BUILDING A STROKE AGENDA FOR UKRAINE

SITUATION ANALYSIS 2021

World Health Organization
European Region

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Abstract

Stroke care has become a priority in Ukraine. It is estimated that up to 130 000 people have strokes in Ukraine each year and mortality from stroke is higher than in most European countries. This document summarizes the findings of several WHO missions that took place from 2019 to 2021 to develop a situation analysis of stroke care in Ukraine and support further actions to improve the situation. The preliminary findings were discussed with national stakeholders in December 2021, leading to proposals for building a stroke agenda in Ukraine. While it reflects the situation before the invasion of Ukraine on 24 February 2022, it is an important contribution to health system reforms and rebuilding in Ukraine.

Keywords

STROKE – PREVENTION AND CONTROL
DELIVERY OF HEALTH CARE – METHODS
HEALTH SERVICES
UKRAINE

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Document number: WHO/EURO:2022-5641-45406-64977

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Acknowledgements

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WHO is grateful for the contributions of the following experts who participated in the WHO meeting on a stroke strategy for Ukraine, which took place in Kyiv, Ukraine on 15 December 2021: Yuriy Cherednychenko, Neurosurgeon, Interventional Neuroradiology Unit, Mechnikov Dnipropetrovsk Regional Clinical Hospital, Dnipro, Ukraine; Yuriy Flomin, Head, Stroke Center, Universal Clinic "Oberig", Kyiv, Ukraine, and Board member, Ukrainian Anti-Stroke Association; Dmitriy Gulyayev, Coordinator, Stroke Support Organization "Ukrainians against stroke", and Board member, Stroke Alliance for Europe (SAFE); Marina Gulyayeva, Executive Director, Ukrainian Anti-Stroke Association; Dmytro Lebedynets, Head, Stroke Center, Feofania Clinical Hospital, Kyiv, and World Bank Consultant; Serhiy Moskovko, Chair, Department of Neurology, Pirogov Vinnytsya National Medical University, Vinnytsya; Mykhailo Tonchev, Head, Department of Neurosurgery, Sklifosovsky Poltava Regional Clinical Hospital, Poltava; Gianluca De Rubeis and Enrico Pampana, Diagnostic and Interventional Neuroradiology Unit, Department of Diagnostics, San Camillo Forlanini Hospital, Rome, Italy; and Maria Sheverdina, Thomas Fisher, Stolarczyk Mateusz, Massimo Alberini and Lev Prystupiuk of the Angels Initiative*.

This work was prepared in the context of the Biennial Collaborative Agreement between the Ministry of Health of Ukraine and the WHO Regional Office for Europe. It was made possible thanks to the financial contribution of the Governments of Denmark and Ukraine and Swiss Agency for Development and Cooperation.

*The Angels Initiative is co-funded by Boehringer Ingelheim International GmbH.

Acronyms and abbreviations

ACS	acute coronary syndrome
CVD	cardiovascular disease
DALY	disability-adjusted life year
DRG	diagnosis-related group
EAST	Enhancing and Accelerating Stroke Treatment
EMS	emergency medical services
ESAP	Action Plan for Stroke in Europe
ESO	European Stroke Organization
EVT	endovascular thrombolysis
ICF	International Classification of Functioning, Disability and Health
IHME	Institute for Health Metrics and Evaluation
MoH	Ministry of Health
MRI	magnetic resonance imaging
NCCT	non-contrast computed tomography
NCD	noncommunicable disease
NDHRP	National Disability, Health and Rehabilitation Plan
NHSU	National Health Service of Ukraine
PC	palliative care
PCI	percutaneous coronary intervention
PHC	primary health care
PMG	Program of Medical Guarantees
SOP	standard operating procedure
STEPS	STEPwise approach to surveillance (for NCDs)
SWI	susceptibility-weighted imaging
TIA	transient ischaemic attack
tPA	tissue plasminogen activator
UAH	Ukranian hryvnia
UHC	universal health coverage
WB	World Bank
WHO PEN	WHO Package of Essential Noncommunicable Disease (Interventions)

Introduction

Stroke care has become a priority in Ukraine. Mortality from stroke is higher than in most European countries. It is estimated that up to 130 000 people have strokes in Ukraine each year; in-hospital mortality in 2020 was 19.76% of all admitted stroke patients; 30–40% of all patients die within the first month of stroke onset; overall, stroke causes 13% of all deaths in Ukraine. In 2020, in-hospital mortality was 15.65% (10 days) for ischaemic stroke and 40.45% for haemorrhagic *(1)*.

About 70% of stroke survivors have persistent neurological deficits that affect their lives and impair their functional independence. Stroke causes over 1.85 million disability-adjusted life years (DALYs) lost per year *(2,3)*. **One third of stroke patients in Ukraine are in the working age group** *(4,5)*.

In 2019, Ukraine's Ministry of Health (MoH) requested the development of a national plan for stroke, with the objective of having a comprehensive programme to implement systemic changes, achieving technical excellence and ensuring investments.

WHO conducted a mission in September 2019 to investigate the needs and the ongoing work on stroke care and plan technical support. The draft of the Stroke National Plan for Ukraine was then reviewed. That document was closely modelled on the Action Plan for Stroke in Europe 2018–2030 *(6)* (SAP-E), developed by the European Stroke Organization (ESO). The mission team's feedback on the review of the document was presented to the MoH in November 2019.

Since the Stroke National Plan for Ukraine had not been published, the MoH invited stroke experts in Ukraine to develop a stroke strategy as a foundation for the stroke plan.

In May 2021, the Ukrainian MoH signed the ***Declaration for the Stroke Action Plan for Europe*** promoted by the ESO as an act of commitment in the fight against stroke.

During a WHO mission in October 2021, the MoH requested WHO to collaborate in developing a comprehensive agenda for stroke in Ukraine.

This document presents a situation analysis for stroke care in Ukraine in 2021, and suggestions for the way forward. Preliminary findings and proposals were presented and discussed at a WHO workshop "Building a 2022–2023 Stroke Management Agenda for Ukraine", which took place in December 2021 with the relevant stakeholders, including: Ukrainian Anti-Stroke Association, World Bank (WB), potential donors such as the Angels Initiative, WHO, and professional and patient associations. This document takes account of the outcomes of the workshop and comments received.

While the findings and recommendations within the document reflect a situation before the invasion of Ukraine on 24 February 2022, it remains an important contribution to rebuilding care in Ukraine going forward.

NCD risk factors and epidemiology

Background

In 2016, noncommunicable diseases (NCDs) were the leading causes of death and disability across the world, and an obstacle to economic development in Ukraine. WHO estimates that NCDs accounted for 91% of all deaths in Ukraine, including 63% from CVD and 10% of other NCDs. The probability of dying between the ages of 30 and 70 years from any of the four major NCDs (CVD, cancer, diabetes mellitus, chronic respiratory disease) was among the highest for countries in the WHO European Region and twice as high for men (36.9%) than for women (16.0%) *(7)*.

In the context of implementation of public health reform, Ukraine adopted the **National Action Plan for Noncommunicable Diseases, aiming at one third reduction in the risk of premature mortality** from CVD, cancer, diabetes, chronic respiratory disease and other NCDs by 2030. A wide range of measures critical for fighting NCDs has been implemented in the country.

- **The National NCD Action Plan** has been adopted, which includes not only the key risk factors for NCDs, but also road safety, environmental health and school health.
- **The National NCD Communication Strategy has been implemented.**
- **The School Medical Service,** to promote school-based health services, NCD awareness, prevention and reduction, is in place.
- **Legislation banning industrial trans-fatty acids in foodstuffs has been adopted (enforcement from 1 January 2023).**
- **Legislative initiatives have been registered in the Parliament, to put in place the WHO Framework Convention on Tobacco Control and EU Tobacco Product directive.**
- **The National Strategy on reduction of harmful alcohol consumption** has been drafted by the MoH.
- **Effective tobacco taxation legislation has been enacted to decrease the affordability of all tobacco products, including emerging products.**
- Training courses have been held on the **integrated management of hypertension and diabetes**, WHO Package of Essential Noncommunicable Disease Interventions (WHO PEN) for primary care in low-resource settings, with an emphasis on **evaluating CVD risks using the total CVD risk assessment technique to detect risk factors even before the patient has symptoms** *(8)*.
- The school nutrition reform regulatory package has been adopted and its implementation started in mid-2021. (The New Ministerial Order of March 2021 on Nutrition/meals in schools/educational institutions was applied.)

Among the "**Policy Dialogue for Better Health Governance**" project, consultations and workshops were held with a wide array of stakeholders to arrive at "*evidence-informed national health policies and strategies to make progress towards universal health coverage in Ukraine, and to provide technical support to reform its health systems. Some relate to NCDs, such as the development of a concept paper and action plan on reforming the mental health system, and an assessment of the State programme on affordable medicines, involving reimbursement of medicines for NCDs through the primary health-care service" (9).*

Health policy and health financing context for the prevention and management of stroke in Ukraine

Background

The Action Plan for Stroke in Ukraine (2020–2030) was first drafted in 2019 but never published. Since 2019, new resolutions on the organization of the **emergency care system were issued by the MoH** (RESOLUTION of 16 December 2020 No. 1271; ORDER of 5 November 2020 No. 2524, ORDER of 22 December 2020 No. 1277/35560 registered in the Ministry of Justice of Ukraine) to improve the appropriateness of the service and accessibility of the emergency system.

Still, the prevention and management of stroke in Ukraine can benefit from broadening the relevant policy context and strengthening health systems.

In relation to prevention, especially for risk factors in common between stroke and the other NCDs, the following **policies and regulations are of note**, as they are relevant to stroke prevention:

- The **National Action Plan on Noncommunicable Diseases to achieve the Sustainable Development Goals** was approved by the Cabinet of Ministers of Ukraine on 26 July 2018. This comprehensive document embraces many essential actions and measures as well as cross-sectoral collaboration. However, it lacks resources, coordination and implementation mechanisms.

- **Tobacco:** Ukraine ratified the Framework Convention on Tobacco Control (FCTC) in 2006. In 2012, the Parliament adopted several important measures, including a smoke-free environment, total ban on tobacco advertising, sponsorship and promotion, and a new graphic pictorial health warning on tobacco packets. In 2018, the Parliament adopted an 8-year tobacco taxation plan, supposing a 20% annual increase in tobacco taxes. These measures resulted in a 20% decrease in smoking prevalence among the adult population and a 40% decrease among the youth between 2010 and 2017. There are new draft laws based on EU Directive 2014/40, which includes pictorial warnings, regulations on heated tobacco products and e-cigarettes, and point-of-sale bans. Ratification by the country of the Protocol to Eliminate Illicit

Trade in Tobacco Products was initiated at the end of 2018 but has not been completed yet *(10)*.

- **Alcohol:** There is a national strategy on reduction of harmful alcohol consumption. Alcohol taxes are adjusted for the inflation rate annually; however, no tax increase has been implemented in the past 5 years. Restrictions on alcohol sales at night could be introduced by local authorities. WHO data show that Ukrainians consumed 8.34 L of pure alcohol per capita in 2019 and, according to the Institute for Health Metrics and Evaluation (IHME), alcohol consumption is the sixth leading risk factor for death and disability combined in Ukraine.

- **Nutrition:** WHO conducted the first national survey on the prevalence of major NCD risk factors, aligned with the WHO-endorsed STEPwise approach to surveillance (STEPS) methodology. The STEPS report was published in early 2020 *(11).* The survey results provided an objective view of the current situation regarding the prevalence of NCD risk factors in the country's adult population. However, no national strategies have been developed to address nutrition-related risk factors in a comprehensive manner. In 2020, the MoH adopted the order on reducing trans-fats in food products, which could be strengthened by the Bill currently registered in Parliament. Ukraine also initiated a comprehensive school nutrition reform programme supported by the package of regulatory acts. The reforms will be implemented in full scale in 2023.

- The national strategy **Physical activity – healthy lifestyle – healthy nation** was developed as a President's Administration initiative, which will run till 2025. It has an action plan without a budget.

- **The National Action to control cancer by 2030 was developed by the MoH and publicized for public consultations several times. So far, the regulatory act has not been adopted. Disease-specific programmes such as those for CVD or cancer control are not in place.**

With reference to health systems strengthening, a number of reforms is under way, which together can support the achievement of better outcomes for stroke and other NCDs.

- Since 2015, Ukraine has initiated a major transformation of its health-care system **towards universal health coverage (UHC)** *(12)*.

- Initially, the focus on health financing reform and building health information systems led to the introduction of **new financing mechanisms, launching of an e-health system, and strengthening of primary care (including reimbursement of selected medicines on an e-prescription basis).**

- **The NHSU** has been established as a single purchaser. It purchases services from providers using contracts that include a range of service specifications related to service organization, equipment and personnel. To be contracted by the NHSU, providers must meet a range of service delivery requirements. They include universal requirements, including those related to legal status, licensing and e-health functionalities; **package-specific requirements** related to facility characteristics, medical personnel and equipment; and additional relevant licenses (for nuclear medicine or narcotics, for example). Services provided outside the contracted packages are not necessarily reported.

- The **Secondary (Specialized) Healthcare Guarantee Programme was launched on 1 April 2020.** Since then, health-care facilities that offer secondary (specialized) care are now operating under agreements with the NHSU.

- As of September 2020 ***(4)***, the NHSU has signed contracts with 3095 health-care providers who have been paid Ukranian hryvnia (UAH) 51.6 billion for rendering services to patients under the Healthcare Guarantee Programme. This amount included:

  - UAH 13.3 billion paid to primary care facilities;
  - **UAH 29.7 billion to secondary (specialized) care facilities**;
  - **UAH 3.7 billion to emergency care facilities;**
  - UAH 4.9 billion to medical facilities treating patients with a known or suspected diagnosis of COVID-19.

- Health-care workers' salaries have been increased since 1 September 2020. This comprises +70% (UAH 3561) of the salary for doctors, +50% (UAH 2362) for nurses, and +25% (UAH 1181) for nursing assistants.

The Healthcare Guarantee Programme defines five top priority medical services:

- **acute stroke treatment**
- myocardial infarction treatment
- maternal care
- complex neonatal care
- diagnostics for early cancer detection.

Since April 2020, case-based payments have been used for four inpatient conditions: acute stroke (one case for all types), acute myocardial infarction, childbirth (one case for all types), and complex neonatal care. Bottom–up costing was used to ensure that these rates cover the full cost of care. Together, these four conditions account for 8.1% of all specialized care contracts. Case-based payments were intended to be introduced for all inpatient care in March 2020, but under the pressure and uncertainty of the COVID-19 pandemic, full implementation was postponed; implementation commenced in April 2021. Before it was implemented, hospitals reported cases to the NHSU using diagnosis-related groups (DRGs), an important building block for DRG implementation ***(13)***.

To date, health-care institutions have received UAH 2.7 billion for the provision of priority services to patients.

Regarding acute cerebrovascular disease, 192 hospitals have been contracted by the NHSU (fulfilling the **package-specific requirements of minimal criteria for stroke care**), reimbursement of acute stroke services is based on DRGs, and accredited hospitals receive UAH 27 000 (US$ 1000) per acute stroke case; around UAH 91 487 (US$ 3385.00) for

mechanical thrombectomy, and UAH 6098 (US$ 225) for cases of transient ischaemic attack (TIA). **The minimal criteria for stroke care are:**

- neuroimaging 24/7 (non-contrast computed tomography [NCCT] or magnetic resonance imaging [MRI] with T2*/susceptibility-weighted imaging [SWI]), neurologist/neurosurgeon 24/7;
- ICU physician 24/7;
- at least four monitored beds with O_2 access;
- ability to deliver intravenous (IV) tissue plasminogen activator (tPA).

There are no established minimal criteria for stroke care centres delivering endovascular procedures.

Service delivery

Background

Optimal care has been defined as care that is collaborative, of high quality, standardized, effective, and cost effective, carried out by an interdisciplinary team using protocols based on best practices. A growing body of studies/evidence has supported the effectiveness of stroke unit care and rehabilitation in reducing stroke morbidity and mortality. As a consequence, the provision of stroke services and its governance should be organized accordingly, integrating different levels of care.

A hospital network integrated with an ambulance, rehabilitation, palliative care and primary health care (PHC) is not in place. There is no overall design for organization of stroke care within Ukraine.

In Ukraine, the three functional layers of the health-care system are organized in their own way: primary and preventive care, secondary care, tertiary care. **There is no functioning network or protocol for establishing criteria and managing where stroke patients should be admitted or transferred according to their need/clinical picture. The role of an ambulance in managing the stroke network (a partnership with emergency services is critical to the functioning of the stroke network) has been recently reviewed.** In 2020, the MoH approved Order #2203 on the organization of medical care to patients with a suspicion of an acute stroke in the system of emergency medical care. This directive introduces the following concepts: (i) patients should be assessed in the prehospital setting with appropriate tools in order to identify stroke patients; (ii) patients with suspected stroke should be taken by ambulance to hospitals that are part of the stroke network; (iii) hospital prenotification of patients with suspected stroke by emergency medical services (EMS) should be considered to improve stroke time targets and reduce delays in time-dependent therapies.

The NHSU mentioned that, as of 2021, 90% of patients with stroke are in fact being hospitalized in stroke-designated hospitals (they estimate it was 70% before the order was introduced).

There are also governance arrangements, as no one is responsible for the network in each oblast. Tertiary care is often not contracted by the NHSU, and coordination of care across providers is a difficult process, and the NHSU needs tools to enforce it.

Ambulances have a code for stroke: different regions use different dispatch systems and they are not unified as of now. There is a central system where a user can see when the ambulance was called for a suspected stroke patient. A 2020 assessment of EMS in Ukraine noted that there was a significant difference between the way dispatchers and ambulance staff self-reported the most commonly seen emergencies, including stroke, underlining the lack of standardized case definitions. Such a lack of precision on case definitions by dispatchers can result in inappropriate use of limited EMS resources, increasing the burden on the system and negatively affecting its efficiency, as well as impacting on patient care ***(14)***.

Protocols for recognition of the early signs of stroke are not standard practice and are not used routinely. **Patients with acute stroke are taken to the nearest hospital, regardless of the type of service that the receiving hospital can offer**. Stroke patients are usually admitted to a neurological department/ward (total number of neurology beds – 22 234, 5.68 per 10 000 population) only partially dedicated to stroke care (up 20% of patients have other diseases). These may largely differ in terms of the technological resources available (i.e. neuroimaging, laboratory tests, etc.), availability of multidisciplinary teams, clinical protocols and guidelines used by the medical staff. Monitors, anti-decubitus mattresses, infusion pumps and other necessary equipment may not be available. This is despite the evidence that dedicated stroke units lead to better outcomes, and that "care of acute stroke and rehabilitation in stroke units" is one of WHO's recommended NCD interventions ***(15)***. A comparatively large number of neurologists is available (12.9 per 100 000 population), whereas there is a **total absence of speech therapists**. This is due to the fact that **there is no dedicated university/academic training course in Ukraine.** This fact certainly has an impact on the **potential recovery of disabilities linked not only to speech deficits but also to swallowing** that may be due to stroke. **International guidelines recommend that a patient should be evaluated for both language and swallowing disorders within 24–48 hours of the ictal event and, if present, an intervention should be done if possible.**

There is a **draft plan of the MoH on Regulations of the Stroke Network** consisting of three levels of care (stroke-ready hospital,[1] stroke unit, stroke centre). A **WHO consultation was held and support requested for developing national criteria for the stroke unit, stroke centre, interventional neuroradiology department/centre, stroke network**

[1] A stroke-ready hospital is a hospital without a stroke unit; instead, it has an emergency department with stroke expertise and ability to administer thrombolysis for acute ischaemic stroke.

(governance model, ambulance stroke code, interhospital pathway dedicated to patients who are candidates for IV thrombolysis and/or endovascular procedures).

There are no standard criteria to regulate access to rehabilitation/nursing home/palliative care services, if available. There is limited experience in telemedicine and e-health care. **There is no palliative care network. A map of palliative services is available** *(16)*.

Infrastructure and management of stroke care in Ukraine

Background

Acute phase

Dedicated stroke protocols within a facility, multi-professional collaboration, early rehabilitation and stroke nursing protocols are not standard. The centres that participate in international projects (such as the Angels Initiative ***(17)*** and/or ESO–Enhancing and Accelerating Stroke Treatment [EAST] ***(18)***) or those that are involved in training activities promoted by the Ukrainian Anti-Stroke Association are those where stroke protocols, clinical pathways within facility, multi-professional collaboration, early rehabilitation and stroke nursing protocols are present and available but not routinely monitored. **There is no emergency or stroke network, no regional or county clinical pathways by which patients are allocated to different settings of care according to their condition**; there are rare examples of coordination/integration of care crossing boundaries within the acute and post-acute phases.

IV thrombolysis with alteplase (tPA) is available and, as previously mentioned, reimbursed on a DRG basis (around UAH 27 000 (US$ 1000). The rate of alteplase treatment for ischaemic stroke in 2018 was 0.5%, in 2019, it was 0.9%, in 2020, 1.5%, in 2021, 4.5% with a total of 4598 treated with alteplase.[2]

As previously mentioned, **there is no inter-hospital pathway dedicated to patients who are candidates for thrombolysis or endovascular procedures.** There are examples of informal agreements between doctors. In some cases, they organize the transfer of the potential candidate patient without a formal protocol, a collaboration contract among hospitals, or a validated/ acknowledged clinical pathway. **Patients eligible for thrombolysis or endovascular treatment for stroke can be treated only if they are in a centre that has this technique available (thrombolysis and angio-laboratory and neuro-interventional specialist).**

[2] The World Bank requested WHO support in building strategies to increase the number of patients with ischaemic stroke treated with alteplase, the target being 15% of all patients with ischaemic stroke treated with alteplase.

According to a survey piloted in 2019, **521 departments admit more than 50 patients with stroke per year; only 225 of them have access to CT/MRI.** This means that the etiopathogenetic diagnosis (whether it is an ischaemic or haemorrhagic stroke) was made on the basis of only clinical evaluation and without neuroimaging in 268.

In 2021, 240 hospitals have been contracted/accredited with the National Health Service (NHS) of Ukraine (as per 1 December 2021) to admit stroke patients, and an ambulance is supposed to take patients only to these hospitals.

In 2020/2021, **161 new CT scan machines were purchased:** 105 of them are 16- or 32-slice CT scan, 56 of them are 64- or 160-slice CT scan. There is a **distribution/installation plan** covering the whole country, which indicates where, in which hospital and in which region the CT scan machines will be installed. Till 2020, access to neuroimaging was limited not only by the availability of equipment but also by economic barriers: the co-payment system is not standardized, and costs related to neuroimaging for a patient with cerebrovascular disease may vary, depending on the organization of the hospital. In the NHSU-accredited Stroke Hospital, the cost of a CT scan is included in the DRG reimbursement for acute stroke.

In Ukraine, **currently only about 20 hospitals have access to an angiography suite (catheterization laboratory/reperfusion centre) for possible neuro-endovascular procedures for stroke and subarachnoid haemorrhage, and about 50 physicians (mainly neurosurgeons, vascular surgeons and vascular radiologists) have received adequate training to perform endovascular stroke treatment – no certification/accreditation is needed.**

Since 2019, there has been a State programme to purchase angiography machines (where the State pays 50% and the local government 50%).

Both the supply and availability of endovascular devices such as catheters are limited and expired or illegally supplied devices may be present. There are no standardized guidelines or protocols for endovascular treatment. In 2019, the endovascular thrombolysis (EVT) rate was 0.2% of all patients with acute ischaemic stroke; in 2020, the EVT rate was 0.3%, in 2021, the percentage increased to 0.6% with 544 treated with mechanical thrombectomy. **Clinical outcomes of patients who are treated with alteplase or EVT are not monitored, post-stroke patients do not undergo review at 6/12 months, and they are usually managed by the PHC physician. Secondary prevention strategies are not monitored.**

In 2019–2020, the World Bank financed a pilot project to improve stroke care in the country. The project is aimed at 10 hospitals: five are regional stroke centres and five are district hospitals. This is an educational project consisting of online lectures by national stroke experts and practical sessions, including simulation training in the Poltava Simulation Centre.

There are another four international stroke projects active in Ukraine:

1. ESO–EAST project
2. Angels Initiative
3. RES-Q registry
4. MT 2020 – Mission Thrombectomy.

All these projects are promoted and connected by scientific organizations, such as ESO, SVIN (Society of Vascular and Interventional Neurology), SAFE (Stroke Alliance For Europe), to accelerate access to stroke care in Europe (ESO–EAST, Angels Initiative) and globally (Angels Initiative and MT 2020). The projects are financed by scientific societies, EU grants and pharmaceutical unrestricted grants.

Rehabilitation service

A hospital network integrated with an ambulance, rehabilitation service, palliative care and PHC is not in place. Patients with stroke are usually discharged home without a formal follow-up/review appointment, and treatment is continued by the family doctor. Each patient with stroke receives a one-time fee for rehabilitation of approximately $300.

A critical gap in the continuum of care occurs upon discharge, and for individuals requiring assistive products. Upon discharge from a health facility (acute hospital or rehabilitation centre), there is no system of support or follow-up care at the community level. Family members take on this role, or individuals may reach out to a therapist to see them on a private basis *(19).*

Ukraine developed a National Disability, Health and Rehabilitation Plan (NDHRP) in 2015 *(20)*. As a result of systemic analysis and a stakeholder workshop, a set of actions and projects that consider the local workforce and infrastructure was recommended for implementation in Ukraine. Since the agreement regarding the proposed action and project implementation, some significant achievements have been observed, particularly in the implementation of the rehabilitation professions and rehabilitation services.

Rehabilitation professions: the names/definitions of basic rehabilitation professions have been established in the Ukrainian National Classification of Professions to legitimize the existence of such professionals in Ukraine. These are: **physical and rehabilitation medicine physician, physical therapist, ergotherapist, physical therapist's assistant, ergotherapist's assistant.** The necessary training activities and academic curricula have been defined as well for each new rehabilitation profession, as well as qualification characteristics and requirements for employment. **It should be noted that speech therapist has not been considered among the rehabilitation professions to be implemented/developed in Ukraine.** Speech and language therapy does not exist as a profession in Ukraine. Stroke patients with swallowing disorders following a stroke, communication deficits and cognitive limitations do not receive the care they need *(19).*

Other important results obtained in implementing the rehabilitation plan in Ukraine concern the **implementation of the International Classification of Functioning, Disability and Health (ICF) and the rehabilitation services.**

Even though the first legislative steps for **systemwide ICF implementation** were made by the MoH in 2016, after four years, the only major achievement is increasing awareness and knowledge of the ICF and the necessity of rehabilitation assessment. The ICF and ICF Children and Youth (ICF-CY) were translated in Ukrainian in 2018. Three back-to-back ICF train-the-trainers' workshops and some for policy-making stakeholders were held in Kyiv in 2018.

There is no official policy concerning the "**individual rehabilitation plan**" that contains information on all components of the rehabilitation cycle for the individual (i.e. functional assessment, assignment and delivery of interventions, final functional evaluation) to be completed from the beginning of treatment (rehabilitation in the acute setting in case of an acute health condition) and collecting all further information relevant to the rehabilitation process.

Since 1 April 2020, implementation of the Program of Medical Guarantees (PMG) has led to reform at the secondary and tertiary health-care levels. **The PMG includes three packages of programmes for medical rehabilitation**, including for children from 0 to 3 years of age, and for persons with neurological and musculoskeletal conditions. The **NHS dashboard also states that 211 health-care facilities (207 municipal, 4 private) were contracted for neurorehabilitation,** 222 (218 municipal, 4 private) for rehabilitation of musculoskeletal conditions, and 63 (all municipal) for rehabilitation during the developmental age.

A situation analysis of the rehabilitation sector was conducted in September 2020. The analysis focuses on the strengths and challenges of the rehabilitation policy and governance, service provision, financing, information management and human resources ***(19).***

No rehabilitation treatment protocols have been established in Ukraine. There are no stroke rehabilitation guidelines. Order No. 751 provides guidance on creating a unified protocol and developing a new protocol. If a literal translation of a foreign-based guideline is adopted at a hospital, the client must sign every time it is used. One project funded by the United States Agency for International Development (USAID) is investigating the development of clinical protocols for care management for stroke, traumatic brain injury and spinal cord injury ***(19).***

The mental health consequences of stroke, such as depression, cognitive disorders, mood disorders, are not assessed in stroke patients.

Palliative care

The first hospice in Ukraine with 30 beds was opened in Lviv in 1997 (Lviv City Hospice) and, since then, the Ukrainian system of **palliative care (PC)**

has been growing. According to the Association of Palliative and Hospice Care and the Ukrainian Palliative and Hospice Care League, **each year, at least 600 000 people with incurable illnesses need PC** ***(16)***. The conditions for which limited PC services are available are cancer, HIV/AIDS, diabetes and tuberculosis. Family members of patients may need professional assistance: social, psychological and spiritual support. According to the needs recommended by WHO, **there are not enough specialized medical facilities to provide PC** – about 1500 beds, which is just over a third of the need. Only six regions are equipped with PC beds for patients, accounting for two thirds of the need, 12 regions are provided with beds for one fifth to one half of the patients, and the other six have less than one fifth. The development of palliative medicine in Ukraine is limited by legislative and organizational problems. These are:

- lack of a proper PC network;
- lack of a regulatory/policy framework for PC development and implementation at multiple levels;
- lack of dedicated/appropriate infrastructure/facilities;
- lack of appropriate skills and experience in the management of chronic pain syndrome (CPS);
- limited access of patients with CPS to analgesic drugs;
- absence of assortment in the State Drug Formulary of oral opioids, transdermal therapeutic systems and other dosage forms;
- limitation of the maximum daily dose for injections of morphine to 50 mg per day.

Access to medicines

Background

Within its list of best buys and other effective NCD interventions, WHO recommends “treatment of acute ischaemic stroke with intravenous thrombolytic therapy” and “low-dose acetyl salicylic acid for ischaemic stroke” ***(15)***. WHO’s list of best buys and other effective NCD interventions also recommends specific prevention measures relevant to stroke: “anticoagulation for medium- and high-risk non-valvular atrial fibrillation and for mitral stenosis with atrial fibrillation” and “drug therapy and counselling to individuals who have had a heart attack or stroke”. The list of CVD drugs that are available free of charge in ambulatory care include those needed for primary and secondary prevention such as statins, antihypertensive and antithrombotic drugs (Table 1).

Table 1. CVD drugs available free of charge

Acetyl salicylic acid (ASA)	Digoxin	Metoprolol
Amiodarone	Enalapril	Simvastatin
Amlodipine	Furosemide	Spironolactone
Atenolol	Glyceryl trinitrate	Verapamil
Bisoprolol	Hydrochlorothiazide	Warfarin
Carvedilol	Isosorbide dinitrate	
Clopidogrel	Losartan	

Access to drugs for PC is limited ***(16)*** and most patients (80% according to the MoH) who die at home requiring PC do not receive adequate pain relief. **There is a limited range of medicines and medical products for care and they are inaccessible for most patients in PC** (Table 2). Particular attention needs to be paid to the availability of opioids, especially for patients receiving home PC. A small number of pharmacies have the license to produce opioids and psychotropic drugs (187/18 224 pharmacies in the whole country) ***(16)***. Pain killers are not categorized in the **State Drug Formulary** into oral opioids, transdermal therapeutic systems and other dosage forms. The maximum daily dose for injections of morphine is 50 mg/day ***(16)***.

Table 2. An assortment of the trade names of opioids from the group N02A opioids, approved for use in Ukraine

International non-proprietary names	ATC code	Registered dosage forms	Number of registered trade names	
			Unit	%
Morphine	N02A A01	Tablets, solution for injection, oral solution	5	17.2
Oxycodone	N02A A05	Prolonged release tablets	1	3.4
Morphine, combinations (unclear what combinations)	N02A A51	Solution for injection	1	3.4
Fentanyl	N02A B03	Solution for injection, transdermal patches	5	17.2
Trimeperidine (pethidine)	N02A B04	Solution for injection	2	6.9
Dextropropoxyphene combinations (as above) excluding psycholeptics	N02A C54	Tablets	1	3.4
Buprenorphine	N02A E01	Solution for injection, sublingual tablets	2	6.9
Butorphanol	N02A F01	Solution for injection	1	3.4
Nalbuphine	N02A F02	Solution for injection	7	24.1
Tramadol	N02A X02	Solution for injection, capsules	4	14.0
Total	X		29	99.9

ATC: Anatomical, Therapeutic, Chemical (classification system)
Source: (16)

Quality of stroke care in Ukraine

Background

In Ukraine, there are no national registries for CVD or stroke. The existing ACS register is a PCI register only. It contains self-reported, non-personalized data from hospitals, which are not verified and do not allowing tracking of patient outcomes. There are National Statistical Services *(4)* that routinely collect some relevant data for measuring international quality indicators such as in-hospital mortality; however, outcomes are not monitored routinely; other current metrics to potentially measure the quality of stroke care are available (written patient-specific stroke record/ chart available) in some hospitals that admit stroke patients. **Since the 2019 WHO mission, 192 hospitals that fulfil the minimal criteria for stroke care have been contracted by the NHS; however, the clinical outcomes of stroke patients are not routinely monitored. Therefore, there is a major lack in understanding the outcomes and quality of life of stroke patients. In two regions, Poltava and Dnipro, a stroke registry pilot project is ongoing.**

Endovascular procedures such as thrombectomy are not monitored at all, and there is no information about the appropriateness of the clinical indication, timeliness of intervention, periprocedural complications, setting at discharge,[3] and clinical outcomes.

In Ukraine, the principal instruments for ensuring delivery and quality of care in the health-care system are legislative orders issued by the MoH. As is the case with other medical conditions, legislative orders regarding the management of stroke in the various phases of the disease and in the continuum of care have long been out of date. At least three strategies to develop clinical protocols and guidelines have been used in Ukraine over the past 20 years with positive but partial results. Concerning cerebrovascular disease, national clinical guidelines and protocols for stroke are out of date. Since 2016, physicians in Ukraine are free to practise according to international protocols and guidelines, although in the event of a medicolegal dispute, the magistrate refers to the national regulations even if they are obsolete. The scientific community on stroke seems to tend to use Canadian and Norwegian guidelines *(21)*.

Some international guidelines and protocols may have been translated into Ukrainian by Anti-stroke Association members who advocate for the development of a stroke culture and its dissemination in the country. For example, they advocate for the use of clinical scales, and have translated them into Ukrainian, such as the NIH Stroke Scale (NIHSS) and modified Rankin Scale (mRS) to facilitate their use to direct treatment or to monitor treatment goals.

Currently, there is interest in and political commitment to establishing a process for clinical guidelines that meet the country's needs, and a stroke care continuum is high on the MoH agenda. The MoH has established a

[3] "Setting at discharge" means where the patient goes once he/she is discharged from hospital such as home, rehabilitation centre, nursing home, etc.

stroke expert working group that is collaborating with WHO experts to review services, current clinical practice and advice on clinical practice guidelines, treatment guidelines, clinical protocols and care pathways, and implement these in the country.

Communication

Background

The Ukrainian Anti-stroke Society has organized through its website *(22)* various stroke awareness campaigns. Stroke experts participate occasionally on TV talk shows to inform the population about the risk factors of stroke and possible stroke treatment. There is limited experience of regional/national stroke campaigns promoted by national stakeholders. An example of communication activities is when the MoH signed the ESO Declaration against stroke in May 2021 *(23)*.

Building a stroke agenda in Ukraine

In light of the situation analysis, international recommendations and discussions with national stakeholders in 2021, the following proposal was made for building a stroke agenda in Ukraine at the time, with actions directed at the following:

- **Upgrading clinical and organizational skills and capacity-building for the management of stroke and cerebrovascular disease.** These are done by establishing standard operating procedures (SOPs) and implementing best practices from the onset of symptoms (early identification and activation of the patient pathway, early start of rehabilitation, criteria for palliative care, data recording, etc.) to life after a stroke. A guideline selection process must be established to create a "**good clinical practice and guideline platform**" because many medical treatments and diagnoses are still unsophisticated and substandard.

- **Improving the quality of delivery of stroke care along the whole stroke pathway** by establishing a **set of indicators** to effectively monitor and manage provider performance for achieving improved outcomes.

- Reviewing all **potential sources of data** to measure the quality of stroke care according to international indicators and, in a later phase, creating a **comprehensive national registry for stroke and cardiovascular disease (CVD)**. Currently, in Ukraine, there are no national registries for CVD or stroke. The existing acute coronary syndrome (ACS) register is that of a percutaneous coronary intervention (PCI) register, which contains self-reported, non-personalized data

from hospitals and is not verified, and does not allow tracking of patient outcomes.

- **Routinely monitoring CVD and stroke outcomes (mortality and disability measured as per international standard scales such as the mRankin scale):**

  - to benchmark the quality of stroke and CVD care at regional, national and international levels;

  - to improve stroke and CVD services;

  - to efficiently allocate resources;

  - to gain a better understanding of outcomes and the quality of life of stroke patients.

- **Ensuring infrastructure (structure and resources) for stroke management**

  - **ensuring efficient distribution of diagnostics and treatment technology** (population and geographical access criteria);

  - **under the Programme of Medical Guarantees, optimizing relevant service packages** (optimization of acute care and rehabilitation packages);

  - **transferring/building capabilities** for acute stroke services and rehabilitation centres (e.g. establishing, training and enabling employment at health-care facilities for a speech therapist and neurointerventionalist);

  - **upgrading the emergency care system to deliver time-sensitive services for patients with acute stroke,** aiming at establishing/maintaining an unbroken chain of care from the primary health centre to specialized services/hospitals (e.g. developing telemedicine-based support for staff at primary health centres to improve the quality of stroke care; establishing stroke care protocols and SOPs in primary health centres; establishing timely access to safe patient transfer between primary care and secondary and tertiary care).

These proposals remain valid for consideration now while Ukraine considers continuation of health system reforms and prepares for health system recovery.

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WHO/EURO:2022-5641-45406-64977