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Health Systems in Action

North Macedonia
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- provide core information and data on health systems succinctly and accessibly
- outline the country health system context in which WHO’s European Programme of Work is set
- flag key concerns, progress and challenges health system by health system
- build a baseline for comparisons, so that Member States can see how their health systems develop over time and in relation to other countries.

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HEALTH SYSTEMS IN ACTION: NORTH MACEDONIA

Key points

● North Macedonia’s health system provides a relatively comprehensive basic benefit package, with about 90% of the population being covered under the social health insurance scheme.

● Public spending on health has declined in recent years and is among the lowest in South-Eastern Europe. There is strong reliance on out-of-pocket payments which represent 40.4% of total health spending, one of the highest shares in South-Eastern Europe.

● Most primary care services are free of charge but certain health services, in particular outpatient specialist visits, prescribed outpatient medicines and inpatient care, require user charges.

● Catastrophic health spending remains a problem, particularly for poorer households, and is largely driven by out-of-pocket payments for outpatient medicines.

● Unmet needs for medical care due to financial reasons have declined over the last decade but remain relatively high among people on low incomes.

● The fragmented primary care network and the limited scope of practice leads to many referrals to secondary and tertiary care and high avoidable hospital admission rates.

● The information system Moj Termin (My Appointment) has greatly improved scheduling and reduced waiting times for clinical appointments and diagnostic tests, but legal and operational barriers continue to undermine its use in primary care settings.

● Before the COVID-19 pandemic, life expectancy in North Macedonia was below the South-Eastern European average, but higher than in some EU countries.

● North Macedonia was hit harder by the pandemic than many other countries, particularly during the second and third waves. Essential health services were disrupted, but e-health interventions were leveraged as part of the emergency response.

● Childhood immunization rates are high but vaccination coverage for measles in children decreased in recent years. Following a measles epidemic in 2018–2019, catch-up vaccination campaigns were quickly put in place.

● Maternal and infant health improved markedly in recent years, but the quality of prenatal and perinatal health services remains a concern.

● The country faces a high burden of noncommunicable diseases, but mortality from stroke and ischaemic heart disease has decreased in recent years.

● The population is at risk from high blood pressure, smoking, high blood sugar and poor diet, and, to a lesser extent, alcohol consumption. North Macedonia has one of the highest smoking rates worldwide. Increasing overweight and obesity among adults and adolescents, as well as respiratory ill-health due to air pollution, are other major public health concerns.

● The country has started to take concerted steps towards addressing the non-prudent use of antibiotics and strengthening the system for AMR surveillance.

This report looks at the action that North Macedonia is taking to strengthen its health systems; to achieve the Sustainable Development Goals; to address the priorities of the European Programme of Work; and to ensure that no one is left behind.
1 ORGANIZING THE HEALTH SYSTEM

North Macedonia has a centralized health system with a single public payer

North Macedonia’s health system is largely financed through a social health insurance scheme operated by a single-payer Health Insurance Fund (HIF) that acts as the main purchaser of publicly funded health services. The social health insurance scheme is funded through contributions and government budget transfers pooled by the HIF. The Ministry of Health has a central role in the decision-making process in most health-related activities, whereas the Ministry of Finance determines the HIF budget. The most important reforms in recent years were the establishment of the Health Network in 2013 for strategic planning of resources and the deployment of the health information system, called Moj Termin (My Appointment) (see Section 3). Both public and private facilities are part of the Health Network (a network of certified providers defined to ensure geographical access to health) and contracted by the HIF. In February 2019, the Ministry of Health launched a national reform of the primary health care system in line with the Astana Declaration, with the aim to introduce a new primary health care model of integrated and patient-centred care to make further progress towards universal health coverage (see Box 1). The country has introduced public participation in various health policy-making processes, such as in the recently established annual National Health Forums, and during the development of the Health 2020 Strategy and the National Health Strategy 2021–2030, which define the strategic objectives for health development in North Macedonia.

More than 90% of the population have access to a broad benefit package, but cost-sharing can be substantial

In 2009, changes to the Health Insurance Law designated all residents (with identification documents) eligible for public insurance coverage. Since then, health insurance coverage has increased, with about 91% of the population being covered in 2019 (Ministry of Health, 2021). People without insurance coverage are most likely individuals without regular employment or employees who face delays in the payment of their salaries. However, there is some uncertainty over the coverage rate, as it is based on population data from 2002, when the last census was conducted.

The HIF provides a broad basic benefit package that covers emergency care, primary and secondary outpatient care, inpatient care, and preventive and rehabilitation services of providers contracted by the HIF. In addition, the HIF covers some dental and mental health care services, medical devices, prescribed medicines and compensation for sick and maternity leave. Preventive services are available to all residents and are directly paid by the Ministry of Health. Most primary care services are free of charge but certain health services, in particular outpatient specialist visits, prescribed outpatient medicines and inpatient care, require user charges (co-payments) up to a maximum of 20% of the price (50% for medical products). Overall, co-payments are capped at EUR 98 per service and there is an annual income-related cap on co-payments and exemptions for some people in vulnerable situations. However, these protection mechanisms do not apply to co-payments for outpatient medicines and medical products and there are no exemptions from co-payments for outpatient medicines and medical products for low-income households.

About 88% of the HIF’s revenues in 2019 came from health insurance contributions for salaries, as well as contributions from the Employment Agency for the unemployed, the Ministry of Labour and Social Policy for insured persons with social rights, the Pensions and Disability Fund for pensioners and the Ministry of Health for uninsured persons. Transfers from the Ministry of Labour and Social Policy for maternity leave constituted another 8.3% of the HIF’s budget in 2019 (Ministry of Health, 2021). In comparison to some other Eastern European countries (e.g. Bulgaria, Czechia, Poland and Romania), government budget transfers to the social health insurance scheme are relatively small (WHO, 2021a).

Most providers of outpatient care are private

Primary care is mainly provided by general practitioners and family doctors, gynaecologists, paediatricians and dentists, who work in single private practices. They refer patients to higher levels of care using the health information system Moj Termin (see Box 2, in Section 3).
Patients can switch the primary care physician with whom they are registered twice per year. Doctors are required to employ a nurse. However, because of the high administrative workload in primary care practices, these nurses typically perform mostly administrative tasks. Private doctors may also practise in rented office space in 34 publicly owned health centres. Primary prevention services are performed solely by public health physicians and “patronage nurses” (community nurses and midwives) who are paid directly by the Ministry of Health. They provide emergency care, occupational health services, and preventive and health promotion services such as vaccination, regardless of the health insurance status of clients. Patronage nurses perform home visits, provide care for newborns and their families, and also have a role in care for older people in some areas. Primary care accounted for 27.8% of the HIF budget in 2019, and hospitals and specialist physicians amounted to about one third each of HIF expenditure (37.2% and 31.2%, respectively) (Ministry of Health, 2021).

Secondary care specialists are mainly public employees receiving a salary, whereas some are private and have individual contracts with the HIF. Specialists work in health centres, outpatient clinics or hospitals. There are general hospitals in all major towns and three specialized hospitals in the major cities, but all tertiary health care services are provided solely in the capital city of Skopje. Most hospitals are in public ownership, but the share of private hospitals has increased, accounting for 4.3% of all hospital beds in 2019 (Eurostat, 2022).

FINANCING AND ENSURING FINANCIAL PROTECTION

Health spending as a percentage of GDP has declined in recent years

Health expenditure is relatively low in comparison to European Union (EU) and South-Eastern European countries, both per capita and as a percentage of gross domestic product (GDP). Spending on health as a percentage of GDP decreased from 8.9% in 2000 to 7.3% in 2019. Health expenditure per capita in North Macedonia amounted to 1 314 US dollars purchasing-power parity (US$ PPP), which was below the average of South-Eastern European countries (1 649 US$ PPP) but close to the average of upper middle-income countries in the WHO European Region (1 338 US$ PPP) (Fig. 1).

Public spending on health is among the lowest in South-Eastern Europe

Although more than half of health spending comes from public sources (57% of health expenditure), public spending in per capita terms is very low. In 2019, North Macedonia spent 775 US$ PPP on health, the second lowest in South-Eastern Europe (1 107 US$ PPP) after Albania (377 US$ PPP in 2018).

Out-of-pocket payments represent over 40% of total health spending

Out-of-pocket (OOP) spending on health accounted for 40.4% of health spending in 2019, which was far above the average of South-Eastern European (31.3%) and EU countries (20.9%) but slightly below the average of UMIC (44.1%). OOP spending mainly consists of co-payments for services partly covered by health insurance and of direct payments for over-the-counter medicines and health services not covered by the social health insurance scheme. Informal payments, which are common in South-Eastern Europe, are most widespread in gynaecological care and constitute an important portion of OOP spending, but one that is difficult to quantify. High levels of OOP spending, including informal payments, make population groups with low incomes less likely to receive the health services they need.
Voluntary health insurance is purchased by only 0.6% of the population and most of these contracts are for supplementary voluntary health insurance, mainly covering services provided by private hospitals (Dimkovski & Mosca, 2021).

**Unmet needs for medical examination due to cost have decreased but remain high among people on lower incomes**

Self-reported unmet needs for medical examination due to financial reasons decreased from 10.1% in 2010 to 1.1% of the population in 2020, with reductions across all income groups, though inequities remain. Reasons for the overall reduction in unmet needs may be the introduction of an annual income-related cap on co-payments and exemptions from co-payments for some people in vulnerable situations since 2010, as well as improved living standards and greater accessibility of services. However, unmet needs among those in the lowest income quintile stood at 3.1% in 2020 compared with 0.2% in the highest income group. Compared with other European countries, the share of people in North Macedonia who reported unmet needs for medical examination due to cost is close to that of Belgium and Montenegro, whereas the gap between income groups is above the EU average but smaller than in Romania, Greece or Albania (Fig. 3).

The high level of OOP spending and inequities in unmet needs for health care due to cost suggests a negatively reinforcing relationship between income insecurity and...
poor health. Despite recent positive economic trends, unemployment remains high and labour force participation is low, especially for women, people younger than 25 years and people older than 55 years. For example, 18.1% of people between 15 and 24 years were not in employment, education or training, compared with 10.1% in the EU (Atanasova & Shriwise, 2021). Poverty rates continue to be consistently higher in rural than in urban areas, with important regional and ethnic differences (World Bank, 2019). These inequities have a direct impact on access to health care for these groups of people (WHO, 2021b).

High out-of-pocket payments lead to catastrophic health spending, particularly for poor households

Although access and financial protection have improved in recent years, catastrophic health spending remains a problem, particularly for poorer households, and is largely driven by OOP payments for outpatient medicines. In 2020, almost 9% of households experienced catastrophic spending (Fig. 4). This is below catastrophic spending levels in other countries in the WHO European Region and lower than expected in light of the growing reliance on OOP payments.

3 GENERATING RESOURCES, PROVIDING SERVICES AND ENSURING ACCESS

Despite a reduction of hospital beds, there is room for efficiency gains in the use of inpatient resources

The network of secondary and tertiary care providers is well developed but there is large variation in the utilization of capacities across similarly classified hospitals. The number of hospital beds per capita decreased from
Despite the Health Network and the vision to establish a new primary health care model with multidisciplinary and integrated teams (see Box 1), coordination between primary care providers is at present very limited. This is mostly related to lacking incentives for group practices, larger teams or multidisciplinary work, but also to incomplete implementation of the family medicine model (only about one fifth of primary care doctors have the specialty of family medicine or paediatrics) (Martínez & Sanchez, 2018) and the limited scope of practice of physicians and nurses. Primary care physicians are not able to prescribe certain medicines (for example, insulin or statins) or to order specific diagnostic tests (for example, endoscopies, magnetic resonance imaging or computed tomography scans) and need to refer patients with chronic diseases and multimorbidities to specialists. The high referral rate to specialists in turn constitutes a burden for specialist care in health centres, and secondary and tertiary care. Nearly two thirds of hospitalizations in 2017 were potentially avoidable hospital admissions for chronic conditions, including chronic obstructive pulmonary disease (28% of potentially avoidable hospitalizations), hypertension (19%) and angina (17%) (WHO, 2019a). This points to substantial scope for extending the scope of practice in primary care for all health care providers, including nurses.

The primary health care reform (Box 1) aims to improve the scope of practice of nurses, physicians, and other health professionals, and to standardize care through the systematic use of clinical guidelines and protocols for patient transitions, referrals and discharge, accompanied by information technology solutions. The implementation of the community-oriented care model will be monitored and assessed along five tracer conditions that have common behavioural risk factors (diabetes, hypertension, chronic obstructive pulmonary disease, asthma and hypothyroidism) with the aim of expanding the scope of protocols beyond clinical detection and management towards health promotion and disease prevention.

North Macedonia has invested in its health information system, but barriers need to be addressed to leverage its full potential

North Macedonia has set up a nationwide e-health system, originally designed to facilitate making appointments in the hospital sector, called Moj Termin (My Appointment), which has been expanded to cover...
As a part of the country’s response to the COVID-19 pandemic, the process of recording data from laboratory tests in a central database, the epidemiological investigation surveys, and the process of isolation of positive patients and their contacts were completely digitized. The centralization of the data in one database enabled the Ministry of Health and the Institute of Public Health to better plan the health system during this period.

**E-health interventions were leveraged as part of the COVID-19 emergency response**

E-health interventions have also played a crucial role in the country’s emergency response to the COVID-19 pandemic since early 2020. Based on existing infrastructure, telephone consultations for primary care, e-prescriptions for patients with chronic diseases, telemedicine for consultations and a digital roster for health workers were implemented and strengthened. These e-health interventions improved access to essential health services, especially for vulnerable and underserved groups, such as rural communities, migrant groups, older people, people living with disabilities, and refugees. Additionally, an e-module for immunizations was implemented, enabling better monitoring of routine vaccination services, enhancing immunization coverage and paving the way for COVID-19 vaccination roll-out (WHO, 2021a; Tille et al., 2022).

**Numbers of health professionals increased but human resources in health remain scarce**

With regard to human resources in the health sector, there is a persistent lack of physicians and nurses (Fig. 6). However, the number of physicians increased from 269 per 100 000 population in 2010 to 312 per 100 000 population in 2019, approaching the EU average of 382 per 100 000 population. The number of nurses also increased, from 340 per 100 000 in 2010 to 440 per 100 000 population in 2019. In contrast, the number of midwives decreased to 48 per 100 000 in 2019 (Ministry of Health, 2021). Almost 70% of employees in the health sector are publicly employed, with nearly all (97.7%) having regular contracts with social security rights (WHO, 2020a).

Compared with countries in the EU, the ratio of nurses to population is very low, at less than half the EU average (915 nurses per 100 000 in 2019). This might partly be related to the outmigration of nurses and their weak professional position in North Macedonia. Curricula for nurse training are not unified and there are no requirements for continuing medical education due to lack of an accreditation, licensing and relicensing to ensure maintenance of essential health services during the COVID-19 pandemic. **Moj Termin** also aggregates data on individual medical reports (for communicable and noncommunicable diseases) and supports the creation of digital health registers. This system is supporting the new integrated real-time module for early detection of clusters and outbreaks of communicable diseases.

Currently, the population can only access a small part of their electronic health record (that is, vaccination records and recovery certificates). The remaining functions of the electronic health record will be rolled out in phases starting in September 2022 through a new patient portal, available to all citizens as a stand-alone mobile app and through the web.

**Box 2**

*Moj Termin*: the digital backbone of the health system

The Government of North Macedonia has put major efforts into the development of the national system for electronic health records, **Moj Termin** (My Appointment). It was introduced as a pilot in 2011 to improve scheduling and waiting times for clinical appointments and diagnostic tests, initially limited to three tertiary care facilities but soon expanding to public hospitals and primary care providers. **Moj Termin** is now available to all clinicians in the public and private sector. The use of the system is mandatory by law, and they use the system to issue and record, for example, referrals, prescriptions and sick leaves.

In 2012, the Ministry of Health decided to expand **Moj Termin** to include several additional modules, including electronic patient records, referrals from primary care to higher levels of care and to diagnostic services, electronic discharge letters as well as e-prescriptions of pharmaceuticals, linking private primary care providers and pharmacies. A telemedicine platform and digital vaccination records were recently added to **Moj Termin** to ensure maintenance of essential health services during the COVID-19 pandemic. **Moj Termin** also aggregates data on individual medical reports (for communicable and noncommunicable diseases) and supports the creation of digital health registers. This system is supporting the new integrated real-time module for early detection of clusters and outbreaks of communicable diseases.

As a centralized e-health system, **Moj Termin** provides a large collection of data from more than 70 sources, including primary care doctors, health centres, hospitals, institutes, clinics and pharmacies. The data constitute an important source of information with a summary of daily activity of providers and providers’ capacities. However, it is not yet fully exploited for health policy planning and management, feedback and quality improvement (Groenewegen, Bryar & Sanchez Martinez, 2019; WHO, 2019a).
system. As a result, competencies and the scope of services of nurses remain undefined and completed specializations are not rewarded with higher remuneration. This situation reinforces the restricted, non-autonomous practice of nurses and midwives, especially in primary care, and impedes the development of specialist or advanced practice roles. On a more positive note, the age distribution of nurses is relatively young, with 85% of nurses employed in health care institutions under the age of 55 years (Groenewegen, Bryar & Martinez, 2019).

The distribution of primary care providers leads to inequalities in access

As in other countries in Europe, the density of health professionals is higher in urban than in rural or suburban areas. Likewise, the distribution of primary care practices varies widely across regions, which constitutes challenges for equal access to care. In addition, numbers of general practitioners with an HIF contract are decreasing continually (World Bank, 2019). There are no data on the distribution and age structure of secondary specialists but the specialist-to-population ratio increases and there is a trend of specialists moving from the public to the private sector due to better remuneration.

There is good coverage of preventive services but challenges remain with regard to immunization, perinatal care and the prevention of noncommunicable diseases

Preventive health services are usually provided in the 34 health centres across the country. Immunization teams, consisting of a medical doctor and a nurse, immunize children and adolescents in the health centres’ immunization units and dispersed immunization points, as well as through mobile units operating in hard-to-reach areas and in immunization pockets, such as in Roma communities.

Historically, the immunization coverage in the country has been high. However, immunization rates of infants receiving the first dose against measles decreased alarmingly, from 96% in 2013 to 75% in 2019 (compared with an average of 96% in the WHO European Region). In contrast, 94% of all children received the second dose in 2018 (compared with 91% in the WHO European Region). In the aftermath of a measles epidemic in the country in 2018–2019 (with 91.3 cases per 100 000), the government, assisted by WHO, quickly put in place catch-up vaccination campaigns and renewed its efforts to eliminate measles. The country was identified by WHO for priority action, with a focus on an increased commitment to immunization and strengthening vaccine acceptance (Institute of Public Health, 2019a; WHO, 2019c). Since April 2019, vaccination against measles has become compulsory for enrolment in kindergarten and early learning centres.
In addition to gynaecologists, who are responsible for perinatal care services, health centres also have community nursing units that carry out visits of mothers and infants in the postnatal period. Improving mother and child health is a strategic priority for the government (see Section 4). In 2019, the national Safe Motherhood Committee and the Perinatal Mortality Audit Working Group were created to develop and implement an audit system on perinatal mortality, and in 2020 the Perinatal Care Master Plan 2020–2030 for improved health of mothers and newborns was launched to accelerate progress towards achieving the Sustainable Development Goals (see Section 4). The Master Plan focuses on four key strategic areas to achieve the defined goals, namely: services delivery, which includes regionalization and service re-organization by levels of care; infrastructure, equipment, human resources, transport and referral system; quality of care; and health information systems (Ministry of Health, 2020).

Low HIV prevalence with a worrying rise of new cases
Between 1987 and 2018 North Macedonia registered a total of 403 new HIV cases and 99 HIV-associated deaths. However, more than half of new HIV infections (210) occurred between 2013 and 2018. In 2018, all new cases (45) were diagnosed in men, with the majority of infections (84%) being among 20- to 39-year-olds and attributable to transmission among men who have sex with men (82%).

There has been noticeable progress in reaching global UNAIDS 95:95:95 targets: In 2019, 65% of people living with HIV knew their status, 87.8% of those received antiretroviral therapy and 84% of those on treatment had a suppressed viral load (Fig.7). Health centres play a key role in HIV prevention activities, providing information on sexual and reproductive health, conducting educational workshops and offering free and confidential tests for HIV and sexually transmitted diseases. With the end of funding from the Global Fund in 2018, the government assumed the responsibility for financing the HIV programme through a social contracting mechanism of civil society organizations providing these activities. Moreover, the government introduced new preventive measures for men who have sex with men transmission and provides antiretroviral therapy free of charge.

Access to essential health services is increasing
The UHC service coverage index – a global indicator that monitors progress towards Sustainable Development Goal 3 target 3.8.1 on coverage of essential health services – increased in North Macedonia from 57 (out of 100) in 2000 to 68 in 2019, although this still fell short of the average of 77 in the WHO European Region (Fig.8).

The improving performance of North Macedonia is partly due to a declining incidence of infectious diseases such as tuberculosis and HIV/AIDS (Milevska Kostova et al., 2017) (see Box 3). However, an extensive review of perinatal deaths found that quality of care is
suboptimal for pregnant women and during childbirth, postnatal and neonatal care. Providers of antenatal care were found to lack information on screening for several important maternal conditions and there were shortcomings in intrapartum (during labour) and neonatal care (WHO, 2019b). Prevention of noncommunicable diseases and cancer is also underdeveloped.

Life expectancy in North Macedonia has increased, but stays below the average of the WHO European Region

The latest mortality data reported by North Macedonia to WHO refer to 2013. According to these data, life expectancy at birth stood at 75.5 years. Although this was below the averages for South-Eastern Europe and the WHO European Region, it was higher than more up-to-date life expectancy figures for some EU member states (Fig. 9). Female life expectancy was 4.1 years longer than male life expectancy (77.6 years compared with 73.5 years), but this gender gap is smaller than in the WHO European Region overall (6.3 years).

Cardiovascular and cerebrovascular diseases and cancers are the most important causes of adult mortality and morbidity. There was an increase in mortality due to diabetes (7.8%) and specific cancers, in particular lung cancer (21.5%), colorectal cancer (20.5%), pancreatic and prostate cancer, as well as Alzheimer’s disease (48%) between 2000 and 2017 (WHO, 2019a).

North Macedonia has been hit severely by COVID-19, potentially impacting overall life expectancy

The COVID-19 pandemic had a major impact on population health and mortality in North Macedonia. The number of deaths was much higher than in previous years and this excess mortality far exceeded the WHO European Region average (Fig. 10).

By the end of January 2021, 72.8% of all COVID-19 deaths occurred in people with at least one chronic condition. People aged 50–59 years had the highest incidence (6 110 per 100 000 people), but mortality was highest among people above 60, accounting for 78.8% of COVID-19 deaths. While men and women had similar rates of infections, men accounted for 62.8% of COVID-19 deaths. Furthermore, sub-national trends in health inequalities also emerged. For example, in the Polog and north-eastern regions, the COVID-19 incidence was low but case fatality was high compared with national averages, suggesting that COVID-19 exacerbated existing health inequalities (Atanasova & Shriwise, 2021).

Box 3
North Macedonia is on the path towards ending tuberculosis by 2030

Tuberculosis prevalence declined from 18.7 per 100 000 population in 2010 to 9.6 in 2019. Cooperation with the Global Fund to fight AIDS, Malaria and Tuberculosis was crucial for the stabilization of the epidemiological situation. Since 2017, the Government of North Macedonia has been implementing the Strategy for Tuberculosis Prevention and Control, which includes early detection, as well as proper and timely treatment for every patient.
Progress in maternal health has resulted in a reduction of infant and maternal mortality rates

Infant and maternal health is a main focus of national health policies and there have been sustained health promotion activities with regard to infant and maternal health. Maternal mortality decreased from 13 deaths per 100 000 live births in 2000 to 7 per 100 000 live births in 2017, which was below the averages of the WHO European Region (13 per 100 000 live births) and the EU (7.8 per 100 000 live births). Infant mortality rates fell similarly until 2019, but remained above the EU average (5.3 deaths per 1 000 live births compared with 3.4 per 1 000 live births in the EU). The number of perinatal deaths, stillbirths and deaths in the first week of life decreased continuously over the past three decades. After an upsurge of neonatal mortality in 2015, swift action was taken by the Ministry of Health with technical support from WHO, the United Nations Population Fund (UNFPA) and UNICEF, resulting in the national Safe Motherhood Committee, the Perinatal Mortality Audit Working Group and the Perinatal Care Master Plan 2020–2030 (see Section 3).

Fig. 9
Life expectancy in North Macedonia is higher than in some EU member states

Note: Data are for 2019 or latest available year (shown in brackets). No data for 2000 for Türkiye and Bosnia and Herzegovina; data for Georgia for 2000 not shown, as only marginally lower than in 2019. CIS: Commonwealth of Independent States; SEE: South-Eastern European countries. Source: WHO, 2022b.

Fig. 10
COVID-19 has led to high levels of excess mortality

Note: Excess mortality from all causes of death, defined as the difference between the total number of deaths and the number that would have been expected in the absence of a crisis (e.g., the COVID-19 pandemic). This difference is assumed to include deaths attributable directly to COVID-19 as well as deaths indirectly associated with COVID-19 through impacts on health systems and society. Source: WHO, 2022d.
North Macedonia faces a high burden of noncommunicable diseases

Due to population ageing, prevalence rates of noncommunicable diseases are increasing, accounting for about 95% of all deaths in 2016. More than half (61%) of all deaths in 2016 were related to cardiovascular disease and 20% to cancer. Diabetes and chronic respiratory diseases accounted for 5% of all deaths each (WHO, 2019a). Stroke and ischaemic heart disease are the leading causes of death, followed by lung cancer and Alzheimer’s disease (WHO, 2019a). Deaths from stroke and ischaemic heart disease have decreased since the early 2000s, whereas the other causes of deaths have remained relatively stable (Fig. 11).

The National Strategy for Prevention and Control of Noncommunicable Diseases, adopted in 2009, identified the prevention of circulatory diseases as a priority, and emphasized the promotion of healthy lifestyles and strengthening interdisciplinary work in primary and secondary prevention. In 2015, an assessment of the country’s efforts in strengthening the health system for better noncommunicable disease outcomes showed that preventive health services have been built up, but remain fragmented, as public health programmes are narrowly defined and implemented on an annual basis.

Tobacco and unhealthy diets are major risk factors for mortality

Unhealthy lifestyles are major drivers of mortality in North Macedonia. A high prevalence of smoking, high blood sugar levels and unhealthy diets (high consumption of sugar, salt and fat) is estimated to account for nearly three quarters of deaths (Fig. 12). High mortality attributable to high blood pressure (estimated to account for 34.9% of deaths in 2019) indicates substantial scope for action in terms of both behavioural and health system performance dimensions, including the control of chronic conditions at primary care level.

North Macedonia ranks among the countries with the highest smoking prevalence worldwide and the highest average number of cigarettes smoked among adults and young people (Analytica, 2018, 2019). However, smoking rates have declined in recent years, probably due to a 2010 smoking ban in public places, increased unit prices of cigarettes, and improved education and public awareness about the negative health effects of smoking (Box 4). North Macedonia is one of the few countries in the WHO European Region routinely recording patient’s tobacco use status. However, the data on smoking prevalence are not included in national statistics, forestalling the evaluation of measures undertaken. On a more positive note, alcohol consumption among adults per capita (3.8 litres) was far below the average of the WHO European Region and the EU (7.8 and 10.8 litres, respectively in 2018).

Overweight and obesity rates among adults and adolescents are increasing

Overweight and obesity rates among adults in North Macedonia have increased in recent years. Almost two thirds (64.9%) of men and more than half of women (51.2%) were overweight in 2016, compared with 56.3% and 46.7% in 2000, respectively. Half of the adult population are not physically active and only 8.3% of adults practice 150 minutes of moderate physical activity per week, which is far below the EU average of 64% (WHO, 2018). Obesity and overweight among 7-year-old school children also increased between 2010 and 2019, especially among girls, where it increased from 30.9% to 37.8% (Spiroski et al., 2021).

Air pollution is a main risk factor for respiratory diseases among children, and the prevalence of hepatitis remains high

Particulate air pollution as a risk factor for ill-health constitutes an important public health concern in cities and urban centres in North Macedonia. The country has one of the highest levels of air pollution in Europe, in particular in the capital Skopje (EEA, 2020). In 2019, about one in seven deaths (13.7%) was estimated to be due to poor air quality. Prevalence of respiratory conditions (not including infections or pneumonia) is particularly high among children (0–14 years). In 2019,
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39.8% of morbidity in children related to diseases of the respiratory system. Pre-school age children (0–6 years) in urban settings were twice as likely to acquire diseases of the respiratory system than those in rural areas (Institute of Public Health, 2019b).

In contrast to a low and declining incidence and number of deaths attributable to tuberculosis (see Section 3), the incidence of hepatitis B remains 6.5 times higher than the EU average (7.5 and 1.1 per 100 000 population, respectively) despite the introduction of mandatory hepatitis B vaccination for all babies born after November 2004.

There is also scope for improvement in terms of which antibiotics are used. In 2018 North Macedonia did not meet the WHO monitoring target of at least 60% of antimicrobial consumption being from the “Access” category. Almost half of the antibiotics consumed belong to the “Watch” category, which should only be used for a specific, limited number of indications (Fig. 13).

5 SPOTLIGHT ON ANTIMICROBIAL RESISTANCE

Community consumption of antibiotics is comparatively low, but data do not capture privately purchased antibiotics

In 2018, community consumption of antibacterial medicines was 16.7 defined daily doses per 1000 inhabitants per day, which was below most eastern European and some western European countries. However, reported consumption does not include consumption of antimicrobials that can be privately purchased in community pharmacies. Although a national surveillance system for antimicrobial medicines consumption is in place, there are no reporting requirements and monitoring systems for non-prescription dispensing of antibiotics, which leads to underestimates of overall antibiotic consumption.

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Non-prescription dispensing of antibiotics, antibiotic use in hospitals and high rates of antimicrobial resistance are concerns

Concerns in the use of antibiotics include decreasing prices of antibiotics and high prescribing budget ceilings within the capitation payment model. Furthermore, despite strict regulations regarding prescription-only dispensing, it is still possible to obtain antibiotics in community pharmacies without prescriptions. For some medicines, the level of non-prescription dispensing is 50% higher than the quantities dispensed with a valid physician-issued prescription (WHO, 2020b).

Antibiotic use in hospitals is not monitored, because of a lack of reporting requirements and information systems. However, surveys suggest high use of antimicrobials, with almost two thirds of hospital patients receiving at least one antimicrobial agent (WHO, 2020b). The high levels of antibiotic consumption are linked to the lack of clinical guidelines and lack of funding for rapid diagnosis of infectious diseases, leading to diagnostic uncertainty and even misdiagnosis. Moreover, the country reports underusage of blood and cerebrospinal fluid culture diagnostics, especially in regional hospitals (WHO, 2020b, 2020c). The high overall usage of antibiotics might also explain why North Macedonia has the third highest share of patients with bloodstream infections due to methicillin-resistant Staphylococcus aureus in Europe (Fig. 14). However, these data must be interpreted with caution, as they are based on a small number of isolates (WHO, 2020c).

North Macedonia puts significant efforts into tackling AMR and developing a One Health policy approach

With the support of the WHO country office, North Macedonia set up a multi-sectoral working group in 2016 that involves the Ministry of Health and the Veterinary Chamber and follows a One Health approach in which the human and animal health sectors work closely together to tackle antimicrobial resistance (AMR), including through educating the health and veterinary workforce (WHO, 2021c). However, plant health and activities in food production are not yet addressed, and there is no education on AMR for professionals in the farming sector (animal and plant), food production, food safety and the environment. Furthermore, the national AMR strategy is not linked to any other action plans related to human health, such as those on HIV, tuberculosis or sexually transmitted infections.
To address the non-prudent use of antibiotics and strengthen the system for AMR surveillance, North Macedonia set up the National Strategy for Containment of Antimicrobial Resistance 2019–2023. The country also contributes to one of the main international AMR surveillance mechanisms established by the WHO European Region, the Central Asian and European Surveillance of AMR (CAESAR) Network, and is a member of the Global AMR Surveillance System (GLASS) (WHO, 2020c). For rates of antibiotic consumption and resistance to decline, there is a need for effective high-impact policies and measures, including improved surveillance systems, infection prevention and control programmes, ending the sale of antibiotics without prescriptions, rapid testing for patients to determine whether they have bacterial or viral infections, delayed antibiotic prescriptions and mass media campaigns.

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6 EUROPEAN PROGRAMME OF WORK (EPW)

Moving towards universal health coverage

The WHO Regional Office for Europe is supporting North Macedonia’s efforts to build a robust, resilient and evidence-informed health system, as the core of post–COVID-19 recovery. The work on universal health coverage is focusing on improving the quality and comprehensiveness of primary care, including through advancing plans for the national primary care model, as well as improving people-centredness across the continuum of care for communicable diseases, noncommunicable diseases and mental health conditions. WHO has supported the Ministry of Health in its efforts to maintain essential health services during the pandemic by conducting an assessment of the capacity of essential health services, sharing technical information and guidelines, and supporting the piloting of tele-consultations. Another focus is the country’s health workforce. WHO supported the development of national strategies for improving working conditions, with the objectives of retaining and motivating the existing workforce.
Protecting against health emergencies

WHO supported the country in building capacity of national public health laboratories for the detection of SARS-CoV-2, including large-scale procurement of equipment, supplies and personal protective equipment, coupled with the upgrading of servers for surveillance and laboratory performance, as well as regular training on testing, reporting, biosafety and biosecurity. An epidemic intelligence and emergency centre was established, strengthening the capacities to conduct strategic management and monitoring of emergencies, such as communication, coordination and contact tracing. An integrated national database of all national laboratories where testing for SARS-CoV-2 is performed has also been set up.

Promoting health and well-being

A key achievement has been building institutional capacity for improved health outcomes of mothers and newborns through an integrated national approach. A national master plan for perinatal care was developed, detailing a consolidated implementation plan. In parallel, WHO introduced the first-ever perinatal mortality audit in North Macedonia, an essential tool to inform policy-making, planning and monitoring the safety and protection of mothers and newborns.

Strengthening the surveillance, coverage and management of vaccines was identified as another priority. The national electronic immunization database was interconnected with the national e-health records and a reporting system was created that allows for full oversight of the vaccination situation in the country, paving the way for a coordinated and comprehensive COVID-19 vaccination effort.

References


COUNTRY DATA SUMMARY

| Life expectancy at birth (years), both sexes combined a (2017) | 75.5 | 76.7 | 78.3 | 80.9 |
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| Estimated maternal mortality per 100 000 live births (2017) | 7.0 | 11.7 | 12.7 | 6.3 |
| Estimated infant mortality per 1 000 live births (2019) | 5.3 | 5.2 | 7.0 | 3.4 |
| Population size, in millions (2020) | 2.1 | 57.7 | 928.0 | 512.0 |
| GDP per capita, PPP$ (2020) | 16 927 | 27 356 | 35 340 | 44 421 |
| Poverty rate at national poverty lines a (2017) | 21.9 | 22.6 | 14.9 | 17.1 |

a Latest year for which data are available shown in brackets.

Notes: EU: the 28 EU Member States until 2020; GDP: gross domestic product; PPP: purchasing power parity.

Source: WHO, 2022b.


WHO Regional Office for Europe

WHO is the authority responsible for public health within the United Nations system. The WHO Regional Office for Europe (WHO/Europe) covers 53 countries, from the Atlantic to the Pacific oceans.

To support countries, WHO/Europe seeks to deliver a new vision for health, building a pan-European culture of health, where health and well-being goals guide public and private decision-making, and everyone can make healthy choices. WHO/Europe aims to inspire and support all its Member States to improve the health of their populations at all ages. WHO/Europe does this by providing a roadmap for the Region’s future to better health; ensuring health security in the face of emergencies and other threats to health; empowering people and increasing health behaviour insights; supporting health transformation at all levels of health systems; and by leveraging strategic partnerships for better health.

European Programme of Work ‘United Action for Better Health in Europe’

The European Programme of Work (EPW) sets out a vision of how the WHO Regional Office for Europe can better support countries in our region in meeting citizens’ expectations about health.

The social, political, economic and health landscape in the WHO European Region is changing. United action for better health is the new vision that aims to support countries in these changing times. “United”, because partnership is an ethical duty and essential for success, and “action” because countries have stressed their wish to see WHO move from the “what” to the “how”, exchanging knowledge to solve real problems. The WHO European Region’s solidarity is a precious asset to be nurtured and preserved and, through the EPW, WHO/Europe supports countries as they work together to serve their citizens, learning from their challenges and successes.

The European Observatory on Health Systems and Policies

The European Observatory on Health Systems and Policies supports and promotes evidence-based health policy-making so that countries can take more informed decisions to improve the health of their populations. It brings together a wide range of policymakers, academics and practitioners, drawing on their knowledge and experience to offer comprehensive and rigorous analysis of health systems in Europe. The Observatory is a partnership hosted by WHO/Europe. Partners include the governments of Austria, Belgium, Finland, Ireland, Norway, Slovenia, Spain, Sweden, Switzerland, the United Kingdom, and the Veneto Region of Italy (with Agenas); the European Commission; the French National Union of Health Insurance Funds (UNCAM), the Health Foundation; the London School of Economics and Political Science (LSE) and the London School of Hygiene & Tropical Medicine (LSHTM). The Observatory is based in Brussels with hubs in London (at LSE and LSHTM) and at the Berlin University of Technology.