Rebuilding Ukraine

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War and Health in Ukraine: Tackling Disease Amidst Crisis

Policy Recommendations for **Cardiovascular Disease** & **Mental Health**

Executive Summary

Ukraine is grappling with one of the most complex public health crises in modern European history. The ongoing war has triggered a public health emergency, superimposed on a pre-existing burden of **noncommunicable diseases (NCDs)** and **mental health disorders**. Given the acute threats to the region, attention is focused on disaster relief. But what consideration should be given to **medium** and **long-term strategies** for strengthening population health?

This policy brief shifts the focus from emergency to sustainable recovery, prioritising two urgent health challenges: **mental health** and **cardiovascular disease.**

Drawing on high-impact evidence, this brief provides cost-effective and actionable recommendations for addressing **ischaemic heart disease** and **stroke** including implementation of the WHO-HEARTS package, telemedicine, polypill access, and stroke units equipped with telestroke capacity. To address **rising PTSD, alcohol use disorder, and suicide,** it proposes scaling up primary and community-based services with programmes such as CETA and WHO's PM+, trauma-informed mHealth for military personnel, alcohol harm reduction, and improved weapon safety protocols.

These recommendations offer the Ministry of Health a path forward: to stabilise the current health crisis and lay the groundwork for long-term recovery.

Introduction

The future of Ukraine is uncertain and its healthcare system is **under unprecedented strain.** The full-scale war has intensified existing challenges in an already fragmented system, alongside the emergence of new health crises. **Five years** of **national health reform** have been **destabilised** by the destruction of health infrastructure, workforce shortages, mass displacement, and diversion of resources towards emergency and military needs (World Health Organisation (WHO) 2024a; WHO 2025b).

As of 2024, more than **6.7 million Ukrainians** are displaced abroad and **3.7 million** internally (International Organization for Migration (IOM), 2024). **Access to healthcare**, particularly for **chronic conditions** and **mental health**, has been severely **disrupted**. An estimated **14.6 million** people require humanitarian assistance, including basic medical services, clean water, food, and electricity (United Nations Office for the Coordination of Humanitarian Affairs, 2024). Health sector resources have been reallocated towards trauma care, while routine services such as immunisation, screening, and chronic disease management have been sidelined (WHO, EU, USAID & World Bank, 2022).

Prior to February 2022, Ukraine already carried one of the **highest burdens of noncommunicable diseases (NCDs)** in Europe. Cardiovascular disease (CVD) accounted for 67% of deaths, with **ischaemic heart disease (IHD)** and **stroke** as the leading causes of mortality (Institute for Health Metrics and Evaluation (IHME), 2021). In parallel, mental health conditions, including **depressive disorders, alcohol use disorders (AUD)**, and the **highest male suicide rate** in Europe, contributed disproportionately to disability and premature mortality. Wartime conditions are projected to significantly escalate these trends (Ministry of Health (MoH) Ukraine, 2022; WHO, 2023a).

Ukraine also faces a high burden of communicable diseases, ranking **fourth in tuberculosis (TB)** and **second in HIV** infections in the WHO European Region. Over one-quarter of HIV-positive individuals are co-infected with TB, and the country is still recovering from the COVID-19 pandemic (European Centre for Disease Prevention and Control (ECDC), 2022; WHO, 2023).

35.6 million
population of Ukraine

14.6 million
need humanitarian assistance

6.7 million
refugees

3.7 million
internally displaced people (IDPs)

(IOM 2024, UNHCR 2024, WHO 2024)

Disrupted Disease Surveillance

- **Population displacement, infrastructure damage** and **resource diversion** have hindered disease monitoring and surveillance.
- The World Health Organisation and Ministry of Health face **challenges in assessing health trends** and the **current burden of disease.**
- As a result, Ukraine lacks an accurate picture of the NCD and mental health burden, **impeding health policy planning.**

Urgent Challenges

Health Infrastructure Damage: By 2025, **2,176** attacks on healthcare infrastructure had been recorded, with **910** hospitals damaged or destroyed, and **262** health workers killed (Haque et al., 2024; WHO, 2025a).

Workforce Shortages: Loss of healthcare personnel, especially near conflict zones, as many workers have fled or been mobilised into military service (WHO, 2024a; WHO, 2025b).

Mental Health Crisis: Ukraine faces a growing mental health crisis, with already high rates of alcohol misuse and suicide expected to rise, alongside widespread PTSD due to trauma, violence, and economic hardship. Over **15 million** people are projected to **need psychological support**, including **3–4 million** requiring **psychiatric care** (MoH, 2022; WHO, 2024b).

Delayed NCD Management: Emergency care has absorbed staffing and funding, interrupting the prevention, diagnosis and treatment for NCDs such as IHD, stroke and cancer (Navarese et al., 2022).

Financial Barriers: The proportion of Ukrainians living in poverty rose from **5.5%** to **24.1%** in **2022**, pushing **7.1 million** into poverty and reversing 15 years of progress. Declining household incomes have reduced access to care, with nearly 1/3 of households postponing treatment (United Nations Development Program (UNDP), 2023; WHO, 2025b).

Frontline Civilians: Residents in areas of active combat or outside government control have restricted access to healthcare; **32%** reported being unable to obtain regular medication supply (WHO, EU, USAID & World Bank, 2022).

Infectious Diseases: Displacement, overcrowding, and poor living conditions have increased TB and HIV transmission risk nationally and across borders (Wilczek et al., 2022; Paul et al., 2023)

This policy brief examines two **urgent** and **interconnected health challenges**: **cardiovascular disease** and **mental health.** It provides immediate recommendations that can be implemented during wartime and scaled into recovery.

Objectives & Methods

Goals

1

Assess the current and evolving burden of disease in Ukraine.

2

Review evidence-based studies from Ukraine and comparable international contexts.

3

Provide policy recommendations for the Ministry of Health to address CVD and mental health.

Methods

This brief draws on high-quality academic sources, including the Global Burden of Disease (GBD) study by the IHME, WHO, the World Bank, UN agencies, alongside systematic reviews and meta-analyses. These publications represent the most reliable and rigorously reviewed forms of evidence, selected for their relevance to Ukraine's wartime and humanitarian context.

Limitations

Due to disrupted surveillance, the disease burden is likely underestimated. Common sources such as the GBD study rely on pre-war data, requiring updated surveys to reflect current conditions. Some studies are from high-income or non-conflict settings, limiting application. The evolving nature of the war complicates long-term policy implementation and planning.

Ukraine Then, Ukraine Now

	Ukraine	EU Average
Life Expectancy	66.3 ♂ 75.7 ♀	78.5♂ 83.1♀
Health Expenditure	<3% GDP	8–12%
Hospitals (per 100,000)	~3.2*	~2.2
Hospital beds (per 100,000)	~6.8*	~5.8

*high but unevenly distributed and underutilised (IHME 2021; OECD 2022; WHO & World Bank 2024)

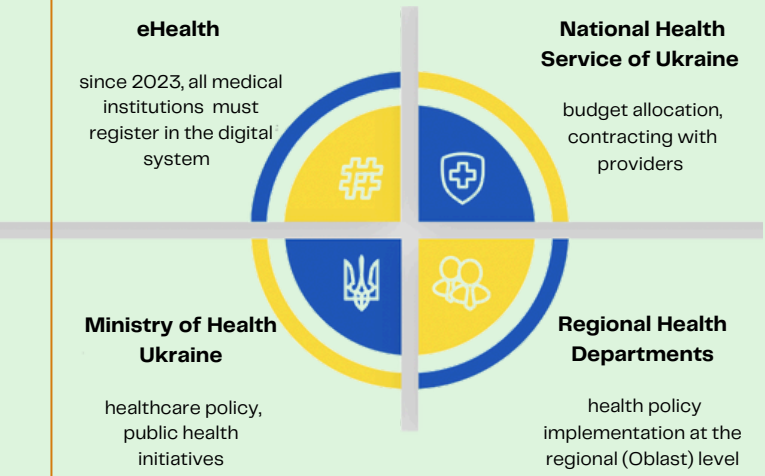
With a Human Development Index (HDI) of **0.734**, Ukraine ranks **40th** out of **42 European countries** and **100th** globally (UNDP, 2024). In 2021, life expectancy was 75.7 years for females and 66.3 years for males – 7.5 and 11 years lower, respectively, than the EU average (IHME, 2021). (IHME, 2021).

The war has dealt a blow to Ukraine's economy; since 2021, health spending has fallen by **21%,** with financing redirected to emergency and defence needs (WHO & World Bank, 2024). In 2024, the total state healthcare expenditure amounted to 201.7 billion UAH (€4.3 billion), representing **less than 3% of GDP** – half the EU average (OECD, 2022; WHO & World Bank 2024).

Ukraine's National Healthcare System

Ukraine's healthcare system is characterised by an extensive hospital network and **specialist-centric care,** historically **centralised** and chronically **underfunded.** Primary and preventive services are deficient and underdeveloped, while inpatient care dominates the system. Despite the breadth of the public hospital network, out-of-pocket payments (accounting for 51% of household health spending in 2019) are among the highest in Europe and far exceed the OECD average of 14% (Lekhan et al., 2022). Low public funding, low salaries, and a surplus of unevenly distributed hospital beds, contribute to inefficiency and corruption, with half of Ukrainians reporting informal payments for care (WHO, 2022b). Although the constitution now guarantees free healthcare, access remains limited in practice, particularly for low-income and rural households (WHO, 2023e).

Primary Healthcare: local clinics with general doctors and nurses
Centralised Healthcare: hospital or specialist centres
eHealth: digital tools such as online records that support healthcare delivery



(Own figure, adapted from Swecare, 2024)

2017 Reform

In 2017, Ukraine launched a major health system reform, introducing the **National Health Service of Ukraine (NHSU)** as a single purchaser of services, funded through the state budget. This marked a shift towards a **"money follows the patient"** financing model, backed by the expansion of primary healthcare (PHC) (WHO, 2021a). Digital tools such as **eHealth** have been since introduced and by 2024, over 35 million Ukrainians had registered with a family doctor through the online platform (WHO, 2025b).

While these reforms have improved governance and service delivery, structural problems persist. In 2021, out-of-pocket spending still accounted for **46.3%** of total health expenditure (WHO, 2023c). Payment gaps and resource distribution still have a long way to go, with the war severely halting progress.

Burden of Disease

1 Cardiovascular Disease (IHD & Stroke)

- **Ischaemic Heart Disease (IHD)** is the leading cause of death in Ukraine, with mortality increasing by **10.2%** between 2011–2021 (IHME, 2021). After adjusting for age differences between countries, Ukraine has the **highest IHD mortality rate in Europe,** with 399.21 deaths per 100,000 population (Cenko et al., 2023).
- **Stroke** is the second leading cause of death, with over **130,000 strokes** reported annually (Flomin et al., 2025). War, violence and poor living conditions have been found to increase CV risk factors, with civilians in conflict zones showing higher rates of high blood pressure, diabetes and CVD. Stroke admissions have **increased by 22.4% since 2023,** and are expected to climb as war-related PTSD in young populations manifests as CV events in later life (Nanavati et al., 2023; Shkoruta et al., 2024).

#1

IHD mortality rate in Europe

22.4%

increase in stroke admissions in 2023

Risk Factors

- High blood pressure
- Elevated stress
- Poor diet
- Tobacco use (49% in men, 14% in women)
- High alcohol consumption
- Head and neck injuries
- War-induced trauma
- Aging population

(WHO, 2020;Jawad et al., 2018; IHME 2021; Dobrova et al., 2023;WHO 2025b)

2 Mental Health (PTSD, Alcohol Use Disorder, Suicide)

- According to the GBD Study, **depressive disorders, alcohol use disorders**, and **self-harm** were the sixth, eighth, and tenth leading contributors to death and disability combined in 2021 (IHME, 2021).
- In 2019, Ukraine had the **highest male suicide rate in the WHO European Region,** 39.2 per 100,000, **double the OECD average.** This burden is heavily gendered, with men accounting for 6/7 suicides (WHO, 2021).
- **PTSD** is expected to become the most significant post-war mental health condition (Kalaitzaki et al., 2024). Initial reports from the MoH indicate that **90% of Ukrainians** show at least one symptom of PTSD, and **57%** are at risk of developing it (1 in 4, compared to the global average of 1 in 14) (MoH, 2022).
- **Alcohol use disorders (AUD)** affect **6%** of the population, disproportionally those displaced or in military services (WHO, 2024c). The co-occurrence of AUD, PTSD and suicide is well-documented as trauma exposure leads to substance use as a coping mechanism (Bogdanov et al., 2025).

#1

male suicide rate in Europe

1 in 4

Ukrainians will require psychological support after the war

Risk Factors

- Exposure to violence and combat
- Displacement, insecurity, loss of family, loss of income
- Stigma and low awareness
- Alcohol consumption

→

- Military veterans
- Children, adolescents
- IDPs, returning refugees
- Civilians along contact lines and in occupied territories

(Lim et al., 2022; Dobrova et al., 2023; Martsenkovskyi et al., 2024, Seleznova et al., 2023)

Ischaemic Heart Disease & Stroke

Health Terms Explained:

Thrombectomy: procedure to remove a blood clot after a stroke
Primary Prevention: steps to stop a disease before it starts
Secondary Prevention: care after a disease starts to prevent it recurring
Aspirin, statin, ACE Inhibitor: blood thinning medications to prevent heart attack and stroke
Telestroke: using video call to diagnose a stroke remotely

Ukraine - What is the Gap?

Despite reforms to increase PHC, many Ukrainians still avoid general practitioners (GPs), relying on specialists for CVD management. **Primary prevention;** addressing risk factors like diet, smoking, and blood pressure is typically delivered by GPs and nurses. Across Ukraine, these professionals are undertrained in CVD management, underutilised, and often delegated administrative tasks (Uthman et al., 2024; WHO, 2025c). Additionally, barriers such as cost, brand preferences, and pharmacy shortages make it difficult for patients to obtain blood pressure medication (WHO, 2025b). Acute stroke treatment has been disrupted with no mechanical **thrombectomies** able to be performed in 2022–2023 due to lack of safe transportation and staff (Flomin et al., 2025). **WHO NCD Kits** (containing medication, blood pressure monitors) have been deployed but no data is yet available to assess their effectiveness (WHO, 2025c).

What does the Evidence Show?

WHO-HEARTS Package (Primary Prevention)

Primary and community based care, is best positioned for prevention of IHD and stroke, **significantly reducing risk factors** such as blood pressure and cholesterol in resource-poor health systems (Nowrin et al., 2023). The WHO has developed the **HEARTS technical package** for primary care facilities to **streamline CVD management.** The package includes lifestyle counselling, treatment protocols, medicine, risk-based management, team-based care and systems for monitoring (WHO, 2020b). A review of 32 low and middle income countries (12.2 million patients) showed a significant improvement in blood pressure control by 28%, (Moran et al., 2023). Cost is saved by **task-shifting** to lower salaried health workers, less frequent clinic visits and improved patient education. The effectiveness of the package has been tested in rural and humanitarian settings, supporting its feasibility in Ukraine's context (Abrar et al., 2024).

eHealth, Telemedicine & Telestroke

Digital interventions show significant benefits in both prevention and treatment of IHD and stroke; two meta-analyses of **eHealth programs** (telemonitoring, text reminders, smartphone apps) found improved risk factor control; reduced cholesterol, improved medication adherence, diet and exercise (Kamaruddin et al., 2023, Jaén-Extremera et al., 2023).

A review on **telestroke** in rural settings showed that teleconsultations led to **faster treatment, lower mortality** and **improved 3 month functional outcomes** (Lazarus et al., 2020, Wilcock et al., 2021). Although studies were not conducted in conflict settings, limiting generalisability, such low-cost interventions may reach remote populations when travel is unsafe.

Polypill Medication (Secondary Prevention)

A fixed-dose combination **"polypill" (aspirin, statin, ACE inhibitor)** has been tested across multiple countries and shown a **significant reduction** in **major CV events** within 6 months following a heart attack, as well as improved medication adherence compared to multiple pill care. Additionally, a polypill is cost-effective and easier to procure than sourcing 3 separate medications, particularly in a setting with supply chain deficits (Castellano., 2022, Rivera et al., 2023).

Organized Stroke Unit Care:

A **dedicated stroke unit** significantly improves patient **survival** and **return to independent living** compared to a general ward following a stroke. A multi-continent Cochrane review found that the risk of **death** or **dependency** reduced by **25%,** due to timely thrombectomy. These benefits were observed across age, sex, and stroke severity, supporting feasibility (Langhorne et al., 2020).

Mental Health

Health Terms Explained:

mhGAP: WHO program that trains non-specialists to treat mental health conditions
mhealth: mobile phone health applications
Lay counsellor: a person without formal training in mental health, delivering basic psychological support under supervision

Ukraine – What is the Gap?

The gap between the need and availability of mental health services in Ukraine is large. At a national level, mental health services are not commonly available, stigmatized and poorly understood (Winkler et al., 2017; Kuntz et al 2022). Although Ukraine has a high number of psychiatrists and psychologists, care remains largely institutional and biomedical, rather than community-based (Quirke et al., 2020). In 2022, the MoH and NHSU introduced **WHO's Mental Health Gap Action Programme (mhGAP),** aimed at training health-care workers on mental disorders in PHC. Despite this progress, uptake remains low, with one-quarter of patients reporting that they did not receive consistent care or medication (WHO HNA, 2022; WHO, 2024). Approximately 80% of Ukrainians report being unaware of mental health services in their area (WHO & Health Cluster Ukraine, 2023b). A key challenge ahead is supporting Ukraine's growing veteran population. Given the scale of need, integrating veteran mental health services into the broader public system may prove more effective and sustainable than creating parallel structures (WHO & World Bank, 2024).

What does the Evidence Show?

Delivery of Mental Health Intervention by Lay Counsellors:

a growing body of evidence supports brief, psychological interventions delivered by non-specialist providers in low-resource, disaster settings (Connolly et al., 2021).

1) Common Elements Treatment Approach (CETA)

CETA is a form of psychotherapy delivered by **trained lay counsellors,** shown to **reduce depression, anxiety, PTSD** and **aggression** in conflict-affected areas. In Ukraine, CETA was evaluated with a randomised controlled trial (RCT), where both standard (8-12 sessions) and brief (5 sessions) programmes **significantly improved mental health outcomes** among IDPs and veterans in Eastern Ukraine (Bogdanov et al., 2021).

2) Problem Management Plus (PM+)

PM+ is a **five-session counselling programme** developed by WHO for lay counsellor delivery. Trials in Nepal and among Syrian refugees found reductions in **psychological distress** and **depression,** particularly among individuals who would otherwise have no access to care (de Graaf et al., 2023; Jordans et al., 2021). Evidence suggests greater benefit in women, a critical consideration for Ukraine, where male military personnel represent the greatest risk group. A further limitation is that Ukrainian's mental health stigma may hinder uptake of counselling. Stigma-reduction campaigns are essential to improve acceptance and reach.

mHealth Applications for Military Personnel

mHealth apps show promising results in **reducing PTSD, depression and insomnia** among **military personnel,** with strong user acceptance (Farzandipour et al., 2024). A review found that mHealth has significant impact in reaching **vulnerable populations** and **addressing stigma** and **provider shortages** (Khosravi et al., 2024). In Kenya, younger adults preferred app-based care over face-to-face therapy, which may be applicable to Ukraine's young, displaced population (Meffert et al., 2024).

Alcohol Taxation:

Increasing taxes on **alcohol** is a highly effective population-level strategy to reduce harmful drinking. A review of **alcohol control policies** in the Baltic countries and Poland found that taxation led to **reductions in all-cause** and **alcohol-related mortality** (Manthey et al., 2023; Rehm et al., 2023). However, 48% of drinkers in Ukraine report consuming non-taxed alcohol (e.g. home-made), which requires targeted interventions (WHO, 2024c).

Restricting access to lethal means:

In conflict settings, widespread access to firearms and explosives poses a significant risk. Promoting **safe weapon storage** and temporary removal of firearms can prevent impulsive suicides. A systematic review found that **means restriction** was the single intervention which effectively **reduced suicide rates** (Altavini et al., 2022).

Policy Recommendations:

IHD & Stroke

1. Strengthen Primary & Community-Based Healthcare: WHO HEARTS Package

→ **Collaborate with WHO to procure the HEARTS package:** implement across PHC clinics, prioritising small and rural centres in war-affected and front-line regions (WHO, 2020b; Nowrin et al., 2023).
→ **Train non-physician staff to provide counselling on CVD risk factors,** use task-shifting to enable nurses to measure blood pressure and manage medication refills where physicians are limited.
→ **Divert patients from specialists to GP- and nurse-led clinics** by maintaining GPs as gatekeepers and establishing clear referral pathways to specialist services as needed (Nowrin et al., 2023).

2. eHealth, Telemedicine & Remote Cardiac Monitoring

Leverage Ukraine's telecom infrastructure, which has remained largely resilient (WHO, 2025b):
→ **Develop a national telemedicine reimbursement framework** to cover telehealth consultations for CVD, incentivising both doctors and patients to use digital pathways.
→ **Implement digital registries** to flag patients who have missed visits or medication pick-ups.
→ **Continue the digitalisation of medical records,** despite ongoing infrastructure destruction.
→ **Introduce remote cardiac monitoring tools,** such as blood pressure tracking apps and ECG devices (Kamaruddin et al., 2023; Jaén-Extremera et al., 2023).

3. Secondary Stroke Prevention (Polypill)

→ **Procure and introduce a fixed-dose combination polypill** (aspirin, statin, and ACE inhibitor).
→ **Integrate into PHC** by enabling GPs to routinely prescribe the polypill to patients following a heart attack or stroke (Castellano, 2022; Rivera et al., 2023).
→ **Include the polypill in Ukraine's national essential medicines list,** fund its provision through the NHSU and international humanitarian assistance.

4. Dedicated Stroke Units & Telestroke

When rebuilding hospitals, prioritise stroke units in regional hospitals and the training of specialised stroke teams (Langhorne et al., 2020):
→ **Rebuild hospitals with dedicated stroke wards** and catheterisation laboratories.
→ **Train cardiologists, nurses, and physiotherapists together to deliver coordinated care,** using standardised protocols such as early mobilisation and swallowing assessments (Flomin et al., 2025).
→ **Integrate units into a national telestroke programme,** enabling remote patients to receive timely virtual stroke assessments by a specialist (Lazarus et al., 2020; Wilcock et al., 2021).

Policy Recommendations:

PTSD, AUD, Suicide

1. Community-Based Mental Health Services (CETA, PM+)

→ **Implement the CETA and WHO PM+ five-session counselling programmes,** adapted to the Ukrainian language and cultural context, with a focus on reducing stigma and normalising help-seeking behaviours (Bogdanov et al., 2021; Khosravi et al., 2024).
→ **Address the shortage of specialists by task-shifting:** train lay counsellors (community workers, Red Cross volunteers, nurses, and teachers) in basic psychotherapy using the PM+ manual (Connolly et al., 2021).
→ **Deploy trained counsellors to regions with high concentrations of IDPs, veterans, and civilians exposed to violence.**
→ **Tailor interventions to gender and population needs:** target women with PM+, and young male veterans with digital formats (de Graaf et al., 2023; Jordans et al., 2021).

2. mHealth Applications for Military Personnel

→ **Develop and implement evidence-based mHealth applications,** ensuring they are culturally adapted, trauma-informed, and offer offline functionality (Farzandipour et al., 2024).
→ **Partner with the Ministry of Defence** to gain endorsement and frame mHealth tools as promoting mental wellness, rather than illness, to help reduce stigma (Khosravi et al., 2024; Meffert et al., 2024).
→ **Integrate mHealth into the broader health system,** for example by enabling PHC providers to prescribe mHealth applications as part of treatment plans.

3. Alcohol Harm Reduction & Taxation

→ **Collaborate with the government** to implement higher taxation on alcohol**,** discouraging consumption and raising revenue for the health system (Manthey et al., 2023; Rehm et al., 2023).
→ **Train PHC workers to screen and counsel for alcohol misuse,** for example during cardiovascular disease (CVD) assessments.
→ **Launch national media campaigns** highlighting the links between alcohol use and cardiovascular disease, violence, and mental illness, with targeted messaging to address the consumption of non-taxed alcohol, particularly in rural communities (WHO, 2024c).

4. Weapon Safety Protocols (Target Suicide Risk)

→ **Collaborate with the government and military to enforce weapon safety protocols,** including supervised access to firearms (Altavini et al., 2022).
→ **Introduce policies on firearm licensing,** safe storage of guns, and ammunition control.
→ **Launch public awareness campaigns** on the risks of unsecured firearms and the link between firearm access and suicide.

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