 100 000
27 Feb	15 774 300	36	35 797	15 153 080	34	34 387	741 197	2	1682

Vaccinations are voluntary and free. As of 1 February, the following vaccines against COVID-19 are currently in use in Ukraine: Moderna – mRNA - 1273, AstraZeneca - Vaxzevria, Pfizer BioNTech - Comirnaty, and Sinovac - CoronaVac.[95] Mass vaccination centres and vaccination points (e.g., medical clinics) provided immunisations before the war.[96] Mobile immunization teams were also available to vaccinate professional groups (doctors, educators, military, social workers, government officials, etc.), organized teams with more than 50 people, and low-mobility communities. Prior to the escalation of the conflict, NGCA residents could be vaccinated at vaccination points in GCA, but the procedure for crossing the LoC limited access, resulting in a slow uptake.[97]

The health care workforce has not yet been fully vaccinated: 666 249 (97.8%) had received one dose and 550 382 (80.8%) had received a complete primary vaccine series by 1 February 2022.[98] The MOH has indicated that it plans to release a list of professions for which vaccination will be mandatory.[99] On 27 September 2021, the country's National Immunization Technical panel recommended vaccinations for those aged 12 and older.[100]

[91] Interfax Ukraine, Health Ministry refuses purchase of COVID vaccines due to war - Liashko, 20 April 2022.
[92] WHO, EURO COVID-19 Monitor, accessed 9 April 2022.
[93] Interfax Ukraine, Health Ministry refuses purchase of COVID vaccines due to war - Liashko, 20 April 2022.
[94] WHO, Ukraine Ministry of Health, Ukraine Public Health Center, Ukraine COVID-19 Daily Situation Report, 13 April 2022.
[95] Ukraine Ministry of Finance, Vaccination against coronavirus in Ukraine, accessed 1 February 2022.
[96] Ukraine Ministry of Health, List of vaccination points and mass vaccination centers, accessed 1 February 2022.
[97] Ukraine Ministry of Health, About COVID-19 vaccination in Ukraine, accessed 2 February 2022.
[98] WHO/EURO COVID-19 vaccine programme monitor, accessed 2 February 2022.
[99] Ukraine Inform, Mandatory COVID vaccination possible in Ukraine – health chief admits, 21 September 2021.
[100] Racurs, First, we will vaccinate half of the adults - Lyashko on the beginning of vaccination of adolescents, 30 September 2021.

Ukraine's vaccination rollout has been hindered by challenges on the demand side, with "anti-vax" disinformation spreading on social media and high vaccine distrust among the population in general.[101]

Health system management

Twelve dashboards track COVID-19 and related health system data in Ukraine. The MOH operates ten dashboards in Ukrainian, including one which maps cases and deaths.[102] The Office of the National Security and Defense Council (NSDC) of Ukraine has created a health care system dashboard that maps medical services, pharmacies, hospitalizations, hospital bed type and occupancy and vaccinations.[103] The MOH and NSDC dashboards were removed from public use at the end of February. The WHO Regional Office for Europe continues to operate a dashboard with MOH data on regional bed occupancy and oxygen availability.[104] As of 19 April, WHO reported that only ten oxygen plants were operating across the country to supply hospitals and health facilities.[105]

At the national level, as of 24 February, 24 551 hospital beds (33% of the beds allocated for COVID-19 patients) were occupied with cases of confirmed or suspected COVID-19; 22 911 (32%) of the 70 854 beds supplied with oxygen were occupied; 1074 ICU beds were occupied (21%); and 630 mechanical ventilators were occupied (10%). Following the invasion, as of 12 April there has been an 88% decrease in the number of beds occupied by patients with confirmed or suspected COVID-19 from 24 551 to 2898, while the number of available beds has decreased by 30 105 (41%).[106] The reasons may be a combination of a change in health care seeking behaviour and the repurposing of wards in anticipation of and reaction to trauma cases.

Table 11: COVID-19 bed occupancy, as of 24 February and 12 April 2022[107]

	COVID-19 allocated beds			COVID-19 allocated beds with oxygen		
Date	#	#Occupied by suspected /confirmed cases	%	#	#Occupied by suspected /confirmed cases	%
24 February	73 376	24 551	25	70 854	22 911	32
12 April	43 271	2898	7	42 127	2589	6

Influenza

As of week 7, 2022 (ending 20 February 2022) the level of influenza like illnesses (ILI) has exceeded the epidemic levels for the 2021−2022 season, with 27.5% of cases reported in children under 17 years of age.[108] Since the start of the war, there has been a decline in the number of severe acute respiratory infection (SARI) cases, partly due to the lack of reporting from some sentinel sites (e.g., for week 15, only 25 out of 28 sites reported). The Ukraine influenza sentinel surveillance system has sentinel centres located in different geographical areas of the country; there are

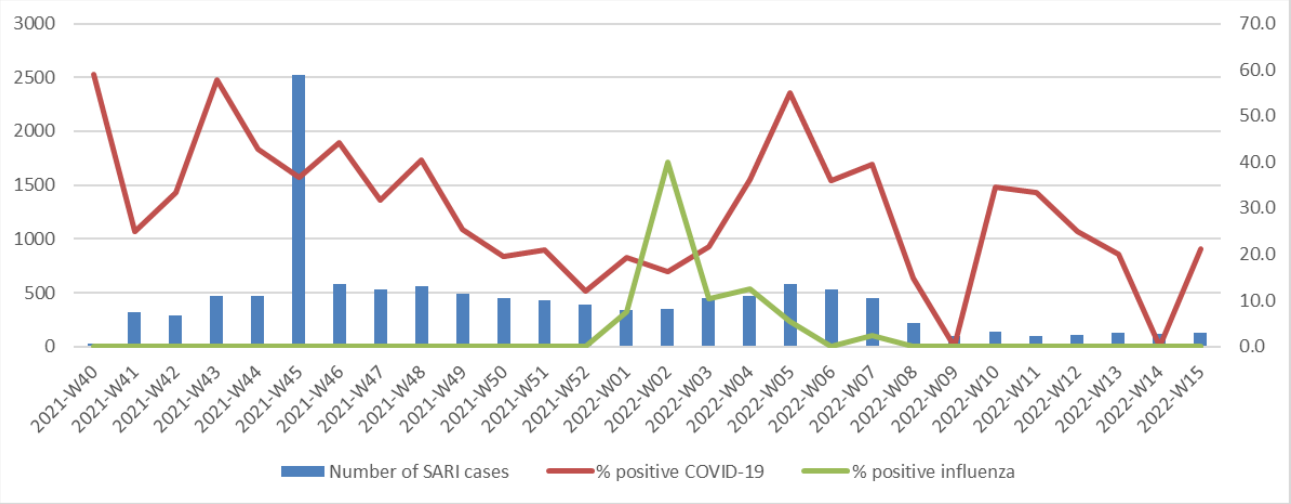
[101] UNICEF, 'Infodemic' of COVID-19 disinformation bad for Ukrainians health, study for UN finds, 3 March 2021.
[102] National Health Service of Ukraine, Analytical panels, accessed 1 February 2022.
[103] National Security and Defense Council of Ukraine, Health system of Ukraine, accessed 2 February 2022.
[104] WHO EURO/Ukraine Ministry of Health, Information on bed occupancy and oxygen availability in the regions of Ukraine, accessed 2 February 2022.
[105] UN, Ukraine: Aid agencies step up relief deliveries as humanitarian situation worsens, 19 April 2022.
[106] WHO EURO/MoH Ukraine: Information on bed occupancy and oxygen availability in the regions of Ukraine, accessed 13 April 2022.
[107] WHO EURO/MoH Ukraine: Information on bed occupancy and oxygen availability in the regions of Ukraine, accessed 13 April 2022.
[108] Public Health Center, Incidence of Influenza and SARS in Ukraine, accessed April 2022.

centres in Kyiv, Dnipro, Odessa and Khmelnytsky. The centres include 17 sentinel stations: nine hospitals and eight polyclinics.[109] The current level of functioning of these centres is unknown.

For the past six weeks in Europe, influenza activity had been increasing from week 4/2022 and then remained at moderately high levels. Countries in central and Western Europe have reported sentinel positivity above 30% in primary care. Influenza A(H3N2) is the dominant circulating influenza subtype, which is sub-optimally matched to the 2021/22 season's influenza vaccine. In Ukraine, vaccines against influenza are available for free for health care workers and at cost from pharmacies for the general public. As of 20 February 2022, 164 939 people were reported to have been vaccinated against influenza this season; by 3 April, 171 252, an additional 6313 people.

Internally displaced and refugee populations are at increased risk of contracting influenza – with current crowded conditions, with a preponderance of children, increasing risk of transmission. This combined with very low levels of influenza vaccination in groups that are vulnerable, suboptimal match of the vaccine and potential reduced access to health care, increases the potential risk of adverse health outcomes. Rapid identification of suspect cases at increased risk of severe disease will allow early triage and appropriate clinical management.

Fig. 5 Severe acute respiratory infection (SARI) cases and positivity of influenza and COVID-19 by week



During the 2020-2021 influenza season, levels of influenza positive cases remained well below levels seen before the COVID-19 pandemic.[110] Influenza morbidity in the 2020/2021 season was lower in Ukraine and other European countries than during the previous season, attributed to the public health and social measures taken against COVID-19.[111] In 2020, 78 deaths caused by influenza were reported to the SSS, whereas 56 were recorded for 2019.[112]

Poliomyelitis

An outbreak of polio occurred in 2021. Two cases of poliomyelitis (polio) were reported and confirmed; both were caused by circulating vaccine-derived poliovirus type 2 (cVDPV2).[113] In September 2021, the virus was isolated from an unvaccinated 17-month-old girl with acute

[109] National Academy of Medical Science of Ukraine, Week 20, 16 June 2021.
[110] Flu news Europe, Influenza virus detections in Ukraine, accessed 21 2022.
[111] National Academy of Medical Science of Ukraine, Week 20, 16 June 2021.
[112] State Statistics Service of Ukraine, Databank, accessed October 2021.
[113] WHO EURO: Catch up polio immunization campaign to begin in Ukraine

flaccid paralysis from Rivnenska oblast in north-west Ukraine.[114,115] In December 2021, the virus was isolated from an unvaccinated 2-year-old boy with acute flaccid paralysis in Zakarpatska oblast in western Ukraine. Both sets of parents had refused vaccinations.[116] A total of 21 individuals residing in two oblasts (Rivnenska and Zakarpatska) had positive isolation of cVDPV2 in stool specimens; all specimens were closely related.[117]

Overall vaccination coverage was 80% in 2021 (see Tables 5, 6 and 12) among 1-year olds. Supplemental vaccination in the community where the first case was detected was conducted from 11-22 October 2021 with inactivated polio vaccine (IPV) for children aged less than 5 years of age, regardless of previous vaccination history. A nationwide vaccination campaign (IPV) targeting all under-vaccinated children (those having only zero or one dose) aged between 6 months and 6 years began on 1 February 2022. Achieving high uptake of this vaccination campaign has been challenging, with only 22% coverage after three weeks of the campaign. The improved oral polio vaccine, nOPV2, with improved efficacy against cVDPV2, was not utilized.[118,119,120,121]

Country level coordination of the outbreak response is ongoing between the Ministry of Health Public Health Centre and the Global Polio Eradication Initiative (GPEI) partners, including WHO, UNICEF and the US Centers for Disease Control and Prevention. Surveillance of cases of acute flaccid paralysis (AFP), a clinical syndrome associated with poliomyelitis, is ongoing. The total number of reported AFP cases reported during weeks 1-12 of 2022 was 35; all cases are pending final classification.[122]

The current crisis in Ukraine increases the risk for spread of VDPV2 both within and outside of the country, with mass displacement including transit through areas in which VDPV2 is believed to be currently circulating in Ukraine. The overall risk is currently assessed as moderate.

[114] Kyiv Post, Ukraine officially confirms case of polio in child, 7 October 2021.
[115] WHO Euro, One case of polio detected in Ukraine, 13 October 2021.
[116] Public Health Center, A second case of polio has been confirmed in Ukraine: in a two-year-old boy, 24 January 2022.
[117] GPEI Ukraine Polio Outbreak Situation Report 11, 17 December 2021.
[118] WHO EURO: Catch up polio immunization campaign to begin in Ukraine, 28 January 2022.
[119] GPEI Ukraine Polio Outbreak Situation Report 14, 10 January 2022; Ministry of Health of Ukraine, Action Plan for Response to Outbreaks of Circulating Vaccine-Related Poliovirus Type 2, 30 December 2021.
[120] Public Health Center, A second case of polio has been confirmed in Ukraine: in a two-year-old boy, 24 January 2022.
[121] Global Polio Eradication Initiative, cVDPV2 Outbreaks and the Type 2 Novel Oral Polio Vaccine (nOPV2), 13 January 2022.
[122] Polio Eradication Program, Situation Report #23: Ukraine cVDPV2 Outbreak, 4 April 2022.

Table 12: Administrative coverage* estimates for polio immunization administered in 2021 for Ukraine, and Rivnenska and Zakarpatska oblasts [123]

Region	Pol3 (up to 1-year old) %	Pol4 (18 months) %	Pol5 (6 years) %	Pol6 (14 years) %
Ukraine	80.1	80.5	78.4	76.1
Rivnenska oblast	80.8	82.1	89.4	87.2
Zakarpatska oblast	68.5	67.7	67.8	75.5

Based on the status of Ukraine's national polio eradication programme in 2018, the European Regional Polio Eradication Certification Commission (RCC) assessed the country's risk of transmission in the event of the importation of wild poliovirus or the emergence of a vaccine poliovirus (cVDPV) as high.[124] In 2018, vaccination coverage among 1-year-olds (Pol3) was estimated at 71%.[125]

Measles

Measles is circulating in Ukraine. In 2021, 16 measles cases were reported, the second highest number in Europe[126]. The country experienced a nationwide epidemic between 2017-2020, during which the MOH reported 115 543 measles cases and 40 measles deaths to WHO.[127] For 2018 and 2019, Ukraine had the highest measles incidence rates in the whole WHO European Region, at over 1200 and 1300 per million population, respectively.[128] In 2016, national vaccination coverage for measles was reported as 45%, attributed to challenges in vaccine procurement and antivaccination campaigns.[129] Vaccination coverage in 2021, at 87%, still fell below the desired 95% population threshold (Table 5).

WHO surveillance indicators collected in 2017 highlighted poor laboratory testing rates.[130] Although surveillance systems and laboratory capacity have been improved and expanded during the COVID-19 pandemic, laboratories have been overwhelmed with testing for SARS-CoV-2.[131]

With large population movements, increased social mixing, disruption of vaccination services and clinical and laboratory surveillance, and seasonality increase in incidence in late winter/spring,[132] there is a risk of increasing the spread of measles in the coming weeks, which could result in substantial morbidity and mortality.

[123] Ukrainian Public Health Centre, Immunization Coverage, 29 March 2022.
[124] WHO Euro, 33rd Meeting of the European Regional Commission for certification of poliomyelitis eradication (RCC), 2018.
[125] WHO/UNICEF. Ukraine: WHO and UNICEF estimates of immunization coverage: 2020 revision, 8 July 2021.
[126] ECDC: Communicable disease threat report February 2022
[127] WHO EURO, Reported measles cases for the period January-December 2017, 2 February 2018; WHO EURO, Reported measles cases for the period January-December 2019, 7 February 2020; WHO EURO, Reported measles cases for the period January-December 2020, 3 February 2020;
[128] WHO EpiData - A monthly summary of the epidemiological data on selected Vaccine-preventable diseases in the WHO European Region. 2019.
[100] Rodyna R. Measles situation in Ukraine during the period 2017-2019. The European Journal of Public Health 29(Supplement_4) November 2019.
[130] WHO EURO, Reported measles cases for the period January-December 2017, 2 February 2018.
[131] European Observatory on Health Systems and policies, COVID-19 Health System Response Monitor, December 2020.
[132] Martinez ME, The calendar of epidemics: Seasonal cycles of infectious diseases, PLoS Pathog 14(11): e1007327.

Mumps

Cases of mumps have decreased from 0.9 cases per 100 000 population (382 cases) in 2019 to 0.42 cases per 100 000 population (175 cases) in 2021.[133] As with measles, vaccination coverage falls below targets, increasing the risk of outbreaks, particularly among IDPs in collective centres and infants.

Rubella

Cases of rubella have decreased from 0.33 cases per 100 000 population (138 cases) in 2019 to 0.05 cases per 100 000 population (20 cases) in 2021.[134] As with measles, vaccination coverage falls below targets, increasing the risk of outbreaks, particularly among IDPs in collective centres and infants. There is also a risk of congenital rubella syndrome in infants born to women infected during pregnancy.

Pertussis

Cases of pertussis have decreased from 5.5 cases per 100 000 population (2314 cases) in 2019 to 0.2 cases per 100 000 population (91 cases) in 2021.[135] Vaccination coverage falls below targets, increasing the risk of outbreaks, particularly among IDPs in collective centres and infants. Adults in Ukraine are not generally vaccinated for pertussis.

Tetanus

Tetanus is a serious illness contracted through exposure to the spores of the bacterium, *Clostridium tetani*, which live in soil, saliva, dust and manure. The bacteria can enter the body through deep cuts, wounds or burns affecting the nervous system. The infection leads to painful muscle contractions, particularly of the jaw and neck muscle, and is commonly known as "lockjaw".

People of all ages can get tetanus, but the disease is particularly common and serious in new-born babies and their mothers when the mother is unprotected from tetanus by the vaccine, tetanus toxoid. Tetanus occurring during pregnancy or within six weeks of the end of pregnancy is called maternal tetanus, while tetanus occurring within the first 28 days of life is called neonatal tetanus.[136]

The risk of tetanus in conflict-related injuries is high, particularly in injured, unvaccinated children.[137] This poses a substantial risk where vaccination coverage is low, there is exposure to high intensity military attacks, and access to tetanus antitoxin is difficult; this includes Kharkivska, Dvepropetrovska, Zaporizka, Donetska, and Kyivska. Vaccination coverage is below targets in many oblasts (see Fig.3), and many infants are also insufficiently vaccinated with three doses of the vaccine.[138] Tetanus has been reported in the past three years with seven to 15 cases reported per year.[139]

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[133] Ukraine Public Health Centre, Infectious morbidity of the population of Ukraine December 2020 - December 2021.
[134] Ukraine Public Health Centre, Infectious morbidity of the population of Ukraine December 2020 - December 2021.
[135] Ukraine Public Health Centre, Infectious morbidity of the population of Ukraine December 2020 - December 2021.
[136] WHO, Tetanus, accessed 10 April 2022.
[137] WHO, Tetanus, 9 May 2018.
[138] Ukraine Ministry of Health, Implementation of vaccination volumes in 2021 according to the UKRVAC database, 1 January 2022.
[139] Ukraine Public Health Centre, Infectious morbidity of the population of Ukraine, December 2020 – December 2021.

Diphtheria

There is a risk of a diphtheria outbreak in Ukraine due to insufficient stock of antitoxin and low rate of vaccination among the population in recent years.[140] The regions with the lowest DTP3 coverage (50-79%) during the last three years are Lvivska, Zakarpatska, Ivano-Frankivska and Ternopilska in the West of Ukraine, Kharkivska, Denpropetrvoska, Zaporizka, and Donetska in the East, and Khersonska in the South.

The number of reported cases increased from five in 2012 to 23 in 2019;[141] no cases were reported in 2020 and 2021.[142] By the end of 2019, 1 542 650 adults were vaccinated against diphtheria, just 52% of the planned number. The last epidemic of diphtheria in Ukraine was reported in 1991-1998, during which there were 5277 cases reported in 1995 alone.[143]

A suspected case of diphtheria among IDPs was confirmed by laboratory testing in Ternopil on 5 April 2022. The case is a 29-year-old female, internally displaced from Donetska Oblast with unknown vaccination status. As of 21 April, 79 contacts have been identified; all contacts have tested negative for *Corynebacterium*. Laboratory investigation, clinical observation, antibiotic prophylaxis and terminal disinfection were implemented.[144]

Rabies

Rabies is endemic in Ukraine.[145] With many homeless animals due to the conflict and interruption to vaccination programs for domestic and agricultural animals, there is increased risk to transmission.

Leptospirosis

Between 2006 and 2018, high incidences of leptospirosis were reported in Ukraine, with more than 0.5 cases per 100 000 population on average per year.[146] Lower incidences were reported in 2020 and 2021: 0.29 cases per 100 000 population (approx. 120 cases per year) – a reduction by half on 2019 (0.7 per 100 000 population: 295 cases).[147] Population displacement, with people living in poor shelter, coupled with risk of flooding, are potential risk factors. However, the seasonal peak of leptospirosis in Ukraine is during the summer months[148]; and flooding risk is higher in the summer and autumn periods.[149] The increase in the number of rodents due to the destruction of infrastructure and population migration may contribute to the spread of leptospirosis in the affected areas.

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[140] World Health Organization. Diphtheria vaccine: WHO position paper, August 2017 – Recommendations. Vaccine. 2018 Jan 4;36(2):199–201.

[141] Pikul KV, Syzova LM, Ilchenko VI, Zvyagolska IM. Diphtheria: Current public health challenge in Ukraine and Worldwide, Wiad Lek. 2021;74(1):137-143.

[142] Ukraine Public Health Centre, Infectious morbidity of the population of Ukraine – December 2020 - December 2021.

[143] World Health Organization: Immunization, Vaccines and Biologicals. Vaccine preventable diseases Vaccines monitoring system 2020 Global Summary Reference Time Series: DIPHTHERIA.

[144] 24TV, На Тернопільщині зафіксували випадок дифтерії: контактними є понад 70 людей (A case of diphtheria has been recorded in Ternopil region: more than 70 people are in contact), 6 April 2022.

[145] Polupan I, *et al.* An Analysis of Rabies Incidence and Its Geographic Spread in the Buffer Area Among Orally Vaccinated Wildlife in Ukraine From 2012 to 2016. Front Vet Sci. 2019 Sep 10;6:290.

[146] WHO Annual Reports on High Threats Pathogens [Internet]. [cited 2022 Mar 11].

[147] Ukraine Public Health Centre, Infectious morbidity of the population of Ukraine December 2020 - December 2021.

[148] Zubach O, Telehina T, Zinchuk A. Seasonality of Leptospirosis in the Western Region of Ukraine. Int J Infect Dis. 2019 Feb 1;79:124.

[149] Trends in flood losses in Europe over the past 150 years | Nature Communications [Internet]. [cited 2022 Mar 11].

Between 1 January and 31 March 2022, local authorities of the Khmelnystky region, western Ukraine reported three confirmed cases of leptospirosis, of all of which were in IDPs.[150,151]

Hepatitis A and hepatitis E

Some levels of endemicity of hepatitis A have been observed in Ukraine. Although data have not been reported every year, the highest prevalence was reported in 2008 with 5135 cases. Hepatitis A has been well-documented to spread in displacement settings, and reinforcement of WASH activities, and detection and monitoring of acute jaundice, should be considered as the key measures to mitigate the risks of outbreaks.[152] No data on hepatitis E are available; the same mitigation measures apply as for hepatitis A.

Typhoid

There is a low reported incidence of typhoid fever in Ukraine (from 0.012 to 0.14 per 100 000 people). There were prior outbreaks in Odeska and Donetska oblasts in 2015. Lack of access to safe water and appropriate sanitation, poor hygiene, and overcrowding can all increase the risk of outbreaks.

Cholera

Ukraine was the last European country to declare a cholera epidemic, with 33 cases in 2011 in Mariupol (Donetska oblast), a city currently under siege. The risk of outbreak is heightened due to the disruption and destruction of water supplies and WASH infrastructure and the warmer climatic conditions of spring and summer being favourable to transmission. The risk is highlighted by recent events in Mykolayiv: on April 12, the main water pipeline supplying water to the city of Mykolayiv was damaged by shelling, resulting in no centralized water for six days in a row. Due to the lack of water, the city residents drew untreated water from rivers and lakes. In 2017, UPHC reported *Vibrio cholerae* in the open waters of Mykolayiv city. In addition, the risk from soldiers with recent exposure in cholera-endemic countries should be considered.

Vector-borne diseases

Crimean Congo haemorrhagic fever cases have been reported in southern affected areas.[153] Risk of West Nile fever increases in late spring in the bordering countries. Epidemic typhus was a major public health problem in WW2, including in Russia, Ukraine, and Poland. Ukraine has an estimated 1.8 million people aged 80 years and above, some of whom may have contracted *R. prowazekii* during the 1940s and are at risk of Brill-Zinsser disease (recrudescence of epidemic typhus). Body lice infestations among displaced and sheltering populations, living in overcrowded and unsanitary conditions, risks epidemics of *R. prowazekii*; the most recent outbreak in the region was in 1997 in Russia.[154]. There is low surveillance capacity to detect these diseases.

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150 ТСН, Since the beginning of the year, five cases of leptospirosis have been detected in the Khmelnytsky region: two of them among migrants, 5 April 2022.

151 Yampil community, Leptospirosis: What is the danger and how to prevent the disease (ЛЕПТОСПІРОЗ: У ЧОМУ НЕБЕЗПЕКА ТА ЯК ЗАПОБІГТИ ЗАХВОРЮВАННЮ), 4 April 2022.

152 Kaddoura M, Allaham R, Abubakar A, Ezzeddine A, Barakat A, Mala P, Zaraket H. Hepatitis A Virus Genotype IB Outbreak among Internally Displaced Persons, Syria. Emerg Infect Dis. 2020 Feb;26(2):369-371.

153 WHO, Geographic distribution of Crimean-Congo Haemorrhagic Fever, 2017.

154 ECDC, Facts about epidemic louse-borne typhus, accessed 26 April 2022.

Tuberculosis & HIV

Tuberculosis (TB)

Tuberculosis is a serious concern in Ukraine – TB was the cause of 2927 deaths in 2020 (7.0 per 100 000).[155] When access to diagnostic and treatment programmes is reduced or interrupted, as with the conflict, infections go undetected and drug resistance can develop. Delivery of tuberculosis medicines to the East has been particularly challenging. WHO already identified Ukraine as one of the top 20 countries with the highest estimated number of incident drug-resistant cases in 2020 - 4257 (24% of bacteriologically confirmed cases). The level of DR-TB is particularly worrying as DR-TB is more difficult and expensive to treat and is associated with a higher mortality than TB infections that are not drug-resistant. Access barriers, including disruptions in services, in 2020 due to the COVID-19 pandemic, saw a drop in the number of people newly diagnosed with TB compared to 2019, and subsequently those tested and treated for DR-TB. Ukraine made the fourteenth largest contribution to the global shortfall of TB notifications in 2020 compared to 2019. It is predicted that when access to TB diagnostics and services improves, there will be a rise in diagnosed and reported cases of TB, and that a higher proportion with be drug-resistant.[156] TB treatment coverage is estimated at 82%.

Table 13: New cases of TB per 100 000 population in Ukraine, 2020 vs. 2021[157]

	2021	2020	% Change
Total	44.0	42.2	4.3
Children aged 0-14 years	7.4	5.9	25.4
Adolescents aged 15-17 years	12.5	14.2	-1.7
TB/HIV coinfection	6.5	6.9	-0.4

The impact of the pandemic can also be seen when comparing the cases reported in the first six-months of 2019, 2020, and 2021.[158]

Table 14: Reported cases of TB in Ukraine 1H 2019, 2020, 2021[159]

	1H 2019	1H 2020	% Change 2019-2020	1H 2021	% Change 2020-2021
TB cases (new + relapses)	13 512	9644	-28.6	8 767	-7.8
MDR TB	4048	2934	-27.5		
TB/HIV	2995	2088	-30.2	1 358	-13.2

The UPHC reported in March 2022 that 1222 new cases of disease were registered and 12 540 people received treatment for TB.[160] On 13 April, local health authorities in Rivnenska oblast reported the number of cases of TB increased in the first quarter of 2022 (113) compared with the same period during 2021 (104). The increase is predominantly reported in children; ten in 2022

[155] Public Health Center of the Ministry of Health of Ukraine, Registered HIV infection, AIDS, and deaths 2020.
[156] WHO, Global Tuberculosis Report 2021, 14 October 2021.
[157] Ukraine Public Health Center, TB Statistics, accessed March 2022.
[158] Ukraine country reports at the National TB, HIV and viral Hepatitis Programme Managers and partners meeting 23-24 September 2020, organized by Euro WHO and ECDC; the Global Fund Strategic Initiative *Finding the missing people with TB* meeting 9 -10 November 2020, organized by WHO, the Global Fund, Stop TB Partnership and UNOPS.
[159] Center for Medical Statistics of the Ministry of Health of Ukraine, Statistics of the Ministry of Health, 29 March 2022.
[160] Public Health Center, Tuberculosis, 14 April 2022.

and four in 2021. As of 1 April, five people from the Armed Forces and the Ministry of Defense and four internally displaced persons were hospitalized with TB.[161]

In 2019, Ukraine committed to the 2020–2023 State Strategy for Development of Anti-Tuberculosis Care for the Population, aimed at establishing a new model for the prevention, early detection and provision of medical care for TB patients by 2023. Ukraine is also committed to achieve the targets set out in the WHO Global End TB Strategy by 2035.[162]

HIV/AIDS

In 2020, Ukraine had the second highest rate of newly diagnosed HIV infections (39 cases per 100 000) in Europe, contributing to 15% of all those diagnosed in the European region. Ukraine also had the highest rate of AIDS diagnosis (9.9 per 100 000) in the European Region in 2020. While over half of the new HIV diagnoses in Ukraine were attributed to heterosexual transmission, injecting drug use (IDU) was the reported transmission mode in 38% of new diagnoses (highest in the region). The ratio of men to women with newly registered infections was approximately 1.75.[163]

Table 15: New cases of HIV infection, AIDS and deaths registered in 2021 with the MOH[164]

	#	per 100 000
HIV infection	15 360	40.6
AIDS	4151	11.0
Deaths from AIDS	1928	5.1

Deaths recorded as "caused by HIV" from the State Statistics Service databank for 2020 (2949 deaths; 7.0 per 100 000) differ from those reported in PHC MOH publications (Table 15).[165, 166]

Table 16: Patients registered in health care facilities that carry out medical supervision of people living with HIV (PLHIV), as of 1 January, 2022[167]

	#	per 100 000
HIV infection	150 005	397.5
AIDS	47 652	126.3

Table 17: UNAIDS Ukraine HIV and AIDS estimates 2020[168]

Adults aged 15 and over living with HIV	260 000
Adult and children newly infected with HIV (2019)	9300
Adult and child deaths due to AIDS	3100
People living with HIV who are on ART	146 488
Coverage of adults and children receiving ART (%)	57%
Coverage of pregnant women who receive ARV for PMTCT (%)	95%
Early infant diagnosis (%)	73%

[161] Rivine regional Council, Incidence of tuberculosis is growing in Rivne region: doctors call for preventive examination, 13 April 2022.
[162] WHO Euro, World Tuberculosis Day: supporting Ukraine in scaling up TB diagnosis and treatment, 23 March 2021.
[163] ECDC, HIV/AIDS surveillance in Europe 2021 (2020 data), 30 Nov 2021.
[164] Public Health Center of Ukraine, Registered HIV infection, AIDS, and deaths 2021.
[165] Public Health Center of Ukraine, Registered HIV infection, AIDS, and deaths 2020.
[166] State Statistics Service of Ukraine, Databank, accessed March 2022.
[167] Public Health Center of Ukraine, Registered HIV infection, AIDS, and deaths 2021.
[168] UNAIDS, Ukraine, accessed March 2022.

Table 18: HIV treatment cascade for Ukraine, 2019 and 2020

Year	People living with HIV (PLHIV)	PLHIV who know HIV status	PLHIV receiving ART	PLHIV achieving viral suppression
2019	251 168	169 787	136 105	127 817
2020	257 548	176 871	146 488	137 698

Impact of the war on HIV surveillance and response

As with TB, when access to HIV diagnostic and treatment programmes is disrupted, resistance can develop to medications, making the disease more difficult and expensive to treat; of great concern, delivery of antiretroviral treatment to eastern oblasts is proving very difficult. Access issues created by the hostilities also affect HIV prevention services (including prevention of mother-to-child transmission of HIV and harm-reduction services), laboratory testing, patient care, procurement and distribution of diagnostic materials and treatment. Early infant diagnosis, and patient retention and follow-up, are made more difficult by population displacement, movement restrictions and an overburdened health system.[169]

Endemic infectious diseases

Hepatitis B and Hepatitis C

The national government estimates that the prevalence of hepatitis C (HCV) may be as high as 5% of the population, of which 3.6% have chronic HCV, and the prevalence of hepatitis B (HBV) is estimated at 1.5%; most do not know their status and, subsequently, are not on treatment. Incidence of HBV and HCV reported by the Ukraine Public Health Centre are outlined in Table 19. Given the lack of large-scale screening, it is difficult to estimate the incidence of HCV and HBV in Ukraine.

Table 19: New cases of HBV and HCV in Ukraine, 2020 vs. 2021[170]

	2021	Per 100 000	2020	Per 100 000
Acute hepatitis B	508	1.2	731	1.7
Acute hepatitis C	252	0.6	287	0.7
Chronic viral hepatitis	4183	10.0	4306	10.1

As of 1 January 2021, the number of people infected with HCV was estimated at 1 342 418, with only 92 591 under medical supervision. The number of individuals infected with HBV was estimated at 559 341, with18 433 under medical supervision.[171] The MOH acknowledges that epidemiological surveillance for viral hepatitis is limited.[172] As vaccination coverage for hepatitis B does not meet population targets (see Table 5), diagnostics and treatments are limited; and as the conflict may promote an increase in gender-based violence (GBV), there may be an increased risk of HBV and HCV incidence and morbidity. Impeded access to medicines may disrupt the treatment of patients, allowing the diseases to progress and promoting the development of antiviral resistance. The risk for chronic HBV is higher among children compared to adults, and therefore vaccination is needed from birth to prevent mother-to-child transmission.

[169] Ukraine Ministry of Health, Global Fund Funding Request Form Allocation Period 2020-2022, June 2020.
[170] Ukraine Public Health Centre, Infectious morbidity of the population of Ukraine December 2020 - December 2021.
[171] Ukraine Ministry of Health, Viral Hepatitis 2020, 2021.
[172] Cabinet Ministers of Ukraine, On approval of the State Strategy in the field of combating HIV / AIDS, tuberculosis and viral hepatitis until 2030, 27 November 2019.

Waterborne diseases

Due to the deteriorated WASH situation (unsanitary & crowded conditions, disruption of water systems), there is an increased risk of waterborne diseases, such as viral and bacterial diarrhoea, which would exacerbate existing health conditions; however, surveillance of these conditions is limited, as laboratory capacity is unknown even though this is a notifiable disease in Ukraine. There have been a decreasing number of cryptosporidiosis reported between 2019 and 2021 (45, 24 and 11 cases, respectively). The incidence of reported campylobacteriosis has been low (0.37 per 100 000 in 2019, 2020, 2021). UNICEF estimates that children under the age of 15 living in countries affected by protracted conflict are almost three times more likely to die from diarrhoeal diseases caused by a lack of safe water, sanitation and hygiene, than by direct violence.[173]

Sexual, reproductive and maternal health

Sexual and reproductive health

In 2021, for women aged 15-49 years, the contraceptive prevalence rate of any method was 53%, while the unmet need for family planning rate was 6%.

Table 20: Sexual and reproductive health indicators for Ukraine[174]

Contraceptive prevalence rate women aged 15-49, any method – All women, 2021	53%
Unmet need for family planning rate women aged 15-49, 2021	6%
Decision making on sexual and reproductive health and reproductive rights, 2007-2018	81%

The war in Ukraine is becoming a real crisis for sexual and reproductive health, leaving women and girls without continued access to services. Disruption to the national medical supply chain within the country is impacting the ability of health workers to deliver life-saving sexual and reproductive health services, requiring the large-scale distribution of supplies across all 24 oblasts. Inconsistent access to hard-to-reach areas makes the last-mile distribution to health and protection facilities in some oblasts complex and unpredictable.

The sexual and reproductive health needs of women, girls, boys and men are mounting, matched against the diminished capacity of service providers, whose staff themselves are being displaced or conscripted. In addition, the healthcare workforce is comprised mostly of women, many of whom have care-taking roles in their own families and who are subject to other vulnerabilities.[175]

Maternal health and neonatal health

Although the maternal mortality ratio declined from 32 to 19 deaths per 100 000 live births between 2003 and 2017, it remains among the highest levels of neighbouring countries, nearly 10 times that of neighbouring Poland.[176]

At the start of the war, an estimated 265 000 women were pregnant in Ukraine and around 80 000 Ukrainian women are expected to have given birth since the start of the conflict through the end of May. At the same time, WHO estimates that about 15 percent of pregnancies require skilled medical care for potentially life-threatening complications, a particular concerning statistic given reports of women giving birth in underground shelters and subway stations without adequate

[173] UNICEF, Children living in protracted conflicts are three times more likely to die from water-related diseases than from violence, 22 March 2019.
[174] UNFPA, World population dashboard - Ukraine, accessed 1 Mach 2022.
[175] OCHA, Ukraine Humanitarian Needs Overview, February 2021.
[176] World Bank, World Development Indicators, accessed 9 April 2022.

medical support. Caesarean deliveries accounted for roughly one quarter of all deliveries in 2019, and access to this service is likely to be greatly curtailed. There are substantial risks of unsafe deliveries in the immediate term. There have been reports of an increase in the number of premature births since the start of the crisis and requests for more incubators from health facilities.[177]

Table 21: Maternal health indicators for Ukraine[178]

Maternal Mortality ratio (deaths per 100 000 live births), 2017	19
Antenatal care coverage 4+ visits, 2012	87%
Adolescent birth rate (number of live births to adolescent women per 1000 adolescent women), 2018	18
Births attended by skilled health personnel, 2014	100%
C-section rate, % of deliveries by caesarean section, 2012	12
Postnatal care for mothers - women (aged 15-49) who received postnatal care within two days of giving birth, 2012	96%

Child mortality and malnutrition

Child Mortality

Estimates of child mortality rates in 2020 were higher than the WHO European region average (Table 22). The infant mortality rate is relatively high in Ukraine compared with other European countries, at around six deaths per 1000 live births, which is approximately double that of neighbouring Poland.[179] The ongoing conflict is likely to worsen the mortality rate through disruption of essential services and access to health care.

Table 22: Under-5, infant, and neonatal mortality rates for Ukraine and the WHO European Region, 2020.

	Under-5 mortality rate	Infant mortality rate	Neonatal mortality rate
Ukraine	8.1	6.9	4.8
Europe	4.6	3.8	2.5

Malnutrition

Ukraine is a major producer of important food staples, including cereal crops such as wheat, maize and barley, and sunflower oil. Interruptions to supply chains and population displacement may impact food security, both in terms of reduced production and limited access.

Prior to the humanitarian crisis, stunting and acute malnutrition rates were perceived to be low; according to the MICS survey conducted in Ukraine in 2000, 1.3% of children under age of 5 in Ukraine were wasted.[180] High prevalence of acute malnutrition can directly result in increased death rates, but also increases the risk of deaths linked to infectious diseases such as diarrhoea

[177] BBC, Ukraine war: Incubator appeal to support premature babies, 23 April 2022.; Sun, LOST INNOCENCE Horrors of basement Ukraine maternity ward as premature deaths rise & babies weighing same as bag of sugar fight to live, 23 April 2022.
[178] UNICEF, UNICEF data warehouse, accessed March 2022.
[179] World Bank, World Development Indicators, accessed 9 April 2022.
[180] Global Nutrition Cluster, Report of the Global Nutrition Cluster scoping mission to Ukraine, 3-14 February 2015.

and measles. In a small cross-sectional study in Ukraine, published in 2014, the prevalence of iron-deficiency anaemia was 4.8%. A statistically significant association was found between established nutritional deficiency, iron deficiency anaemia and infectious morbidity.[181] Cases of anaemia reported to the MOH for 2020 are presented in Table 23.

Table 23: Cases of anaemia reported in children in Ukraine, 2020

Cases[182]	# of Children[183]	% of Children (0-17)
14 476	7 533 930	0.19

Unlike many middle-income countries, Ukraine has no policy on the distribution of micronutrient supplements; there is therefore no distribution of micronutrient supplements for children or iron and folic acid supplementation for pregnant women. UNICEF, the lead agency of the Ukraine Nutrition Cluster, has, however, recently launched a micronutrient supplementation project in some parts of Ukraine.[184]

Non-communicable diseases

NCDs are the leading cause of premature death (death occurring before the age of 70 years) in Ukraine, accounting for 91% of the total number of deaths.[185] In 2020, cardiovascular disease (CVD) was the leading cause of death, accounting for two-thirds of all deaths. The next leading cause, cancer, accounted for approximately 13% of all deaths.[186] Deaths from the five major NCDs (cardiovascular diseases, diabetes, cancers, chronic respiratory diseases and mental health conditions) make up almost 84% of the total.[187]

Table 24: 2020 Death rates for selected NCDs in Ukraine[188]

	Ukraine	% of all deaths	Per 100 000
All deaths	616 835	100	1620
CVD	408 163	66	1072
Cancer	77 880	13	204
Diabetes	2122	<1	6
Mental health disorders	971	<1	3

Access to essential health services, particularly primary health care, and medications are crucial for the treatment of NCDs, particularly prevalent in older persons, many of whom have been unable to flee due to reduced mobility and means; before the war, there were an estimated 10 million older persons in Ukraine.

In a survey conducted between 11-17 April by IOM, 22% of respondents indicated that they or someone within their family had to stop using their medication because of the war. Among those,

[181] Nyankovskyy S, *et al.*, Dietary habits and nutritional status of children from Ukraine during the first 3 years of life. August 2014; Pediatria Polska 89(6).
[182] Ukraine Ministry of Health, Report on medical care for children, 29 March 2021.
[183] State Statistics Service of Ukraine, Statistical Yearbook of Ukraine 2019, 2020.
[184] Global Nutrition Cluster, Report of the Global Nutrition Cluster scoping mission to Ukraine, 3-14 February 2015.
[185] United Nations Ukraine, STEPS survey reveals high prevalence of noncommunicable disease risk factors in Ukraine, 18 November 2020.
[186] State Statistics Service of Ukraine, Databank, accessed October 2021.
[187] Dumcheva A, *et al.* Tackling noncommunicable diseases in Ukraine 2015–2019. Copenhagen: WHO Regional Office for Europe; 2020.
[188] State Statistics Service of Ukraine, Databank, accessed March 2022.

85% indicated they were not able to secure the medicines due to availability and 44% stated they could not afford to buy the medicines (respondents could indicate multiple reasons). This concerns most frequently medication prescribed for cardiovascular disease, hypertension, and diabetes. Compared to the general population, among IDPs, a higher share (28%) indicated they or their household members stopped taking their medication due to the war.[189]

Diabetes

Official data suggest that about 242 000 individuals have a diagnosis of diabetes in Ukraine. Other sources estimate the prevalence of diabetes as 7.1%, amounting to as many as 2.3 million people, with only 60% of the population already diagnosed.[190] Many living with diabetes will already be living with one or more of the complications of diabetes, and will face extreme difficulty managing in the current circumstances.

The official number of patients provided for haemodialysis is nearly 9000, which might not represent the entire population in need, with estimates much higher. In such conflict settings, the number of patients with acute kidney failure requiring dialysis will likely increase.

Cancer

Many cancer drugs require a complex service delivery setup and are often administered over days through a parenteral (e.g., intravenous) route in hospital. In Ukraine, the emergency has affected many cancer care capacities. In addition, broken supply chains and limited resources have reduced access to medicines.

NCD Risk factors

In 2019, a national survey of prevalence of major NCD risk factors utilising the STEPwise approach to surveillance (STEPS) methodology was conducted, which highlighted particularly high levels of salt and low levels of fruit and vegetable intake.[191]

Table 25: Summary of NCD risk factors in the Ukrainian population from the WHO STEPS survey[192]

NCD Risk Factor	% Overall population	% of Male	% of Female
Tobacco – Current smokers	33.9	50.3	16.7
Alcohol – Current drinkers of alcohol	55.6	66.1	44.6
Fruits and Vegetables – Low intake of fruits and vegetables	66.4	73.2	59.4
Salt – Salt intake of 5g or more per day	86.9	N/A	N/A
Physical activity – Insufficient physical activity	10	9.1	10.8
Overweight	59.0	58.0	60.2
Obesity	24.8	20.1	29.8
Blood Pressure – Raised blood pressure	34.8	34.5	35.0
Blood Glucose – Raised fasting plasma glucose	7.1	6.7	7.4
Cholesterol – Raised total cholesterol	40.7	40.6	40.9
Multiple risk factors – Three or more NCD risk factors	32.8	39.9	25.2

Hypertension

Among the adult population in Ukraine, there is a high percentage of undiagnosed and unaddressed hypertension (raised blood pressure). Among those diagnosed, only 55% of the adult population took medication for raised blood pressure prescribed by a health worker. Raised total cholesterol was reported in 41% of the population (STEPS, 2019).

[189] IOM, Ukraine Internal Displacement Report – Round 3 21 April 2022.
[190] International Diabetes Federation, Ongoing Situation in Ukraine, 21 March 2022.
[191] WHO, Steps Prevalence of Noncommunicable disease risk factors in Ukraine 2019, 2020.
[192] WHO, Steps Prevalence of Noncommunicable disease risk factors in Ukraine 2019, 2020.

Raised Fasting Glucose

7.4% of adult population were reported with raised fasting blood glucose or were on medication for raised blood glucose.

Without antihypertensive medications, patients are at greater risk of heart attacks and stroke; without insulin, some diabetic patients risk death from diabetic ketoacidosis (DKA); and without bronchodilators and oxygen, patients with chronic respiratory diseases may have difficulty breathing.

Trauma

Conflict-attributable casualties

Between 24 February and 28 April 2022, the Office of the UN High Commissioner for Human Rights (OHCHR) recorded 3180 civilians had been injured (368 men, 302 women, 66 girls, and 73 boys, as well as 164 children and 2207 adults whose sex is yet unknown). The real toll is likely higher. Most of the civilian casualties recorded were caused by the use of explosive weapons with a wide impact area, including shelling from heavy artillery and multiple launch rocket systems, and missile and air strikes.[193] Between 2014 and 28 April, more than 12 000 civilians have suffered conflict-related injuries in Ukraine. Prior to the outbreak of the war in February, the majority of recent casualties were due to mines, unexploded ordnance and other explosive objects.[194]

War-related injuries, in particular amputations, burns, spinal cord injuries and complex limb injuries, are causing a surge in limb-saving and other advanced surgeries, as well as acute and ongoing rehabilitation needs, including assistive technologies; these needs are placing enormous strain on the health system. Antimicrobial resistant infections are likely to increase as adherence to antimicrobial treatment is exacerbated by scarcity of medicines and difficult socioeconomic conditions. Vaccination against tetanus is also an essential preventive measure in wound treatment, but depends on the availability of limited vaccine stocks. The health workforce requires more training in war-related injuries and mass casualty situations.

Sexual and gender-based violence

There have been Increasing numbers of reports of sexual and gender-based violence, including acts perpetrated by combatants, such as the rape of women, men and children.[195] There are many particularly vulnerable populations, including unaccompanied children and women travelling alone, the elderly, and people identifying as LGBTI. Since the beginning of the war, a national hotline on domestic violence has received more than 3000 calls and online requests, with around 79% of them related to sexual and gender-based violence (SGBV); 78% are from women.[196] Reported and unreported incidents of SGBV are likely to continue to increase with the psychological impact of trauma, limited access to protection, treatment, and support, as well as crowded, confined shelter conditions.

Prior to the outbreak of war, the COVID-19 pandemic had already worsened the SGBV situation; the hotline received a 23% increase in calls during the first month of quarantine and a 72% increase in the second month of quarantine in spring 2020.[197] SGBV has long been a serious problem in Ukraine, with approximately 75% of women stating they had experienced some form

[193] OHCHR, Ukraine: civilian casualty update 28 April 2022.
[194] OHCHR, Conflict-related civilian casualties in Ukraine, 30 January 2022.
[195] OSCE, Report on Violations of International Humanitarian and Human Rights Law, war crimes, and crimes against humanity committed in Ukraine since 24 February 2022, 13 April 2022.
[196] UNFPA, Ukraine Emergency Situation Report #7, 20 April 2022.
[197] UNFPA, Ukraine steadfast in tackling gender-based violence, despite pandemic-related increases, 13 November 2020.

of violence since age 15, and one in three had experienced physical or sexual violence.[198] Table 26 highlights attitudes and beliefs and prevalence of violence against women in Ukraine.

Consequences of SGBV can include physical injury, psychological distress and long-term mental health problems, pregnancy, sexually-transmitted infections, and lead to negative coping strategies, such as addictions. Survivors have limited access to protection, treatment, and support. Humanitarian actors have reported difficulties in delivering emergency contraception to survivors, especially to the East[199] There is a particular lack of support available for victims in the former NGCAs of Donetska and Luhanska oblasts. Throughout the country, professionals in medical and state institutions lack the specific knowledge and skills needed to deal with survivors of torture and conflict-related sexual violence.[200] In addition to emergency services, access to MHPSS and sexual and reproductive health services is vital.

In 2017, Ukraine initiated a reform of legislation on domestic and sexual violence and in 2019 Ukraine's new domestic violence law came into effect.[201] The legislation's impact remains undetermined.

Table 26: OSCE-led GBV survey on violence against women (2018)[202]

	Totally agree/ Tend to agree	Totally disagree/ Tend to disagree
Views on whether or not domestic violence is a private matter	26%	63%

	Intimate partner	Non-partner
Prevalence of physical and/or sexual violence in the 12 months prior to the survey	7.6%	5.9%

	Since the age of 15	In the 12 months prior to the survey
Prevalence of all forms of sexual harassment	49%	16.9%

	Partner fought in an armed conflict	Partner had not fought in an armed conflict
Prevalence of physical and/or sexual violence, by current partner's involvement in conflict	31%	15%

The GBV sub-cluster is led by UNFPA.

198 UNFPA, Ukraine steadfast in tackling gender-based violence, despite pandemic-related increases, 13 November 2020.
199 Guardian, Rush to get emergency contraception into Ukraine as reports of rape rise, 28 April 2022.
200 https://www.ohchr.org/EN/NewsEvents/Pages/DisplayNews.aspx?NewsID=21187
201 Semchuk, K, Ukraine's legislation on domestic violence gets a reboot - but is it enough?, 4 March 2020.
202 OSCE, OSCE-LED survey on violence against women – Well-being and safety of women, 2019.

Technological and environmental health risks

Technological hazards

Biological

The risk of accidental exposures to biological hazards is low as the country is not known (is not likely) to have collections of high consequence pathogens.

Chemical

Ukraine is a country with many active and formerly active industrial and mining sites, oil refineries and storage facilities of oil products across the country. This gives rise to the possibility of collateral damage at chemical storage sites. Several fires at oil or fuel depots have already been reported due to damage to structures in the surrounding areas of Kyiv and in Lviv. In addition, reports of an ammonia leak at an industrial site close to Sumy were reported in the early morning of 21 March 2022. Two more chemical events have been reported: leakage of ammonia fertilizers in river Ikra in the Ternopil region due to damage of a storage tank by a fragment of a rocket on 6 April; and damage of a tank of nitric acid in Rubezhhne, Luhanska oblast on 5 April. Although no reports of cases of exposure or death were documented in association with these events, this highlights the risks posed by industrial chemical production, storage or transportation sites during the war. Damage to significant chemical sites could pose a major health risk.

Claims and counter claims regarding the possible use of chemical weapon agents during the war have been made, however, no confirmations of use have occurred.

Radionuclear

There are 15 nuclear reactors at four operational nuclear power plants (NPPs) in Ukraine, one decommissioned NPP in Chernobyl, and a research reactor in Kharkiv. In addition, numerous radioactive sources are used in industry and health care facilities nation-wide. As of the time of publication, Ukraine's operating NPPs are operating normally, however, the military conflict is putting Ukraine's NPPs and other facilities with radioactive material in unprecedented danger. There are concerns about the Zaporizhzhia NPP located in the south-east in the vicinity of military operations; it has already been affected by shelling. Occupying forces have withdrawn from the Chernobyl NPP and its Exclusion Zone, where laboratory facilities, equipment and communication lines were looted, damaged or destroyed. National authorities are assessing the consequences of the occupation of the Chernobyl NPP, the nuclear security situation and the radiological situation in the Exclusion Zone, where regular monitoring of radioactivity has not yet been restored. The risk of a nuclear emergency as a result of direct damage due to shelling of NPPs or the failure of a reactor's power supply, or the inability to provide necessary maintenance, remains high, as underlined in the International Atomic Energy Agency's daily updates.[203]

WHO continues to closely monitor the nuclear safety and security situation in Ukraine, liaising with partners, providing technical support with regard to managing potential health risks from technological hazards, conducting risk assessments, and supporting risk communication.

Water contamination risks

Generally, and in Ukraine, the greatest waterborne risk to health comes from the transmission of faecal pathogens as a result of inadequate sanitation, hygiene and protection of drinking water sources.

In the event where chemical or radiological contaminants enter source waters and thereby the drinking-water supply, the appropriate response would be to assess whether the concentrations present a significant immediate risk and if so to minimize these risks (e.g., through provision of water from alternative sources, controlled dilution of contaminated water with non-contaminated water or applying treatment if available). Essential hydration should not be

[203] IAEA, Nuclear Safety and Security in Ukraine, 2022.

compromised in an attempt to reduce exposure to radionuclide contamination from drinking-water.

The risk of disinformation and misinformation regarding these hazards (biological/chemical/radio-nuclear/environmental) is very high.

Mental health and psychosocial support

The magnitude of expected mental health and psychosocial support problems and their expected evolution over time is summarized in Table 2.

The conflict-affected population is struggling to cope with acute psychological distress, exacerbations of chronic mental health issues, and the socioeconomic effects imposed by the war. They require mental health and psychosocial support (MPHSS).

Mental health disorders are reported to affect one in five people in post-conflict settings,[204] while global prevalence is one in 14.[205] In a study of conflict-affected adults in Ukraine from before the war, the prevalence of depression and anxiety were 22% and 17%, respectively.[206] Based on these estimates, out of the 18 million affected population, nearly 4 million adults and 1 million children are at risk of being affected by conflict-related mental health issues. One particularly vulnerable group, health care workers, face overload and understaffing, and are at increased risk of psychological distress and mental health disorders as a result of witnessing traumatic events.[207]

Prevalence and Treatment of Priority Mental Health Disorders

The 2017 Global Burden of Disease Study estimates a population prevalence of 0.2% for schizophrenia, 0.8% for bipolar disorder, 3.4% for major depressive disorder (MDD), 0.3% for epilepsy, 0.7% for drug use disorders in Ukraine. The WHO Global Report on Alcohol estimates a population prevalence of 6.0% for alcohol use disorders. Suicide accounts for 2.0% of all deaths. Ukraine has a similar prevalence to the Eastern Europe regional prevalence for each disorder except MDD, which has a 3.4% prevalence in Ukraine and 2.9% in the region. The prevalence of alcohol use disorders is much higher in Ukraine (6.0%) than globally (1.5%). Ukraine has a higher estimated suicide rate (30.6 deaths per 100 000 population) than the Eastern Europe regional average (29.6 deaths per 100 000 population) and the global average (10.4 per 100 000). The rate of suicide is particularly high among men (56.7 per 100 000 vs. 8.4 per 100 000 among women). Men also have a higher estimated prevalence of alcohol use disorders than women (11.5% vs 1.4%). Women have a higher estimated prevalence of MDD (3.9% vs 2.7%).[208] Table 27 outlines the estimated prevalence and treatment coverage of the Ukraine population in 2017.

[204] WHO, Mental health in emergencies, accessed 10 April 2022.
[205] Charlson F, *et al.* New WHO prevalence estimates of mental disorders in conflict settings: a systematic review and meta-analysis, *Lancet 2019; 394: 240–48.*
[206] Roberts B, *et al.* Mental health care utilisation among internally displaced persons in Ukraine: results from a nation-wide survey. *Epidemiology and Psychiatric Sciences,* 2017.
[207] OCHA, Ukraine Humanitarian Needs Overview, February 2021.
[208] Kemp CG, *et al.* (2022) Baseline situational analysis in Bangladesh, Jordan, Paraguay, the Philippines, Ukraine, and Zimbabwe for the WHO Special Initiative for Mental Health: Universal Health Coverage for Mental Health. PLoS ONE 17(3): e0265570.

Table 27: Prevalence and Treatment Coverage of Selected Mental Disorders[209]

		Prevalence (%)	Total	Combined severe mental disorders† Treated (%)
Schizophrenia	Overall	0.2	102,258	
	Female	0.2	56,404	Overall
	Male	0.2	45,855	9.4
	Young adults (20-34)	0.3	23,732	
	Older age (70+)	0.2	7085	Female
Bipolar Disorder	Overall	0.8	325,659	8.1
	Female	0.8	186,989	
	Male	0.7	138,670	Male
	Young adults (20-34)	0.9	86,743	11.5
	Older age (70+)	0.5	23,371	
MDD	Overall	3.4	1,452,655	Young adults
	Female	3.9	914,450	6.7
	Male	2.7	538,206	
	Young adults (20-34)	2.8	266,084	Older age
	Older age (70+)	6.5	303,708	6.9
Epilepsy	Overall	0.3	140,009	37.5
	Female	0.3	73,102	32.9
	Male	0.3	66,907	42.5
	Young adults (20-34)	0.3	28,933	---
	Older age (70+)	0.4	---	---
Alcohol use disorders ***	Overall	6	2,682,840	20.9
	Female	1.4	336,252	19.6
	Male	11.5	2,379,925	17.1
	Young adults (20-34)	---	---	---
	Older age (70+)	---	---	---
Drug use disorders	Overall	0.7	300,160	34.9
	Female	0.4	91,266	13
	Male	1.1	208,894	38.1
	Young adults (20-34)	1.6	150,134	32.2*
	Older age (70+)	0.2	8868	8.8**
Suicide deaths ±	Overall	30.6	13,679	---
	Female	8.4	2020	---
	Male	56.7	11,660	---
	Young adults (20-34)	37.6	2188	---
	Older age (70+)	33.8	1585	---

(1) Estimates from GBD 2017. * treated age group includes 18-35 while prevalence age group includes 20-34; ** treated age group includes 60+ while prevalence age group includes 70+; *** Alcohol use disorder data comes from the WHO Global Alcohol Report for Ukraine; ± Rate of suicide deaths per 100,000 population. †data for severe mental disorders combined to compare treated prevalence to population prevalence.

[209] Ibid.

Mental Health System

Ukraine is one of the six countries in the WHO European Region with a stand-alone mental health policy. However, significant progress is required to broaden understanding of mental health among the population and move from biological model of care offered by psychiatric hospitals towards more person-centred and community-based approaches.

There is generally low mental health awareness in Ukraine and significant stigma associated with mental illness.[210] Historically, the large centralized psychiatric system has been associated with human rights violations.[211] Prior to 2021, mental health services were represented by in-patient and out-patient psychiatric services and day clinics which provided mostly pharmacological treatment, some leisure activities and assistance to access social benefits. Generally, psychiatric services were not designed to provide support for community integration, assistance to access education, housing or employment. Primary healthcare staff receives limited training in mental health as a part of their formal education and does not feel confident to provide care to people with mental health conditions. Ukraine has a large number of psychiatrists (9.8 per 100 000) and psychologists (33.6 per 100 000). There are approximately 11 477 nurses working in mental health (25.7 per 100 000), though these are not technically classified as psychiatric nurses.[212]

In 2017, the Concept Note on Mental Health Development in Ukraine was developed with the support of WHO, followed by the adoption of the National Mental Health Action Plan in 2021. These policies aim to increase mental health awareness, integrate mental health services and develop of out-of-hospital forms of specialized care, as well as address discrimination and human rights violations of individuals with mental health disorders.

Since 2019, WHO Mental Health Gap Action Programme (mhGAP) has supported national efforts to build the capacity of PHC workers in the management of common mental health conditions. WHO and partners have trained and provided supervision to more than 370 primary health care workers, enabling access to mental health services for more than 400 000 people.[213]

As a result of successive pilot projects run by WHO between 2015-2021, a Community Mental Health Teams (CMHTs) service was established by the MOH and the NHSU in 2021 as part of the State Programme of Medical Guarantees. Starting from 1 July 2021, 61 CMHTs from different oblasts applied for the newly established service package and provided services to 4000 people with severe mental disorders.[214]

People with severe mental health disorders residing in institutions which are under the health and social sector become particularly vulnerable due to attacks on these facilities and limited a ability for independent movement and self-care. Their basic needs in water, sanitation, food, heating and medicines cannot be fully met by the usual supply chains and require special attention and support from humanitarian agencies.

The MHPSS Technical Working Group (MHPSS TWG) in Ukraine, chaired by WHO and International Medical Corps, provides a platform for coordination and technical guidance for more than 50

[210] Weissbecker I, Khan O, Kondakova N, Poole LA, Cohen JT. Mental health in transition: assessment and guidance for strengthening integration of mental health into primary health care and community-based service platforms in Ukraine (English). Washington, D.C.: World Bank Group, 2017.
[211] WHO, Ukraine WHO Special Initiative for Mental Health Situational Assessment January 2020.
[212] Kemp CG, *et al.* (2022) Baseline situational analysis in Bangladesh, Jordan, Paraguay, the Philippines, Ukraine, and Zimbabwe for the WHO Special Initiative for Mental Health: Universal Health Coverage for Mental Health. PLoS ONE 17(3): e0265570.
[213] WHO, Paving the way for quality mental health care in Ukraine, 2 December 2021.
[214] WHO, WHO Special Initiative for Mental Health: Updates and Achievements in 2021, December 2021.

partners carrying out MHPSS activities. Apart from the national coordination mechanism, the group has sub-national units in Donetska, Luhanska and Lvivska oblasts.

3. Vulnerable groups affected

Vulnerable groups in the conflict-affected regions include people over the age of 60, people with disabilities, children and youth, women and girls, victims of human trafficking, Roma, health care workers, and IDPs.

People over the age of 60

Before the war there were approximately 10 528 724 people 60 years of age and older living in Ukraine, roughly 20% of the total population.[215]

Older people present higher rates of disability, are more likely to be separated from their families, and are highly susceptible to economic insecurity. In an IOM general population survey, 57% of both IDP and non-displaced respondents reported one or more elderly persons as part of their household.[216]

People with disabilities

According to the State Statistics Service of Ukraine, as of 1 January 2020, 2 703 006 people with disabilities (PwD) were registered in Ukraine.[217] Certified disability ("invalidity") status in Ukraine is determined by medical commissions: MSECs and LCCs. Determination is based on the individual's history, medical documentation, physical examination and other tests.[218] In an IOM general population survey, 20% of IDP and 23% of non-displaced respondents reported one or more disabled person as part of their household.[219]

Key concerns for PwD include security concerns due to challenges in evacuating from places under shelling; lack of adequate health care, including access to physical rehabilitation support; higher risk of psychosocial distress; lack of accessibility and disability-friendly environments; barriers to registering for official disability status (complex bureaucratic procedures and distance/cost of travel to registration offices); lack of accessible information; and low socio-economic opportunity.[220] Prior to the conflict, 12% of the population needed at least one assistive product (excluding eye glasses); for 5% of the population, this need was unmet. Evidence from previous conflicts indicates this situation will have been further exacerbated by the war.[221]

Disability Rights International (DRI) and other stakeholders in Ukraine report that institutionalization of persons with disabilities, including older people, has been a long-standing protection concern in Ukraine. Abuses of rights, including neglect and multiple forms of physical and emotional abuse are of grave concern. The Age and Disability technical working group (TWG), under the Protection Cluster, is engaged in advocacy efforts with regional and local authorities to protect the rights of PwD and is working with local partners to ensure the delivery of supplies (food products, hygiene items, medicines) to institutions, including those located in hard-to-reach

215 UNFPA, Ukraine subnational population statistics, 2020.
216 IOM, Ukraine Internal Displacement Report Round 3, 2022.
217 OCHA, Ukraine Humanitarian Needs Overview, 11 February 2022.
218 WHO, Situation assessment of rehabilitation in Ukraine, 2021.
219 IOM, Ukraine Internal Displacement Report Round 3, 2022.
220 Protection Cluster Ukraine, Persons with Disabilities, October 2015.
221 WHO, A situation assessment of rehabilitation in Ukraine, 2022.

areas. Persons who reside in institutions and who have been left behind remain some of the most vulnerable, at risk of violence, injury and death. In coordination with the CCCM Cluster, the TWG is also working to improve access to and the provision of services to persons with disabilities, including older persons in collective centres.[222]

Children and youth

In 2020, there were an estimated 8 764 042 children and youth living in Ukraine.[223] Even prior to the war, vaccination coverage across Ukraine did not meet WHO targets. Incomplete coverage increases the risks of outbreaks of vaccine-preventable diseases, such as measles or polio, especially among children.[224] Nearly two-thirds of Ukrainian children have been displaced in the last six weeks as people continue to flee their homes, especially in areas impacted by escalating hostilities in eastern and southern areas of the country.[225]

Women and girls

Since the majority of the displaced population are women and girls (59%),[226] there will be more need for women, adolescent and child-specific services, including sexual and reproductive health services, protection, GBV prevention and response services, and woman- and child-friendly spaces. Sexual and reproductive health is particularly at risk, with millions facing disruption to life-saving SRH services including contraception and emergency contraception; obstetric and newborn care; and providing safe abortion and postabortion care services to the full extent of the law, including for survivors of rape.[227] At the start of the crisis, it was estimated by the health sector that 265 000 women in Ukraine were pregnant, with 80 000 expected to give birth over the first three months of the crisis.[228]

In terms of the workforce, four-fifths of all health care and social workers in Ukraine are female, meaning many women are likely struggling during this crisis to balance their professional and personal care-giving roles.[229] Women also represent over 70% of low-income earners in need of social assistance;[230] many likely do not have the financial reserves to help them overcome barriers to health care.

Roma

According to unofficial estimates of international and public organizations, before the start of the war there were between 200 000 and 400 000 Roma in Ukraine. From 4% to 8% of them have no passports. Many Roma, for various reasons, do not have legal documents confirming their status with regard to birth registration, property rights, residence, etc. Lack of paid work and, as a consequence, pensions, create grounds for social insecurity and exacerbate barriers to obtaining public services, social guarantees, and benefits.[231]

222 Protection Cluster Ukraine, Ukraine Response Protection Snapshot, 27 March - 7 April 2022.
223 UNFPA, Ukraine subnational population statistics, 2020.
224 UNICEF, Humanitarian Action for Children 2021 - Ukraine, 20 November 2020.
225 OCHA, Ukraine Humanitarian Crisis, accessed 14 April 2022.
226 IOM, Ukraine General Population Survey – Round 1, 1 April 2022.
227 UN Women, Rapid Gender Analysis of Ukraine: Secondary data review, 29 March 2022.
228 UNFPA, Interim Appeal for Ukraine, 4 March 2022.
229 OCHA, Humanitarian Response Plan at a Glance, 25 November 2020.
230 OCHA, Humanitarian Response Plan at a Glance, 25 November 2020.
231 UNHCR, Stateless persons, accessed 14 April 2022.

Health care workers

Many health care workers are overburdened and overworked, placing them at increased risk of making medical errors. The MOH is creating teams that will replace overworked surgeons and trauma specialists, in order to prevent medical errors from occurring from psycho-emotional and physical overload.[232] Health staff are also at increased risk of contracting infectious diseases due to inadequate medical supplies or personal protective equipment. Additionally, witnessing and experiencing traumatizing events can also impact health care workers' mental health.[233] Female health care workers, especially single mothers, carry a major burden due to their additional domestic and care responsibilities within their families.[234]

Internally displaced persons

IOM estimates that as of 17 April 2022, there were 7 707 000 of internally displaced persons (IDPs) in Ukraine, 17.5% of the general population. In addition to those already displaced, 1.3 million were actively considering leaving their place of habitual residence due to war.[235] Nearly three quarters of government-controlled Donetska oblast's population has reportedly been displaced. Donetska Oblast Governor Pavlo Kyrylenko reported that the region's population, previously at around 1.6 million, has been reduced to 430 000 since 24 February.[236]

The displacement creates increased vulnerabilities, as IDPs often lack financial and material resources and lack documentation to secure accommodation and employment.[237] Among IDP respondents to the IOM survey, after financial support, access to medicines and health services was the next highest priority for IDPs (26%). Lack of medicines in health care centres or pharmacies was cited as the most significant barrier in accessing health care.[238] Relocating also limits the continuity of care for IDPs; patients are not followed by the same doctor and medical team for their illnesses; nor do they have access to the same treatment centres, especially challenging for people living with HIV and TB, and those struggling with addictions who were registered in treatment programs.

4. Health Determinants

Water, sanitation and hygiene (WASH)

The conflict has caused significant infrastructural damage, leaving hundreds of thousands of people without electricity or water; dilapidated water and sanitation infrastructure will be a further impediment to reconstruction. In addition to individual consumption and hygiene, water is also an essential resource for electricity production and centralised heating. The COVID-19 pandemic has intensified the needs for water supply, solid waste and medical waste management, and hygiene.

Water Supply

Around six million people either have limited or no access to safe water, with active hostilities preventing repair teams from fixing damaged systems and restoring access to water, while also

[232] UKRinform, Almost two thousand foreign doctors are ready to help Ukraine – Lyashko, 15 April 2022.
[233] OCHA, Ukraine Humanitarian Needs Overview, February 2021.
[234] OCHA, Ukraine Humanitarian Needs Overview, February 2021.
[235] IOM, Ukraine Internal displacement report – Round 3, 17 April 2022.
[236] Kyiv Independent, Nearly three quarters of government-controlled Donetsk Oblast population displaced, 22 April 2022.
[237] OCHA, Ukraine Humanitarian Needs Overview, February 2021.
[238] IOM, Ukraine Internal displacement report, 1 April 2022.

hindering the delivery of water in the hardest-hit areas, like Donetska and Luhanska oblasts. UNICEF reports that water trucking services have come to a halt due to relentless shelling in some parts of these eastern oblasts, where local authorities say that the water supply remains critical with little possibility to improve access to safe water as hostilities rage on.[239] It has been reported that more than 40 000 people around Horlivka remain without access to water.

As a result, ACAPS reports that people with limited or no access to water have resorted to melting snow, boiling water, collecting rainwater, or walking to wells. In Mariupol, people must walk up to 3km, sometimes under heavy fire, to reach wells.[240]

Hygiene

The lack of access to water is also affecting people's ability to practice good hygiene. In Mariupol, people have a limited amount of water with which to wash their hands.[241] Limited access to water supplies increases the risk of outbreaks of communicable diseases.[242]

The WASH Cluster is led by UNICEF.

Food security

The ongoing hostilities continue to disrupt local supply chains and access to food and other basic items. In eastern Ukraine, there are reports of food shortages in Kramatorsk (Donetska oblast) as supplies were mostly coming from Kharkiv. Even before 24 February, the escalating tensions in Donetska oblast had already damaged roads and bridges, subsequently limiting access to markets for food. Around 400 000 people were already estimated to be severely or moderately food-insecure in eastern Ukraine. Food insecurity is projected to rise considerably, as more and more people are displaced, where access to food, and possibly even food supply, will continue to be a challenge.

The Food Security Cluster is led by FAO.

Shelter

Damage to residential and public infrastructure due to the conflict is now wide-spread across Ukraine, but the full-extent is still unknown. Active hostilities, insecurity, damage to dwellings and disruptions to utilities, such as gas, central heating systems and electricity are impacting their living conditions. For example, damage to infrastructure has reportedly left 400 000 people without electricity in Donetsk and Horlivka on both sides of the line of contact (LoC). Assessments before the war noted that approximately 81% of people in conflict-affected areas of Donetska and Luhanska oblasts relied on water-based heating (38% used central heating while 43% used personal boilers).

Frequent attacks have forced many people to seek temporary shelter in basements, bomb shelters, and metro stations underground with poor ventilation, heating, provisions, and access to sanitation. Many people have left their homes and travelled to other parts of the country; most are sheltering in private accommodations and/or with families. Across the borders in neighbouring countries, humanitarian partners and governments have set-up temporary shelters and are providing emergency supplies to refugees.

The Shelter Cluster is led by UNHCR.

239 UNICEF, 23 March 2022.
240 ACAPS, Ukraine: Pattern of movement, people's needs, and response, 27 March 2022.
241 MSF, Thousands of people flee bombings in south Ukraine and head west,12 March 2022.
242 MSF, "There's an urgent humanitarian race against time in Ukraine," 11 March 2022.

Security

The escalating insecurity affects the capital, Kyiv, and at least eight oblasts and a vast area of Donetska and Luhanska oblasts, as well as multiple new locations referred to as "newly impacted areas", including but not limited to Kyivska, Kharkivska, Khersonska, Mykolaivska, Odessa, Sumy, and Zhytomyrska oblasts.

Security risks include systematic shelling close to civilian property and utility infrastructure, and heavy presence of military in densely populated areas. Additionally, Ukraine ranks fifth in the world for civilian landmine and explosive remnants of war (ERW) casualties, and in the top three for anti-vehicle landmine accidents; more than 10 000 landmines have been observed.

With around 300 health facilities situated in conflict areas and 1000 health facilities in changed areas of control, access to health care is disrupted.[243]

The Protection Cluster is led by UNHCR.

Restriction of movement

Active conflict continues to prevent humanitarian actors from accessing vulnerable populations. Humanitarian corridors are being negotiated to facilitate the safe movement of supplies and personnel. Martial law and curfews impose movement restrictions, limiting access to health services, essential medicines, and market goods. In certain areas, including in Kharkiv and Mariupol, the population reportedly cannot leave the areas of active fighting, encircled by armed forces, as well as due to roads that are damaged or obstructed with unexploded ordnance.

A 427km-long line of contact (LoC) runs through Donetska and Luhanska oblasts in eastern Ukraine, forming a border between Government-Controlled Areas (GCA) and those controlled by armed non-state actors, collectively known as Non-Government-Controlled Areas (NGCA), prior to the escalation of the conflict. This line is being redrawn. All entry-exit checkpoints (EECPs) are closed to humanitarian actors. The political separation of GCA and NGCA has caused significant constraints to the movement of people and goods for the past eight years.

Since the beginning of the war, access to the affected population has been subject to the dynamics of the conflict, the intensity of military confrontations, and political and diplomatic negotiations.

In NGCA, access for the delivery of humanitarian assistance and for the movement of staff has been extremely limited since July 2015 when most aid agencies were asked to leave NGCA following the introduction of extensive bureaucratic restrictions for humanitarian operations.[244]

[243] WHO, Regional Director pledges WHO support to help Ukraine's health system build back better during visit to Lviv, 11 April 2022.
[244] OCHA, Ukraine Humanitarian Needs Overview, 11 February 2022.

5. Health system needs

Disruptions and challenges to key health system components

Various disruptions and challenges impact the local health system and continue to affect delivery of preventive and curative health services. These are summarised in Table 3.

Access to health care

Access to health services, essential medicines, and market goods is limited by security concerns and movement restrictions related to the hostilities and the imposed martial law and curfews. Based on the shifting context, more than 200 health facilities have found themselves along conflict lines or in changed areas of control. Many rural settlements do not have pharmacies or medical centres. Barriers to care include: active hostilities, martial law (curfew), access to medicine (availability, access to pharmacies, cost), and access to health care facilities (distance, damage to roads, transportation, lack of mass transport, fuel shortages, restricted movement through military checkpoints, safety concerns in facilities, lack of specialized beds and equipment, few disability accommodations, limited telemedicine, health workforce shortages, inadequate information systems, and poor patient satisfaction).

USAID conducted an assessment of patient barriers to care in the GCA of Eastern Ukraine from January-March 2021.[245] From their study, the barriers they found that were similar throughout the country were: poor signage at health care facilities, low health literacy, lack of trust in health care providers, poor attitude of providers, lack of knowledge on health reforms and how to seek care, informal payments, lack of money to pay for healthcare, insufficient patient adherence, and low digital literacy.

Health system management

The Ministry of Health (MoH) and National Health System Service of Ukraine (NHSU) continue to operate.

'The Decentralization Reform' was initiated in 2014 by the national government and has impacted heath care management. The reform essentially passes numerous functional and managerial powers from the national government to the regional and local levels.[246] Regional and local health authorities are now responsible for health care facilities in their territory and are functionally subordinate to the Ministry of Health, but managerially and financially answerable to regional and local government.[247] Local authorities became the administrators of the network of medical institutions and in charge of the quality and availability of medical services.[248]

Recent heath care reforms have also been implemented that have impacted health care management in the region. In October 2017, a new health financing law was passed making a shift from financing a medical institution to financing (the services provided to) the patient.[249], [250] On 1 April 2018, the Government of Ukraine established a new single purchasing agency, the National Health Service of Ukraine (NHSU). The NHSU is a national insurance agency providing coverage for a set of explicit benefits for the population within the available fiscal space. The NHSU was established to begin strategic purchasing with health care providers, meeting the

[245] USAID, Ukraine: Assessment of Patient Barriers to Health Care in the Conflict-Impacted Areas of Eastern Ukraine, 2021.
[246] Médicos del Mundo, Role of the decentralization reform, June 2021.
[247] Lekhan VN, Rudiy VM, Shevchenko MV, Nitzan Kaluski D, Richardson E. Ukraine: Health system review. Health Systems in Transition, 2015; 17(2):1–153.
[248] Médicos del Mundo, Role of the decentralization reform June 2021.
[249] Netherlands Enterprise Agency, Health Care in Ukraine, March 2019.
[250] Médicos del Mundo, Impact of Health Reform on the Primary Healthcare Level in Conflict-Affected Areas of Donetsk and Luhansk Oblasts, June 2021.

requirements for services stipulated in the benefit package – the Programme of Medical Guarantees Programme (PMG). The PMG includes the following health care service packages: PHC including drug reimbursement, specialized and highly-specialized care, emergency, palliative care, rehabilitation and COVID-19.[251]

People in NGCA are particularly hard to reach due to logistical constraints and administrative requirements imposed by separatist authorities.[252]

Supply (including pharmaceutical) chain disruption

The supply chains for medicines, medical supplies, and common goods have been disrupted, creating urgent need. Many distributors are non-operational and many government and humanitarian stockpiles are inaccessible due to active hostilities.

Lifesaving and essential medicines, such as life-sustaining oxygen and insulin, personal protective equipment (PPE), surgical supplies, anaesthetics, safe blood products are reported in short supply.

During armed conflict, medical supply chains often break down, creating shortages of medicines, medical commodities, and basic medical equipment. This disruption in the medical supply chain leads to the use of sub-standard medicines and equipment.

Degraded alert and response

Ukraine already had weak systems for medical data collection and evidence generation before the conflict, including for early warning for potential public health events; and it has not improved. Without the necessary evidence and data, it is difficult to make decisions about where to target medical and outbreak response resources and which interventions to prioritize. Weaknesses in real-time health information also undermine the ability to monitor the quality and effectiveness of services provided to ensure health care actors are accountable to the people they assist.[253]

Due to disruptions to health care and laboratory testing capacity, particularly in areas of active conflict, current surveillance systems may be delayed in reporting outbreaks of disease. At present, the surveillance system is fully functional in the central and western regions, and largely non-functional in occupied and recently liberated areas.

Health workforce shortages

Many health care workers have had to leave their health facilities due to the conflict. As of 9 April, the Ministry of Health reported that 1658 medical workers have been forced to change their place of residence and employed in other regions of the country. Among them:

- 1023 - doctors;
- 429 - specialists (nurses, midwives, paramedic, pharmacist assistants);
- 206 - technical workers.

[251] WHO Euro/World Bank, Ukraine review of health financing reforms 2016-2019, 2019.
[252] ACAPS Ukraine – Conflict in Donetsk and Luhansk Briefing note, 4 November 2019.
[253] Protection Cluster Ukraine/Health Cluster Ukraine, Exploring Access to health care services in Ukraine: a protection and health perspective, July 2019.

Most of the employed doctors who moved from other areas are now in the Lvivska region - 250 people, in Poltavska region - 74 people, and in Volynska - 70 people.[254]

Prior to the conflict escalation, along the line of contact in Donetska and Luhanska oblasts, there was a shortage of medical staff (from 20% to 40% depending on the settlement), and about 60% of available primary care physicians are of pre-retirement and retirement age.[255]

Damage to health facilities

The Ministry of Health reported that between 24 February and 9 April, 307 health care facilities, including primary health care centres had been damaged and 21 hospitals had been completely destroyed.[256] As of 28 April 2022, 157 reports of attacks on health care had been verified by WHO that had impacted health facilities (see below).[257] Prior to the escalation of conflict, many facilities were in degraded condition from lack of maintenance and reported medical equipment in disrepair.[258]

Attacks against health care facilities and workers

Attacks on health facilities and workers are verified and published through WHO's Surveillance System for Attacks on Health Care (SSA).[259] An attack on health care is defined by the SSA as: "Any act of verbal or physical violence or obstruction or threat of violence that interferes with the availability, access and delivery of curative and/or preventive health services during emergencies."[260]

As of 28 April 2022, 175 reports of attacks on health care had been verified by WHO[261] in line with global SSA SOPs:

- 109 "confirmed", 12 "probable", 2 "possible" certainty levels
- 73 deaths, 52 injuries
- 157 impacted health facilities
- 18 impacted transport
- 24 impacted health personnel
- 12 impacted patients
- 36 impacted the delivery of medical supplies
- 5 impacted medical warehouses

254 MOH Ukraine, 9 April 2022; Ukrinform, In Ukraine, 1,658 physicians had to move and change their place of work - the Ministry of Health, 9 April 2022.
255 Médicos del Mundo, Impact of Health Reform on the Primary Healthcare Level in Conflict-Affected Areas of Donetsk and Luhansk Oblasts, June 2021.
256 UKRInform, In Ukraine, 307 health facilities were damaged by shelling, 9 April 2022.
257 WHO, Surveillance System for Attacks on Health Care, accessed 28 April 2022.
258 Protection Cluster Ukraine/Health Cluster Ukraine, 'Exploring Access to health care services in Ukraine: a protection and health perspective', July 2019.
259 WHO, Surveillance System for Attacks on Health Care, accessed 28 April 2022.
260 WHO, Stopping attacks on health care, accessed 14 April 2022.
261 WHO, Surveillance System for Attacks on Health Care, accessed 28 April 2022.

6. Humanitarian health response

Health response organization / coordination – 106 health partners

The Health Cluster, led by WHO, currently links 106 partners (NGOs, UN agencies, national authorities, donors, and observers) engaged in the humanitarian health response in Ukraine.[262,263] The Health Cluster secretariat gathers and disseminates relevant information to guide partners' response; identifies and addresses gaps in technical knowledge to ensure global best practices and standards are followed; and promotes and advocates for humanitarian health action.

The health requests, planning and response tool (HRPR), developed by the Health Cluster, enables organizations and facilities to log requests for assistance from the humanitarian health sector. The Health Cluster Secretariat then engages with partners who are able respond and fulfil the request.

The Health Cluster Secretariat also tracks and verifies reports of attacks on health care (see section above).

Fig. 6. Number of implementing partners by organization type (as of 20 April 2022)

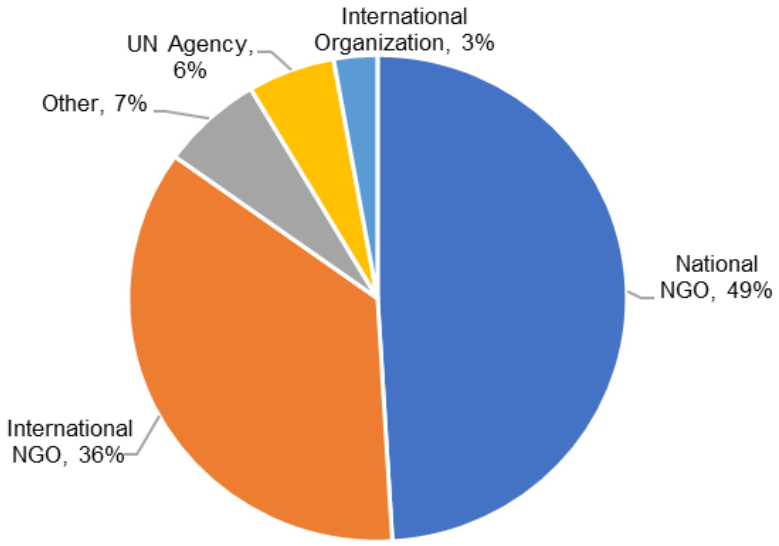

Table 28: Number of operational partners and partners with planned activities

	Partner Type	
	Managing Partners	Implementing Partners
Operational Partners (partners with completed/ongoing activities)	35	87
Partners with Planned Activities	18	19

[262] Ukraine Health Cluster, Bulletin #15, December 2021 - January 2022.
[263] WHO, Health Cluster: About Us, accessed April 2022.

Table 29: Number settlements and oblasts covered by partner activities

Number of unique settlements covered (completed & ongoing activities)	141
Number of oblasts covered (completed & ongoing activities)	24

Fig. 7: Number of operational partners by oblast, as of 22 April 2022

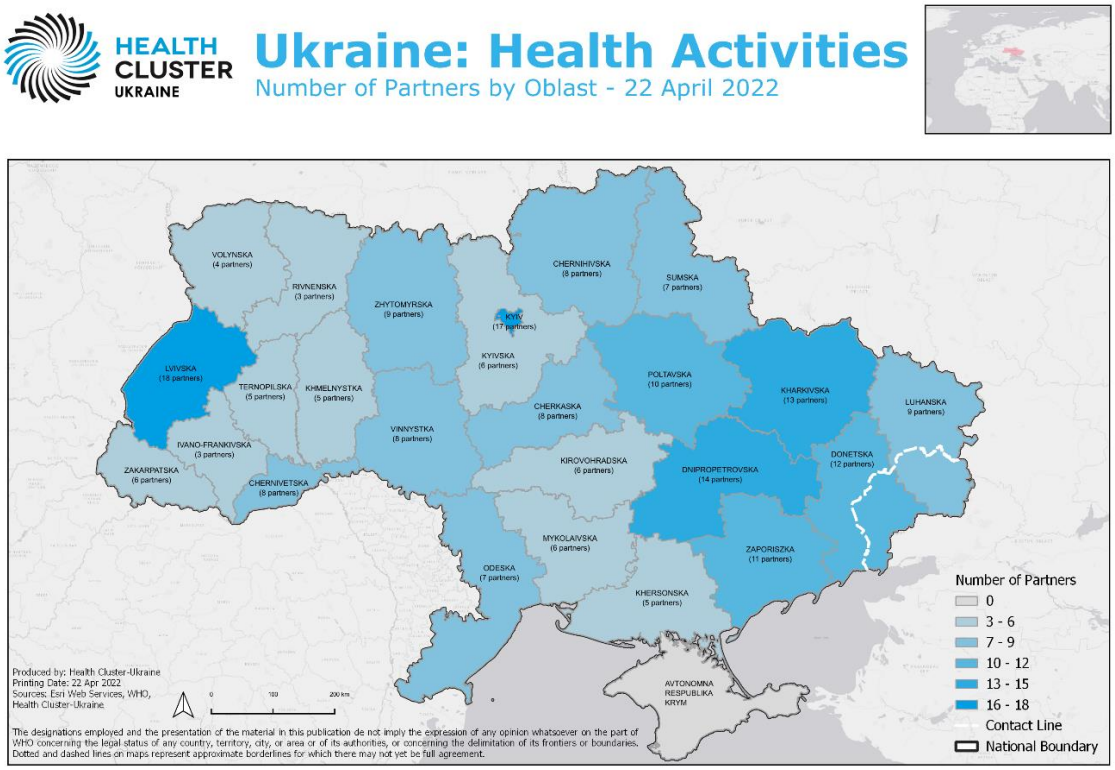

Fig 8. Number of operational implementing partners by health domain (based on information reported by partners on the health domain)

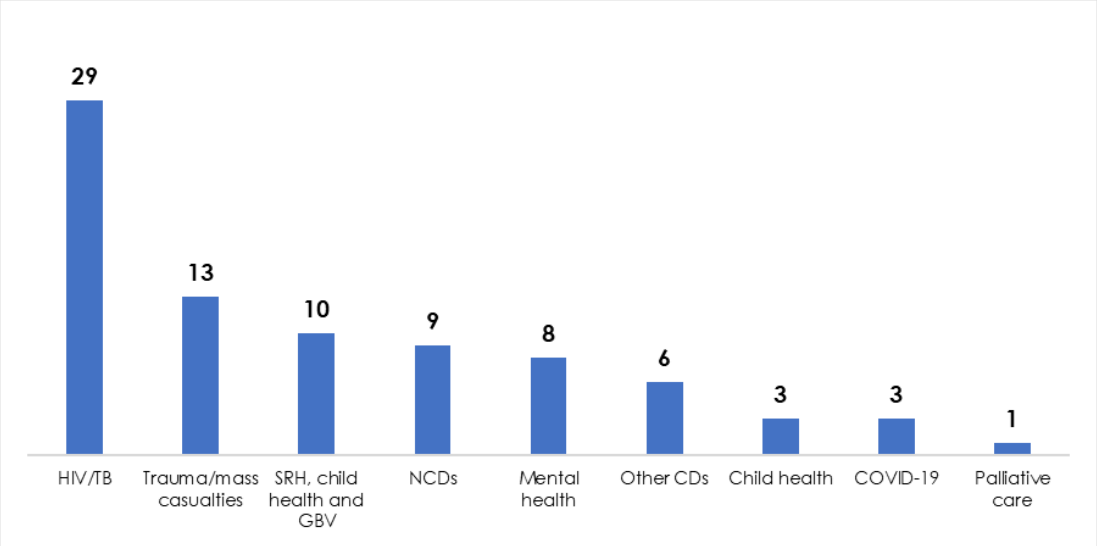

Fig 9. Number of operational, implementing partners by health activity provided

OCHA Ukraine maintains a dashboard and map of 3W Operational Presence detailing the humanitarian partners working in the country.[264] Our colleagues in UN OCHA are mapping new capacity and partners. If you are working in Health Cluster Related activities, please register your humanitarian organization via this form to get connected with clusters and be part of the response (form available in English, Ukrainian and Russian).

[264] OCHA, Ukraine 3W Operational Presence, 7 April 2022.

Availability / functionality of humanitarian health resources

Health system status

The Ministry of Health (MoH) and National Health System Service of Ukraine (NHSU) continue to operate.

Improvements in the provision of essential health services has stalled in Ukraine, with only modest improvements in recent years, from 54% in 1990 to 57% in 2019. The COVID-19 pandemic has made the health system more fragile and more inaccessible to patients. This has limited other essential medical services, including HIV/AIDS and tuberculosis programmes, safe delivery and newborn care, routine childhood vaccination programmes, dialysis and treatment of other chronic diseases requiring continuous care in health facilities.

Health workforce

Health workforce in 2020[265]

- Healthcare sector workforce: 735 000 (12/2020) (83% women)
- Doctors: 147 361 (276 per 100 000).
- Primary health care doctors: family doctors: 16 139; paediatricians: 5161; therapists: 3760
- Primary health care providers: 2200; 5.78 per 100 000 population.

According to the State Statistics Service of Ukraine, 735 000 workers were employed in the health care sector as of December 2020. Women represent 83% of health care workers. The density of the health workforce varies across Ukraine; for instance, the density of doctors varies from 27 to 50 per 10 000 population between the oblasts. Under martial law, students of all medical and pharmaceutical specialties received the right to work in pharmaceutical (pharmacy) institutions. The Ministry of Health also called on pharmacists who have changed their place of residence to go to work in pharmacies operating nearby.[266] According to the MOH, as of 15 April, over 230 foreign specialists are working in Ukraine and over 2000 are ready to provide assistance, if needed.[267]

Health facilities

Number of hospitals: 1630

Primary health care facilities (PHCFs): 10 140; 6964 in rural settings.

As per a 2021 USAID study, Ukraine has 4.42 PHCFs per 100 000 population.[268]

Health facilities are now focused on treating trauma patients. PHCFs are not evenly distributed within oblasts, which results in uneven coverage of essential health care services, especially in the rural and remote areas.

Two public dashboards have tracked the health system status in Ukraine to aid in the COVID-19 response. The WHO Regional Office for Europe operates a dashboard with MOH data on regional bed occupancy and oxygen availability.[269] Currently offline, the Office of the National Security and Defense Council of Ukraine Health Care System dashboard maps medical services,

[265] State Statistics Service of Ukraine, Data on medical staff of the Ministry of Health of Ukraine for 2020, 2021.
[266] MailBD, More than 80% of pharmacies operate in Ukraine – Ministry of Health, April 2022.
[267] UKRinform, Almost two thousand foreign doctors are ready to help Ukraine – Lyashko, 15 April 2022.
[268] USAID, Ukraine: Assessment of Patient Barriers to Health Care in the Conflict-Impacted Areas of Eastern Ukraine, 2021.
[269] WHO EURO/Ukraine Ministry of Health, Information on bed occupancy and oxygen availability in the regions of Ukraine, accessed 2 February 2022.

pharmacies, hospitalizations, hospital bed type and occupancy[270] Note that there were discrepancies between these two dashboards.

Table 30: Medical care institutions in Ukraine (COVID-19 designated facilities), as of 2 February 2022. [271]

Type of medical institution	#
Medical institutions	3149
Type of medical care	
Primary	1421
Specialized	1405
Emergency	24
Primary and specialized	297
Emergency and specialized	1
Ownership	
Communal	2517
Private – legal entities	231
Private - FOP	401
Provide assistance to patients with COVID-19	
Inpatient care	482
Emergency services	25
Mobile crews	799

Table 31: Medical institution capacity in Ukraine (COVID-19 designated facilities), as of 2 February 2022 – data from the Office of the National Security and Defense Council. [272]

Bed type	# Beds
Total beds	144 760
Beds allocated for COVID-19 (% total)	71 170 (49%)
ICU – total number of beds	7349
ICU – beds allocated for COVID-19	5345
Total number of beds supplied with oxygen	910 423
Total number of beds supplied with oxygen allocated to COVID-19	68 524

Table 32: Medical Institution Capacity in Ukraine – data from WHO/Ministry of Health [273]

	2 Feb	11 Apr
Beds allocated for COVID-19	70 594	43 741
ICU – total number of beds	5395	3886
Total number of ventilators	6757	5589
Total number of beds supplied with oxygen	67 729	42 573

[270] National Security and Defense Council of Ukraine, Health system of Ukraine, accessed 2 February 2022.
[271] National Security and Defense Council of Ukraine, Health system of Ukraine, accessed 2 February 2022.
[272] WHO EURO/Ukraine Ministry of Health, Information on bed occupancy and oxygen availability in the regions of Ukraine, accessed 2 February 2022.
[273] WHO EURO/Ukraine Ministry of Health, Information on bed occupancy and oxygen availability in the regions of Ukraine, accessed 2 February 2022.

Pharmacies

There are currently 24 219 wholesale and retail pharmacies registered in Ukraine.[274] On March 31, WHO reported that nearly 50% are presumed to be closed, with many health workers either displaced or unable to work.[275] However, the MOH reported that as of 24 March, out of 20 800 pharmacy outlets, 16 640 (80%) of pharmacies were operating. The MOH and the State Medical Service are monitoring the cost of medicines in order to avoid unjustified price increases and ensure uninterrupted consumer access.[276]

Health services availability

Rehabilitation

The MOH announced the introduction of the International Classification of Functioning, Disability and Health (ICF) on 14 April 2022. In developing a new system of rehabilitation and disability classification in Ukraine, the national classifier will ensure the implementation of the Medical Guarantee Program for the provision of care during acute and long-term rehabilitation periods at all levels of medical care.[277] Veterans and civilians affected by the conflict will be able to receive rehabilitation services, regardless of their disability status.[278]

Humanitarian health system performance

Utilisation of services

No data available.

Quality of humanitarian health services

No data available.

[274] Civil Service of Ukraine on drug control, Register of places of wholesale and retail trade in medicinal products, accessed 14 April 2022.
[275] WHO, Emergency in Ukraine External Situation Report #5, 31 March 2022.
[276] Ukraine Ministry of Health, In Ukraine, more than 80% of pharmacies operate – Alexander Komarida, 4 April 2022.
[277] MOH, At the initiative of the First Lady, a new approach to rehabilitation is being introduced in Ukraine,14 April 2022.
[278] Open for Business, Cabinet of Ministers: Victims of Russia's military aggression will be able to receive rehabilitation means regardless of establishment of disability, 13 April 2022.

7. Information gaps

Table 33: Information gaps and recommended tools for primary data collection

	Gap	Recommended tools / guidance for primary data collection
Health status and threats	Mortality data - disease-specific	Census; facility-based surveillance
	Sexual and reproductive health – expanded STI surveillance, updated maternal health indicators, SGBV capacity	Facility-based surveillance and/or assessments
	Child health - malnutrition data	Anthropometric survey, desk-based nutritional risk assessment
	Hepatitis B and hepatitis C – mortality data	Facility-based mortality data
	Waterborne diseases – incidence/prevalence data	Facility-based morbidity and mortality data; laboratory surveillance data; routine environmental monitoring
	NCDs - incidence/prevalence data	Survey to measure point prevalence of chronic diseases; facility-based morbidity and mortality data
	Environmental health - impact data	Facility-based morbidity and mortality data
	Mental health – updated incidence/prevalence/treatment data	Query mental health symptoms as part of facility-based surveillance and general health surveys, services mapping, participatory assessments
	People with disabilities – health data	Facility-based morbidity and mortality data
Health System Needs	Damage to facilities and equipment	Facility site assessments; monitoring and analysis of requests for assistance
	Medical equipment and supplies data	Facility audits and spot checks, monitoring and analysis of requests for assistance
	Workforce	Facility reports
Humanitarian health system performance	Utilisation of health services	Facility-based morbidity data; coverage survey, comparison of actual programme outputs vs. target beneficiaries; focus groups, other qualitative methods for exploring service utilisation and barriers
	Quality of health services	Facility-based morbidity and mortality data; facility audits and spot checks, patient exit interviews
	Laboratory surveillance system	Laboratory assessments

8. Additional Resources

Key documents

1. ACAPS Ukraine – Conflict in Donetsk and Luhansk Briefing note, 4 November 2019.
2. ECDC, Operational public health considerations for the prevention and control of infectious diseases in the context of Russia's aggression towards Ukraine, 8 March 2022.
3. IOM, Ukraine Internal Displacement Report Round 1, Round 2, Round 3, Mar/Apr 2022.
4. Kyiv Institute of Sociology, Mental health in Donetsk and Luhansk oblasts – 2018.
5. Médicos del Mundo, Impact of Health Reform on the Primary Healthcare Level in Conflict-Affected Areas of Donetsk and Luhansk Oblasts, June 2021.
6. Médicos del Mundo, Role of the decentralization reform, June 2021.
7. OCHA, 2022 Flash Appeal, 1 March 2022; 25 April 2022.
8. OCHA, Ukraine Humanitarian Needs Overview, 11 February 2022.
9. OCHA, Ukraine - Humanitarian Response Plan 2022, 11 February 2022.
10. OCHA, Ukraine Situation Reports.
11. OSCE, 2021 Trends and observations from the Special Monitoring Mission to Ukraine, 4 February 2022.
12. Protection Cluster Ukraine/Health Cluster Ukraine, Exploring Access to health care services in Ukraine: a protection and health perspective, July 2019.
13. REACH/OCHA, Rapid Needs Assessment of Conflict-Affected Areas, 22-25 March - Eastern Oblasts 6 April 2022.
14. REACH/OCHA, Rapid Needs Assessment of IDP-hosting Areas, 22-25 March - South and East Oblasts, 21April 2022.
15. Ukraine Public Health Centre, Infectious morbidity of the population of Ukraine December 2020-December 2021.
16. UNFPA, Ukraine Situation Reports.
17. UNCHR, Ukraine Situation Flash Update #9, 21 April 2022.
18. UNICEF, Ukraine Situation Reports.
19. UN Women, Rapid Gender Analysis of Ukraine: Secondary data review, 29 March 2022.
20. USAID, Ukraine: Assessment of Patient Barriers to Health Care in the Conflict-Impacted Areas of Eastern Ukraine, 2021.
21. WHO, Ukraine Situation Reports.