

HYPERTENSION CARE IN UKRAINE: Breakpoints and Implications for Action

Hypertension (HTN) is one of the leading causes of preventable mortality in Ukraine: while cardiovascular diseases (CVDs) caused 65 percent of deaths, high systolic blood pressure was responsible for 42 percent of total deaths in 2016,^{i,ii} and this rate is the highest in the world (compared to 15 percent in France, 23 percent in China, and Bulgaria with the second highest at 41 percent).

According to Ukraine's Health Index Survey 2017,ⁱⁱⁱ people pay attention to their blood pressure (BP) measurements, and 78 percent of the population reported measuring their BP in the past 12 months. About one third of Ukrainian adults (34 percent) have HTN, but only a proportion of them succeed at reaching normal BP levels when receiving treatment. Behavioural and metabolic risk factors are the most common reasons for the development of HTN in adults.ⁱⁱ

KEY MESSAGES

1. A cascade analysis was conducted to systematically identify the breakpoints along the hypertension (HTN) care delivery chain in two regions of Ukraine. The continuum of HTN care included diagnosis, treatment initiation, blood pressure (BP) monitoring according to the norm, and the attainment of BP control while on treatment.
2. The analysis found significant gaps in detection, treatment monitoring and treatment adherence in the HTN program. The largest breakpoints were BP monitoring at the frequency recommended by the official guideline on HTN management (67 and 71 percent gap in compliance in Lviv and Poltava regions) and achieving normal BP while on treatment (76 and 65 percent gap among patients with BP monitoring data in Lviv and Poltava regions). Estimates of the BP screening gap were uncertain but probably larger in Poltava region.
3. This HTN cascade analysis in two regions presents important lessons and policy implications for HTN care in Ukraine: (1) HTN screening is only the first step in a **sequence of services** the health sector needs to ensure so that HTN patients achieve BP control; (2) Closing the BP screening gap will help **detect HTN early** and link cases to effective treatment; (3) Immediate HTN treatment and systematic follow-up should **focus on patients with stage 2 and 3 HTN** and those with **co-morbidities** like diabetes, in order to prevent poor outcomes; (4) Low rates of **BP control** requires additional attention and effort from care providers at all levels; (5) Comprehensive record keeping of patient risk factors (smoking, BMI, co-morbidities) and appropriate exchange of patient data between levels of care can be improved in order to support decision-making; and (6) There is a need for the development of **systems for managing risk factors related to HTN** in Ukraine for primary prevention, earlier detection of HTN, and successful management of cases.
4. Treatment for BP control is cost-effective in all regions of the world, and in Ukraine improved HTN care **would save lives, reduce disability and save resources in health care.**

BACKGROUND AND RATIONALE

In Ukraine, CVDs have been recognized as a leading burden of disease. Several policy measures have been adopted in response, including reimbursement of drug costs for patients with HTN and establishment of reperfusion centres for acute heart surgery in 2017. In addition, there has been a significant increase in tobacco taxation over the last decade, seen as linked to a 20 percent decrease in smoking rates. Such actions already show positive results in terms of reducing mortality rates among people with heart attacks (reduced death rates in people with Acute Myocardial Infarction by 20 percent in 11 regions of Ukraine^{iv}) and lower numbers of emergency care calls after implementation of the reimbursable drugs program (a reduction of 4.2 percent in reported emergency cases for strokes and heart attacks^v). In addition, an indicator of hospitalization rates measured in the “Serving People, Improving Health” project in seven Ukraine regions has shown a 12 percent drop from 5.95 hospitalizations per 1,000 population in 2015 to 5.32 in 2017.^{vi}

In Ukraine, available data suggests that undiagnosed or uncontrolled HTN is one of the most frequent causes for hospitalization of patients, and uncontrolled HTN significantly contributes to mortality particularly in the population over 50 years of age.

A key recommendation in the HTN guideline^{vii} from the Ministry of Health is for Ukrainian primary care providers to detect HTN early through regular BP measurement of all adults with any identified risk factor (smoking, high cholesterol, excessive body weight, low physical activity, and alcohol overuse). Patients with a systolic BP of 140 or above and diastolic BP of 90 and above should then be examined further to confirm the presence and stage of HTN. Once diagnosed, 1st or 2nd line anti-hypertensive medication should be prescribed. Patients on treatment should monitor their BP level daily and receive additional monitoring through visits to a health care facility. Until the target level of BP is achieved, the patient should visit a physician every 2–3 week. For patients known to have high risk and poor treatment adherence behaviors, the interval of follow up visits should be at least once in a 3-month period. Once BP normalizes, regular monitoring by the primary care provider is recommended every 6-12 months.

Given the long-term monitoring and treatment needs of hypertensive individuals by primary care providers, HTN can be used as a tracer condition for assessments of chronic care and treatment adherence. In Ukraine, available data suggests that undiagnosed or uncontrolled HTN is one of the most frequent causes for hospitalization of patients, and uncontrolled HTN significantly contributes to mortality particularly in the population over 50 years of age (strokes and ischemic heart diseases are responsible for an estimated 48 percent of deaths in adults aged 50-69^{viii}).

The World Bank, with support from the Swiss Development cooperation, implements the technical assistance program “Support to Reforms and Governance in the Health Sector in Ukraine.” The strengthening of primary health care is a core objective. Using HTN as a tracer for chronic care, an analysis was conducted on the continuum of care for HTN in two regions in Ukraine, Lviv and Poltava. The aim was to assess breakpoints in the care cascade and consider priority setting for HTN control. The analysis also provided a 2016 baseline prior to the introduction of a HTN prevention, screening and health sector strengthening program in Poltava region. It took into account the then newly issued recommendation from the Ministry of Health on HTN screening of February 2018.^{ix}

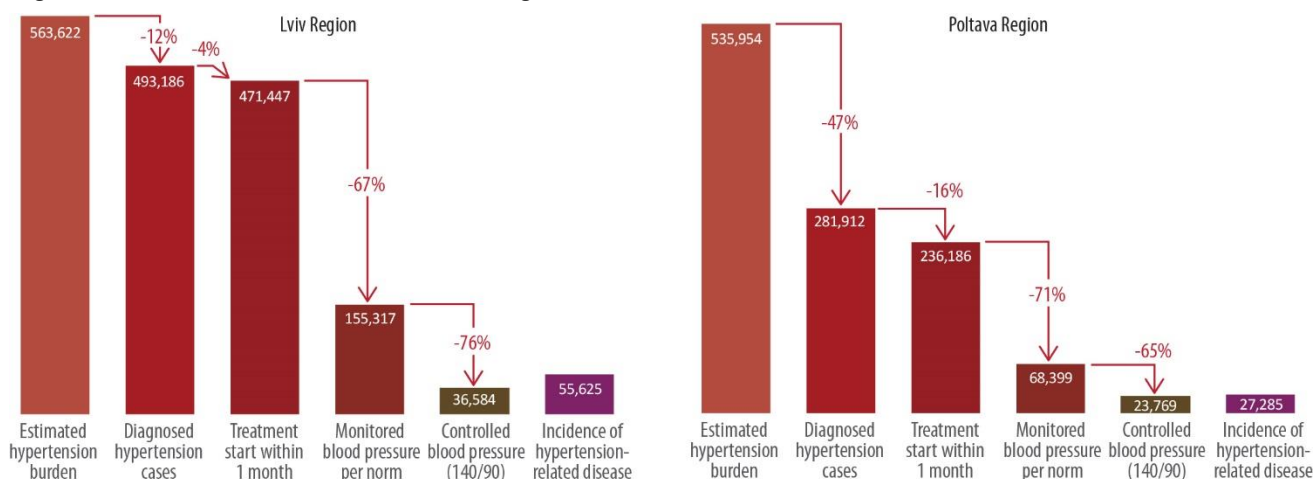
FINDINGS

The cascade analysis showed that main breakpoints in HTN care are: regular and risk-adjusted monitoring of BP levels among HTN patients, the achievement of BP targets, and the systematic monitoring of key parameters in HTN such as body weight, glucose, and cholesterol levels. The presentation of the major gaps in HTN control can be seen in Figure 1, which captures patient losses at all key stages of HTN care in two regions of Ukraine. The most problematic stages are compliance with HTN protocol guidelines for monitoring of patients with HTN, especially those patients with elevated BP while on treatment (67 and 71 percent gap in compliance in the Lviv and Poltava regions) and achieving normal BP while on treatment (76 and 65 percent gap even among patients complying with monitoring in Lviv and Poltava regions).

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There is no recent estimate of HTN prevalence in Ukraine. The 2007 Ukrainian Demographic Health Survey (which measured BP of a sample of adults) reported that about 25 percent of women aged 15–49 and 32 percent of men aged 15–49 can be classified as hypertensive,^x which, if extended to the total adult population, suggests at least one third of the adult population is living with HTN. Since then, no representative survey with BP measurement has been conducted. The estimates for HTN prevalence in the Lviv and Poltava regions as provided by local teams of experts varied, from 28 percent in the Lviv region and up to 45 percent of in the adult population in the Poltava region. The Health Index Surveys of 2017 and 2018 only collected self-reported data on BP measurement at clinics. In 2017, 82 (Lviv region) and 80 percent (Poltava region) of adults reported having measured their BP within the last 12 months. Among these, 21 (Lviv region) and 23 percent (Poltava) had elevated BP, according to the survey respondents. These estimates are similar to the prevalence of HTN based on medical records^{xi} with 24.3 percent of adult patients in Lviv region and 23.7 percent of patients in Poltava region classified as hypertensive.

Figure 1 HTN care cascades for 2016 in Lviv and Poltava Regions



Sources: Lviv and Poltava regional demographic statistics (target to screen), Health Index Report 2017 (questions related to blood pressure); Regional 2016 annual form #12 statistics, Lviv Cardiology 2016 screening campaign report, patient form 025 extract, demographic statistics ambulatory care data from primary care units form 025 (blood pressure screen, screening result, diabetes status, ABC monitoring and records of hospitalization).

Time to treatment: As per guideline, most HTN patients are prescribed treatment on the day of HTN diagnosis, however, some patients have a long delay until treatment is prescribed or initiated. According to our analysis of routine medical records^{xi}, 77 percent (Lviv region) and 79 percent (Poltava region) of diagnosed patients had treatment initiated on the same day of HTN diagnosis and an estimated 84–86 percent had treatment initiated

within the first month after diagnosis (Figure 1). There is a prolonged delay in starting treatment for those patients not initiating same-day. The median delay to treatment for these patients was 6 weeks in the Poltava sample and 3 months in the Lviv sample. Overall estimates showed that **1 in 8 patients diagnosed with stage 3 HTN were not on treatment after 1 month of diagnosis in Poltava region, and 1 in 6 patients in Lviv region.** The analysis did not have any data to assess the two sub-stages within the screening-diagnosis continuum (from positive BP screen to HTN diagnosis), but it is likely that there are patients lost or incurring delays between these two sub-stages.

Figure 2 Stage of HTN at diagnosis in Lviv and Poltava Regions

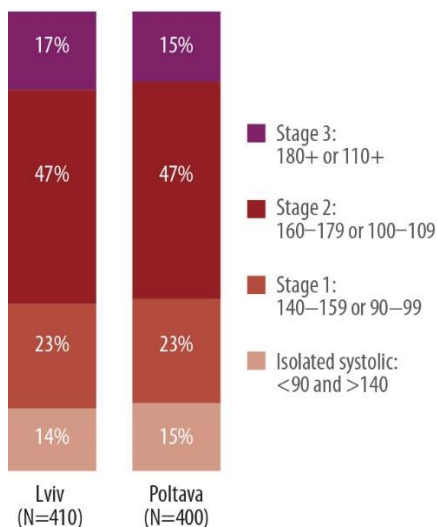
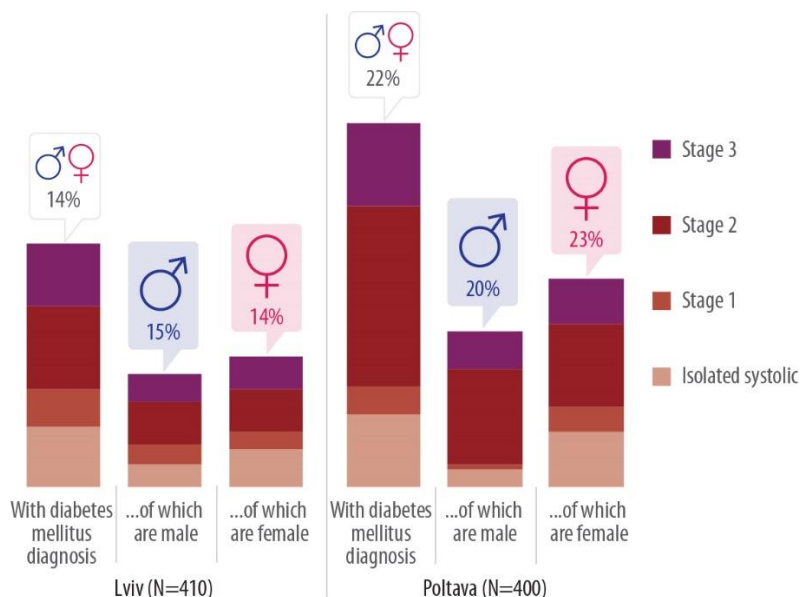


Figure 3 Prevalence of diabetes among HTN patients by stages and sex



Source: Analysis of samples of medical records extracted from ambulatory care cards (form 025) Lviv and Poltava Regions

There were more than 1.6 times more co-morbid HTN/diabetes patients in Poltava region compared to Lviv region.

Roughly two thirds (67 percent) of HTN patients in the sample were not seen by a primary care doctor in accordance with the recommended interval.

Stages and co-morbidity: most patients are diagnosed in stage 2 or 3 of HTN, often HTN diagnosis goes together with overweight and a diagnosis of diabetes mellitus. Almost equal numbers of patients diagnosed with HTN are registered in stage 2 and 3 in the Lviv and Poltava region (64 and 62 percent respectively, see Figure 2). Patients who were overweight (BMI>25) and obese (BMI>30) made up the majority of patients diagnosed with stages 2 and 3 HTN, but there were gaps in data availability between regions: weight and height information was routinely recorded in Poltava region, but less than half of the sampled patient records in Lviv region ambulatories contained this data. Joint diagnoses of HTN and diabetes occurred frequently but there were differences between regions: there were more than 1.6 times more co-morbid HTN/diabetes patients in Poltava region compared to Lviv region, based on patient record data (see figure 3).

Correct BP monitoring of patients in treatment is one of the largest breakpoints based on the frequency recommended by the “Arterial HTN” guideline. Roughly two thirds (67 percent) of HTN patients in the sample were not seen by a primary care doctor in accordance with the recommended interval (within 3 weeks of a high BP measurement and within 6-12 months if the last BP measurement was within the normal range). Adherence to follow up monitoring was much better for patients with a last follow-up BP in the normal range (92 percent compliance in the Poltava region and 89 percent in the Lviv region). HTN patients with elevated BP rarely returned for a follow-up BP measurement within 3 weeks (only 1 in 10 cases in Poltava region and 2 in 10 cases in Lviv region). Data showed that male patients and younger patients below 35 years had especially long intervals between BP

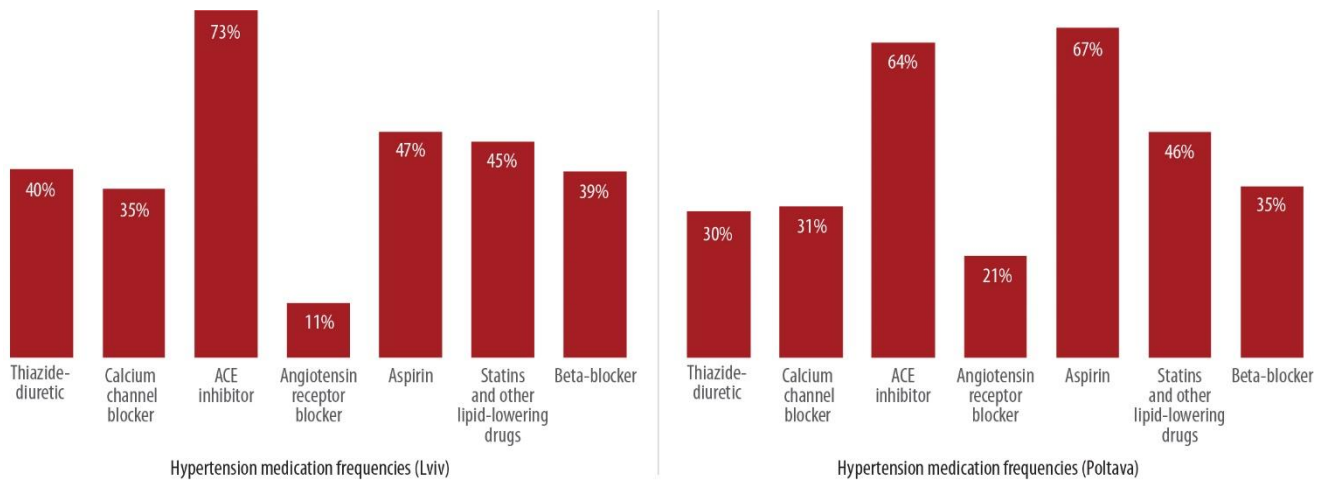
assessments after an elevated BP. In contrast, patients in older age groups and co-morbid patients with diabetes had better follow-up monitoring at provider level.

Treatment strategies (pharmaceutical): Based on patient file review, HTN patients were receiving medical prescriptions that are in line with evidence-based regimens.

Polypharmacy was frequent. Most patients in the sample received 1–3 drug types for HTN management with an average of 3 drugs per patient in each region. The most frequently prescribed drugs were ACE inhibitors, aspirin and statins. However, there were considerable difference in the frequency of prescriptions for certain drugs between regions: patients sampled in Poltava region were prescribed angiotensin receptor blockers twice as frequently as patients in Lviv region, and prescription of aspirin was 20 percent higher in Poltava compared to the Lviv sample (see Figure 4). Polypharmacy (5+ regular HTN medications) among those receiving only HTN treatment^{xii} was higher in stage 3 patients. Predictors of higher numbers of drug types included older age, longer duration of disease and being female.

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Figure 4 Frequencies of HTN drugs prescription in patients in 2016 in Lviv and Poltava regions



Sources: Extracted from ambulatory care cards (form O25).

Treatment strategies (non-pharmaceutical): There was no indication that the diet, exercise and lifestyle advice worked, given the BMI monitoring data. According to HTN guidelines, all HTN patients should receive diet, exercise and lifestyle advice. The analysis looked at changes in BMI over time as an indicator for patients’ adherence to life style advice. Only marginal changes in patients who were overweight or obese could be seen during patient follow up after 6+ months compared to the BMI at diagnosis. In the Lviv and Poltava samples, from all included medical records indicating overweight or obese status of patients at HTN diagnosis, a quarter of patients achieved weight loss of at least 3 percent. However, only 7 percent had a weight reduction of greater than 10 percent which would indicate that the advice was effective for lifestyle change. In contrast, there was a greater number of patients who seemed to gain weight while on HTN treatment; about 14 percent of patients with initial excess weight added at least 3 percent to their baseline body weight (average weight gain in this group was 9 percent).

The majority of HTN patients receive some ABC monitoring^{xiii} (glucose, BP measurement, LDL cholesterol), but only few achieve full ABC control. On average, 73 percent of patients in the Poltava region and 81 percent of patients in the Lviv region have results for all three ABC measurements in their medical records. However, the level of

Among all HTN patients surveyed, only 9 percent had evidence of reaching ABC targets.

achievement of ABC control is low: from all patients with glucose tested within the normal range (A measurement), only 43 percent have BP within the target range (A and B measurements within norm), and only 19 percent also have LDL cholesterol within the target range (A, B, and C measurements within norm). Among all HTN patients surveyed, only 9 percent had evidence of reaching ABC targets.

Diabetes co-morbidity significantly influenced the success of HTN treatment in the sampled patients, by a factor 10 (Poltava) to 13 (Lviv).

The main aim of HTN care – the achievement of normal BP levels while on treatment – is only met successfully by a minority of HTN patients, most patients therefore remain at high risk of HTN-related morbidity and mortality. Among all recorded HTN patients whose BP is monitored as per protocol, only 24 percent in Lviv region and 35 percent in Poltava region achieved the BP target (see Figure 1). Difficulties in achieving the BP target were as common among male as among female patients in both regions. Slightly better rates of BP control were observed in patients aged 35–59 years of age compared to 60+ years old. Most success in achievement of BP control was registered in patients with normal BMI. For instance, in Poltava region, odds of achieving controlled BP were 3 : 1 for patients with BMI<25 compared to patients with BMI>30. In Lviv, the same odds were 1.6 : 1. Diabetes co-morbidity significantly influenced the success of HTN treatment in the sampled patients, by a factor 10 (Poltava) to 13 (Lviv), and this effect was likely a result of multiple factors including higher age and considerable diabetes-related vascular damage.

IMPLICATIONS FOR ACTION

The study, conducted in collaboration with the regional Cardiology and Primary Care Teams, demonstrated the value of **analyzing routine medical record data as well as triangulating data across multiple data sources**. The Ministry of Health, Ukrainian Public Health Centers, Regional Department of Health, care providers and technical agencies should collaborate to strengthen HTN care and chronic care models in general, with focus on the following issues:

- ▶ **Information should be disseminated on the HTN cascade and the identified breakpoints in care, and on the performance of the services regarding treatment initiation, monitoring and outcomes**, which can all guide quality improvements.
- ▶ Patients with HTN usually constitute the largest groups of patients with chronic disease in each primary care practice; therefore, providers at this level **should be fully equipped with knowledge, tools and aids** to provide effective care to such patients.
- ▶ In order to properly monitor patients with HTN, the care teams should **understand patient risk factors and behaviors, establish trust and proactively monitor patients**, especially in more complicated cases who are found to fail treatment targets.
- ▶ **Coordination of care between levels of care, and follow-up especially of severe HTN and CVD cases** need strengthening.
- ▶ The recently published National Guidance on Screening^{ix} needs to be translated into **systems of regular screening of all eligible individuals and local screening targets, and systematic follow up of HTN and diabetes cases** (Box 1).
- ▶ Hospital admission is a frequent outcome of poorly controlled HTN. **Effective management of HTN at the primary care level should translate to better health outcomes for patients and lower the number of avoidable hospitalizations**. Incentives to prevent hospitalizations and better support to patients at most risk should be provided to all stakeholders of the care cycle (patient, primary and secondary care providers).

- ▶ Gaps in data exchange and cooperation between specialized and primary care providers is a possible barrier to achieve better outcomes in HTN treatment and **these gaps need to be bridged with strengthened health information systems.**

Box 1 Global lessons on successful HTN management

BLOOD PRESSURE CONTROL HAS BEEN A CORNERSTONE OF THE PREVENTION OF STROKE, ISCHEMIC HEART DISEASE, AND PERIPHERAL VASCULAR DISEASE FOR DECADES

- ▶ Screening to find hypertensive cases is important for disease prevention
- ▶ Blood pressure control is cost-effective in all regions of the world

RECENT FOCUS IN HTN/CVD CONTROL

- ▶ Improving efficiency of identifying those who will most benefit from treatment
- ▶ How to improve access to medications, especially at the outpatient level
- ▶ How to improve adherence to medications and deliver them consistently

TREND TOWARDS EVALUATING OVERALL RISK RATHER THAN SINGLE FACTOR

- ▶ More cost-effective if overall CVD risk is assessed, not BP or cholesterol levels alone
- ▶ Shifting responsibility for screening to community health workers is effective
- ▶ Concentration on the most at-risk patients (with difficulty to control HTN)
- ▶ Screening by using mobile phone app

REGARDLESS OF SCREENING LOCATION, ONCE IDENTIFIED, MOST PRIMARY PREVENTION FOR ISCHEMIC HEART DISEASE AND STROKE WILL OCCUR IN PRIMARY HEALTH CENTRES

- ▶ Training and skills of primary care personnel is an important factor
- ▶ CHWs can help improve adherence once individuals are on HTN treatment
- ▶ Participation and motivation of patients

Sources: Summarized from Jeemon et al. "Management of Hypertension and Dyslipidemia for Primary Prevention of Cardiovascular Disease" chapter in: Prabhakaran, D., S. Anand, T. A. Gaziano, J.-C. Mbanya, Y. Wu, and R. Nugent. 2017. Cardiovascular, Respiratory, and Related Disorders. Disease Control Priorities, (third edition), Volume 5. Washington, DC: World Bank. doi:10.1596/978-1-4648-0518-9. License: Creative Commons Attribution CC BY 3.0 IGO

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ABBREVIATIONS USED IN THE TEXT

- BP** blood pressure
BMI body mass index
CVD cardio-vascular disease
HTN hypertension

ENDNOTES

- ⁱ Data cited as referred to in An Avoidable Tragedy: Combating Ukraine’s Health Crisis. Lessons from Europe. World Bank, 2009. - 64 p. <http://siteresources.worldbank.org/INTUKRAINE/147271-1089983407712/22234568/DemografiaEngl.pdf>.
- ⁱⁱ Institute for Health Metrics and Evaluation (IHME). GBD Compare Data Visualization. Seattle, WA: IHME, University of Washington, 2017. Available from <http://vizhub.healthdata.org/gbd-compare>
- ⁱⁱⁱ Health Index Survey Report 2017, available online <http://health-index.com.ua/>
- ^{iv} <https://ua.interfax.com.ua/news/pharmacy/502054.html> Reported by the Association of interventional cardiologists of Ukraine based on data from the Registry of Percutaneous Interventions
- ^v MoH reported 17,000 less emergency calls associated with “Dostupni Liky” [Accessible Drugs] program after 1 year of its implementation <http://moz.gov.ua/article/news/dostupni-liky-za-chas-roboti-programi-ukrainci-viklikali-shvidku-na-17-tisjach-raziv-menshe> Online dated 2018-05-25.
- ^{vi} <http://wb.moz.gov.ua/>
- ^{vii} Unified Clinical Protocol of Primary, Emergency and Secondary Medical Care “Arterial HTN”, 2012
- ^{viii} Data from the Institute for Health Metrics and Evaluation GBD 2016 © 2018 University of Washington
- ^{ix} Recommendations for disease screening and periodic examinations at the primary health care level developed by the Ministry of Health of Ukraine. <http://moz.gov.ua/article/for-medical-staff/rekomendacii-schodou-doskonalennja-sistemi-profilaktiki-ta-rannogo--vijavlennja-zahvorjuvan> Online dated 2018-02-02.
- ^x Ukraine DHS, 2007 - Final Report (English) can be found here: <https://dhsprogram.com/pubs/pdf/FR210/FR210.pdf>.
- ^{xi} The sample of medical records used for the analysis included a randomised selection of medical cards in four primary health care centres in Poltava region in November-December 2017 (total of 777 records) and four primary health care centres in Lviv region in December 2017 (410 records). The inclusion criteria were that HTN confirmed latest in 2016 to understand follow up and treatment success patterns.
- ^{xii} Here we only account for HTN drugs not looking into pharmaceutical treatment of other diseases, like Diabetes mellitus or other
- ^{xiii} ABC measurements include: A. Fasting blood glucose: Normal <5.6 (diabetics <6.1 mmol/L*); B. Blood pressure: Normal <140 or <90 (diabetics <130 or <80*); C. LDL cholesterol control: Normal <5 mmol/l (diabetics <4.5 mmol/l*) <100 mg/dL). The target is to achieve all three ABC measurements within norm

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