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MISSING HEALTH CARE WORKERS: 21 IMPROVEMENTS



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Summary

In the introductory chapter, publication describes the problem of the shortage of health professionals in the world and in Slovakia in particular. In the remaining sections, it focuses on possible improvements to the problem of health care worker shortages. These improvements focus on both extensive and intensive increases in the availability of health services.

The number of health workers is a globally debated issue. The WHO expects 18 million missing health workers by 2030, mainly in lower and middle-income countries. Two out of five physicians active today in the US will be aged 65 or older in the next decade. Among lower-level health workers (nurses, medical assistants, etc.), 3.2 million are projected to be missing over the next 5 years. In Germany, 14 000 nursing positions in hospitals and a further 8 000 in intensive care units were unfilled in 2021, with 5 000 vacant positions for doctors. Almost half of general practitioners in France reported in 2019 that they were no longer accepting new patients.

While the number of medical doctors in Slovakia has increased by about 13% in the past 12 years, the number of nurses has decreased by about 3%. The proportion of doctors aged 65+ has risen from less than 7% in 2009 to more than 16% in 2020. However, the proportion of young doctors is at least being maintained or slightly increased. In contrast to doctors, however, the proportion of young nurses is declining significantly. The under-40 category accounted for almost 44% of nurses in 2009, but only 22% in 2020. According to the European Commission (March 2020 figure), by 2030 there will be a shortage of more than 3 000 doctors and 9 900 nurses in Slovakia. There are significantly more medical doctors in the Bratislava region (more than 6 doctors per 1 000 inhabitants) compared to other regions (2.5 - 4 doctors per 1 000 inhabitants). While in 2009 there were 27 doctors and 49 nurses per 1 000 people aged 65+, in 2020 there were only 22 and 34 respectively.

We have divided the steps to improve this into two subgroups. One group represents extensive measures, dealing with quantity, i.e. how to increase the absolute number of health workers, or at least maintain or slow their decline. The other deals with intensive measures, i.e. how to produce more services without the need to supply more workers of today's typical medical qualifications.

Extensive:

1. Reform of medical education and postgraduate practice
2. Reflecting on the SAO report on residential studies, setting of goals
3. Exploring the possibility of increasing the capacity of secondary medical schools
4. Reflect the findings of the SAO on secondary education in the health sector
5. Analysis of barriers to the further development of part-time work in the health sector
6. Creating a strategy for recruiting Roma health workers
7. Gradual retreat from the salary automat
8. Improving regulatory conditions for the development of outpatient clinics and clinic networks, allowing for the emergence of more types of contractual networks
9. Programme for the smooth entry of third-country health workers into Slovakia, especially Ukrainian refugees

Intensive:

1. Regular review of the competencies of all actors in the sector to increase participation, including training conditions. The involvement of a large network of pharmacies in health care delivery and a review of compulsory education and the roles of junior health staff are offered as a starting point.
2. Regular audit of bureaucratic obligations in the health sector
3. Introduction of fees at least in the most problematic sectors (ambulance services, etc.)
4. Alternative to the specialist care recommendation ticket
5. Gradual build-up of waiting time databases
6. Simplification of administrative access to treatment (prescription and indication restrictions)
7. Mandatory remote (phone, app) interview before free doctor visit
8. Developing the possibility of reimbursement of relevant treatment abroad
9. Significant strengthening of health and human body education in schools
10. Creating the legal and moral space to involve family members in the delivery of healthcare
11. Preparing the legislative ground for more flexible forms of contracts between providers and health professionals
12. Technology thrives in a system where innovation is not mandated from above, but is sought after by the actors in the system because it gives them a competitive advantage. The spread of innovation in healthcare therefore needs a less directive and more competitive view of the system.

Acknowledgements

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Introduction

The issue of the shortage of health care workers was among the highest topics of the Slovak media during the pandemic. However, it is a long-term problem that resembles a floating iceberg - the biggest part is not yet visible.

The first chapter of this publication describes the problem of the shortage of health professionals in the world and in Slovakia in particular. There have been quite a few statistics and analyses on this topic in recent years, so we focus on summarising the findings so far.

In the remaining sections of the publication, we discuss possible improvements to the problem of health worker shortages. These improvements have several dimensions. We will discuss the increase in the number of staff in the sector, but also the fact that an absolute increase in the number of health workers is rather unlikely in the future. The current healthcare model will have to undergo major internal changes if it is to continue to develop the availability, range and quality of services for people.

Fortunately, improvements lie ahead, we just need to stop being afraid of them.

1 Current and future status

The discussion about health professionals in Slovakia is accompanied by a statement of facts about how many of them have left, are leaving, or are planning to leave abroad. From this, an unbiased viewer might get the impression that this is primarily a problem of Slovakia and similar (Eastern European) economies. However, the number of health workers is a globally debated issue.

1.1 World

A 2017 analysis¹ based on WHO data on global health workforce numbers and expected population health needs concluded that while there were roughly 40 million health workers in the world in 2013, by 2030 there will be a need for 80 million. The real number, based on expected trends, is expected to be only 65 million, implying a global shortfall of 15 million health workers. The WHO itself even writes on its website about an 18 million² shortage of health workers in 2030, mainly in lower and middle income countries.

Not surprisingly, the prospects are worse in developing countries. Africa accounts³ for 24% of the world's disease burden, but only 3% of the world's health workers. In contrast, the two American continents are home to 37% of the world's health workers, while their populations bear 10% of the world's disease burden.

The need for health care workers is not an independent number. It is a function of the maturity of the economy. The United States is clearly the country with the largest resources for health care in the world. Healthcare accounts for almost a fifth of the US economy, which means USD 12 500 per year per person, roughly 2 times more than in Germany. American universities and hospitals provide a fantastic space for medical careers. Yet the American media are full of alarming reports about the shortage of medical professionals. Two out of every five⁴ physicians active in the US today will be 65 years of age or older in the next decade. Among lower-level health care workers (medical assistants, etc.), 3.2 million⁵ employees are projected to be missing over the next 5 years; the number of jobs for nurses is projected to grow the fastest⁶ of any profession in the U.S. economy. Already in 2021, there were 53 open⁷ registered nurse positions per applicant. In 2032, the U.S. is projected to have a shortage of over 120,000 physicians⁸. These are lucrative jobs even by American standards. A registered nurse in the U.S. in 2020 will earn a median salary of \$75,000⁹ per year, a general practitioner \$240,000 and a specialist \$344,000¹⁰ per year.

Similarly, in Germany, 14,000¹¹ nursing positions in hospitals and another 8,000 in intensive care units were unfilled in 2021, with 5,000 positions¹² for doctors. Almost half¹³ of general practitioners in France reported in 2019 that they were no longer taking new patients.

These examples illustrate that the "shortage" of health workers is a much more complex problem than wages or attractiveness of the work environment, and it is a problem that affects the whole world.

1 <https://human-resources-health.biomedcentral.com/articles/10.1186/s12960-017-0187-2>

2 https://www.who.int/health-topics/health-workforce#tab=tab_1

3 <https://www.weforum.org/agenda/2019/07/5-ways-to-bridge-the-global-health-worker-shortage/>

4 <https://www.aamc.org/news-insights/press-releases/aamc-report-reinforces-mounting-physician-shortage>

5 <https://www.hcinnovationgroup.com/policy-value-based-care/news/21241090/mercer-report-healthcare-labor-shortage-will-continue-to-grow>

6 <https://www.ncbi.nlm.nih.gov/books/NBK493175/>

7 <https://www.axios.com/health-care-employment-worker-squeeze-d963ef94-db74-4864-a75c-128f9d58ea27.html>

8 <https://www.aamc.org/news-insights/press-releases/new-findings-confirm-predictions-physician-shortage>

9 <https://money.usnews.com/careers/best-jobs/registered-nurse/salary>

10 <https://weatherbyhealthcare.com/blog/annual-physician-salary-report>

11 <https://www.iamexpat.de/career/employment-news/germanys-shortage-nursing-staff-continues-worsen>

12 <https://www.dw.com/en/doctor-shortage-in-germany-called-acute/a-1071282>

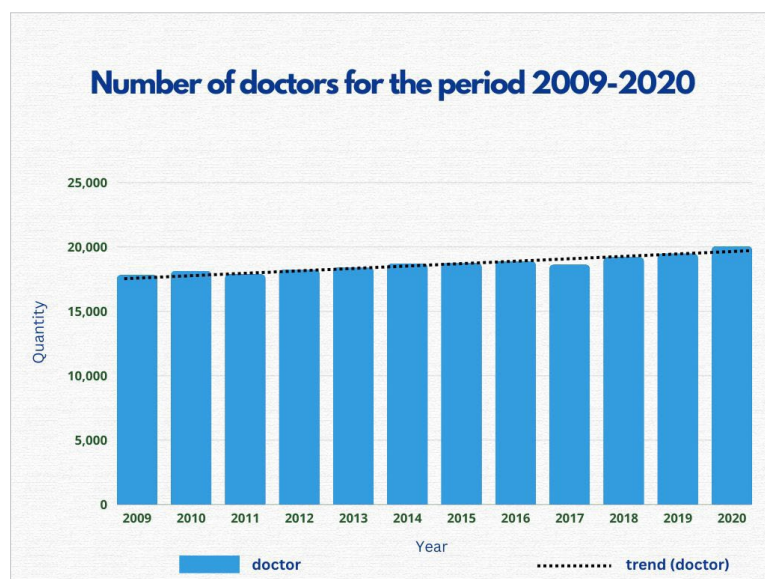
13 https://www.french-property.com/news/french_health/doctor_shortages

1.2 Slovakia

Based on the data processed by the NCZI, in 2020, 114 284 workers (89 364 women; 24 920 men) - natural persons - worked in the Slovak health sector, 74.9% (85 626) of whom were health workers. Within the health professions, nurses accounted for the largest share at 36.9%, followed by doctors at 23.4%, hospital assistants at 6%, pharmacists at 5.3% and practical nurses/health care assistants at 4.8%.

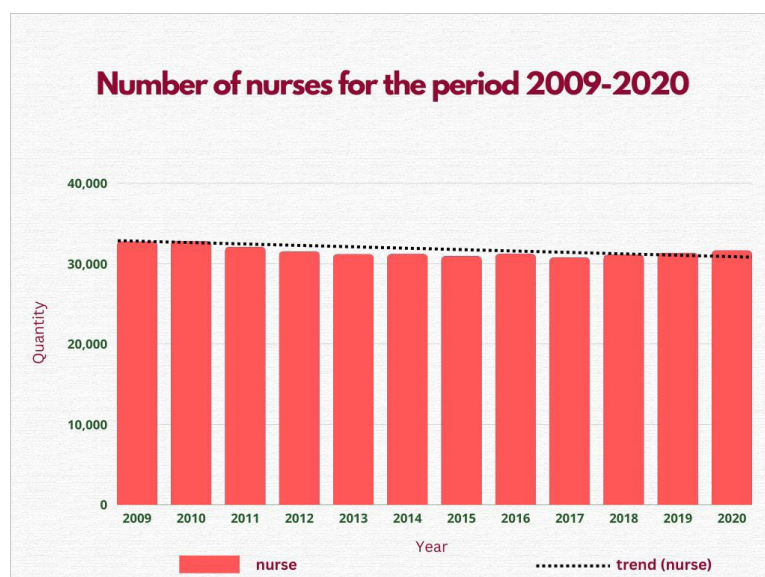
Charts of the number of doctors and nurses and their age composition will help us to get an idea of the current and future development. While the number of doctors in Slovakia has increased by about 13% in the last 12 years, the number of nurses has decreased by about 3%. However, please note that the pandemic year 2021 may shuffle these figures, but the data is not currently available.

Chart 1: Number of doctors for the period 2009-2020



Source: National Health Information Centre (NHIC)

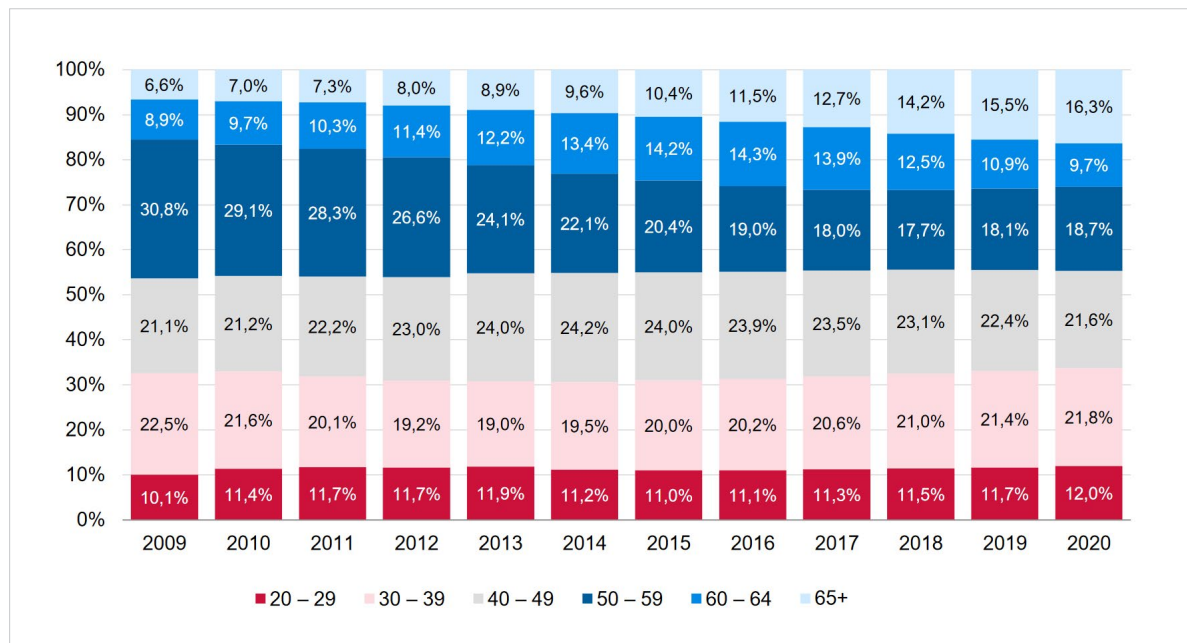
Chart 2: Number of nurses for the period 2009-2020



Source: NHIC

The age structure of both professions is also crucial information, where ageing is evident. The proportion of doctors aged 65+ has risen from less than 7% in 2009 to more than 16% in 2020. In the case of doctors, however, the proportion of younger doctors is at least being maintained or slightly increased.

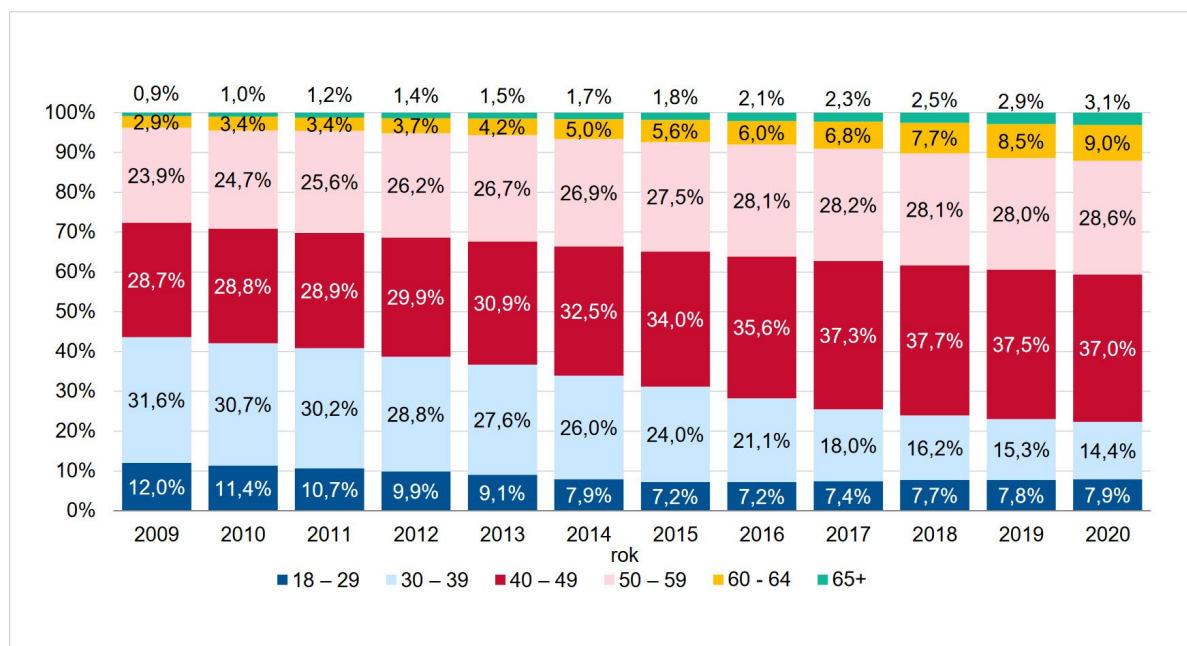
Chart 3: Age structure of doctors for the period 2009-2020



Source: NHIC

The same cannot be said for nurses. Although the proportion of the 65+ category is much smaller than for doctors, it is also growing rapidly. However, in contrast to doctors, the proportion of younger nurses is declining significantly. The under-40 category accounted for almost 44% of nurses in 2009; in 2020, it was only 22% of nurses. The only positive news is the number of healthcare assistants (also known for a while as 'nurse practitioners'), who have grown from 1 100 in 2009 to 4 100 in 2020.

Chart 4: Age structure of nurses for the period 2009-2020



Source: NHIC

It is evident from what has been written that the real decline in the number of health professionals in Slovakia is only just beginning. According to the European Commission (March 2020 figure), by 2030 there will be a shortage¹⁴ of more than three thousand medical doctors and 9 900 nurses in Slovakia. Other sources (mainly professional chambers and associations, or the Ministry of Health) have given other figures¹⁵ in the past. For our purposes, the exact amount is not relevant; it is sufficient to state that the declared shortage in the coming years will be in the order of thousands.

It is not a secret that Slovak health professionals also go abroad. For example, in relation to the Czech Republic, the situation in the last 5 years before the pandemic was relatively stable, at least in terms of doctors. The number of Slovak doctors grew only very slightly during this period. However, the statistics only capture doctors who did not study in the Czech Republic. There are another 4000 Slovak doctors graduated from Czech universities.

Table 1: Doctors with foreign medical faculty in the Czech Republic

	2000	2005	2010	2015	2018	2019	2020	2021
Total	624	1711	1948	2644	3232	3246	3321	3341
Slovakia	524	1564	1679	2008	2218	2223	2241	2223

Source: CZECH MEDICAL CHAMBER (CMC)¹⁶

In addition to the quantitative aspect of the total number of health workers, there are also qualitative aspects. There are significantly more doctors¹⁷ in the Bratislava region (more than 6 doctors per 1 000 inhabitants) compared to other regions (2.5 - 4 doctors per 1 000 inhabitants). In some specialties, there is a combination of above-average shortage of people and very high average age (general medicine, paediatrics, child psychiatry...).

As a share of the workforce, nurses and midwives make up 2.2% of all employees in Slovakia, which is the same as the EU average, similar to Austria (2.2%) the Czech Republic (1.9%) or the Netherlands (2.3%), but less than in Germany, Norway or Finland, where they make up more than 3% of the workforce¹⁸.

1.3 Understaffing? What exactly does it mean?

The term „understaffing“, whether it be of health care workers, train drivers or programmers, is sometimes treated in the media as an objective, independent number. The objective may be a shortage of fuel in the tank (the engine goes out), or oxygen in the blood (the person dies). But in the case of social ‘scarcity’ we are always talking about scarcity against some fabricated ideal. To understand the issue, working with the notion of „medical shortage“ is important, so we’ll stop here for a moment.

External comparison

The lack can be perceived when comparing Slovakia externally with another country. Looking at the relative numbers of health professionals in Slovakia and Western Europe, there is a clear difference in the numbers of nurses, less so in the numbers of doctors. However, the average values (per 1 000 inhabitants) do not

14 <https://www.webnoviny.sk/vzdravotnictve/nedostatok-sestier-a-lekarov-na-slovensku-sa-moze-prehlbit-varuje-europska-komisia/>

15 <https://www.webnoviny.sk/vzdravotnictve/kalavska-sestry-chybaju-avsak-nie-az-tolko-kolko-uvadza-komora/>

16 <https://www.zdravotnickýdeník.cz/2022/02/lekaru-z-ukrajiny-v-cr-pribyva-proti-roku-2010-je-jich-osmkrat-vice/>

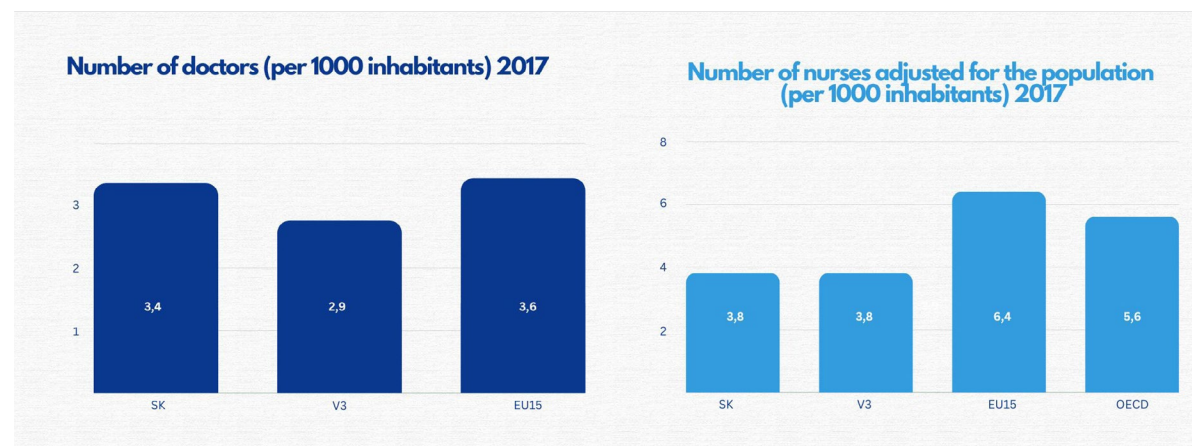
17 <https://www.linkedin.com/pulse/%C4%8Dasovan%C3%A1-bomba-v-lek%C3%A1rskych-ambulanci%C3%A1ch-11%C4%8Das%C5%A5-jozef-mathia/>

18 <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/edn-20200512-1>

capture a relatively wide range of values. For example, the United Kingdom, France, the United States and Canada have fewer doctors than Slovakia (according to WHO data¹⁹).

On the contrary, Belarus, Georgia and Kazakhstan, for example, have significantly higher numbers. In the case of nurses, the only developed country with a significantly lower number is Greece; the vast majority of developed countries have a significantly higher relative number of nurses. The situation is similar for the 'Eastern Bloc', although there are statistical outliers in the Czech Republic and Slovenia, as well as some post-Soviet states (Belarus).

Chart 5: International comparison of health workforce numbers



Source: Health Expenditure Review II²⁰

The careful reader will note that some of the data require closer examination. Especially in the case of nurses and nursing staff, international comparisons are sometimes problematic because countries may report differently on different categories (e.g. registered nurse, health assistant...). Please therefore take exact figures with a pinch of salt; at least approximate proportions are valid.

We summarise the subchapter by stating that the external comparison depends on the framework in which we place Slovakia. At the same time (primarily for doctors), it is true that even a developed country can have a below-average number of health professionals and a functioning health system.

Internal comparison

Another way to identify a „gap“ is to make a comparison within a single country. This can be over time, i.e. a simple trend in the total number of health workers in a country, taking the past as a standard. As we have shown in the graphs above, if we take the recent past as the standard, doctors have increased and nurses (before Covid) have not decreased dramatically. If we stretch the view further into the past, we see a shrinking of the total number of health care workers, but an increase in the number of medical doctors.

19 <https://www.who.int/data/gho/data/themes/topics/health-workforce>

20 https://www.mfsr.sk/files/archiv/44/revizia_zdravotnictvo_2.pdf

Table 2: Evolution of the number of health workers in Slovakia

	1960	1970	1980	1988	2000	2010	2015
Development of the number of workers	59	76	106	127	120	108	106
total for the entire resort	386	173	762	203	773	079	682
Of which doctors together	6 159	9 802	16 198	18 678	19 894	18 110	18 719
Population per 1 doctor	652	463	308	282	272	300	290

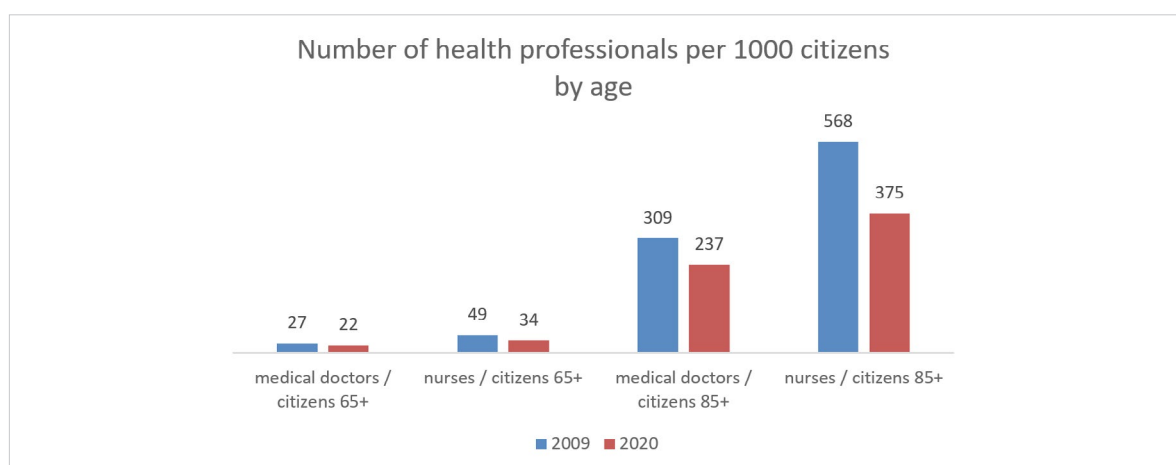
Source: Demolishing myths²¹

We can also make internal comparisons based on existing standards and norms, for example in the form of the number of nurses per existing hospital bed. The number of beds times the normative standard will provide a frame of reference against which the existing and future situation can be compared. The problem with this comparison lies partly in the normative standards (it may change in the future, for example due to new technologies or labour-saving procedures) and mainly in the number of beds. The number of beds may also change substantially in the future, for example with the development of short stay surgery.

Another possibility is to compare the evolution of the workforce not in absolute terms, as shown in the charts above, but in terms weighted by the age structure of the population. Most health care is consumed only at retirement age (a smaller part still in the first two years of life). Therefore, there is a difference between having 5 nurses per 1,000 population with only 100 retirees and 5 nurses per 1,000 people with 300 retirees.

With such a comparison, we already see dramatic changes today. Whereas in 2009 there were 27 doctors and 49 nurses for every 1,000 people aged 65+, in 2020 there are only 22 and 34 respectively. Slovakia is currently in a phase of intense demographic transition, with the 65+ cohort expected to exceed 31% in 2070 and the 85+ cohort even expected to exceed 14% of the population in 2070.

Chart 6: Number of health professionals per 1000 population by age



Source: NHIC, ŠÚ²², INESS calculation

²¹ <https://buraniemytov.sk/2-7-zdravie-a-zdravotnictvo/>

²² http://statdat.statistics.sk/cognosext/cgi-bin/cognos.cgi?b_action=cognosViewer&ui.action=run&ui.object=storeID%28%22i73A51921BEAC4C85B747133F2FF9824A%22%29&ui.name=Vekov%20skupiny%20-%20SR%2c%20oblasti%2c%20kraje%2c%20okresy%2c%20mesto%2c%20vidiek%20%5bom7007rr%5d&run.outputFormat=&run.prompt=true&cv.header=false&ui.backURL=%2fcognosext%2fcps4%2fportlets%2fcommon%2fclose.html&run.outputLocale=sk

Weighting the number of health professionals by the age of the population is a somewhat crude but more than telling method for illustration. To get a more detailed view, it is possible to start by breaking down age into individual diagnoses and their evolution, and weighting the number of health workers by the number of diagnoses.

From healing to improving lives

All the methods of finding shortages presented so far are „mechanical“ - they mechanically compare the numbers of health workers and the amount of tasks they have to perform. However, they do not abandon the existing framework for assessment of healthcare. The latter is strictly medical and works with acts of ‚healing‘. However, societal ideas about healthcare are evolving. People’s demand for what they want to do with their bodies and the state they want them to be in is expanding. Healing is shifting more towards improving life, or more aptly - „treatment“ is changing to „wellbeing“.

The requirement for health services is no longer just to avert death or serious bodily harm. People want to maintain their ability to play sport, be sexually active, their mental well-being or their physical attractiveness for as long as possible. As early as 1948, the WHO defined health as „A state of complete physical, mental and social well-being, not the simple absence of disease or defect“ - but such a definition is unlimited from above (physical and mental perfection cannot be attained), so health solutions are ever expanding.

In practice, on the one hand, this means that the same health professionals are solving an ever wider range of problems (e.g. fixing noses, implanting hair, straightening teeth, helping to achieve higher sporting performance...). On the other hand, it also means an expansion of what we think of as „health services“ - physiotherapists, consulting professionals, but also smart watches or data and artificial intelligence services are being added to clinics and doctors in scrubs. Applying the scale of today’s healthcare sector to the future years away therefore inevitably leads to unrealistic notions of scarcity, for better or worse.

Therefore, in the following we will also use the term „health management“. It encompasses not only medical and health interventions, but also such things as administrative actions, data collection and processing (wearables...), infrastructure (websites...) and anything else related to services around the analysis and improvement of the human body.

Is there a staff shortage?

Quite often we hear statements in the media about the shortage of truck drivers or programmers. However, this is just a rhetorical turn of phrase. Their quantity is directly proportional to consumers’ willingness to pay for their services. Just keep raising the bid price until a driver or programmer becomes available. If we’re not willing to pay that price, it means that other needs are a higher priority for us than transporting goods or programming an app. At the same time, the rising price is attracting new service providers into the industry.

The problem arises when the pricing mechanism is dysfunctional. In the case of programmers, there are almost no barriers. Payments for IT services are unregulated and entry into the industry is open, you just need to know how to code. In the case of truck drivers, the first hurdles appear - entry into the industry is not free (need for a driving licence), there are cross-border restrictions, regulations on vehicles and cargo, etc. However, the demand side is still open - the demand prices for transport services are fully in the hands of the customers.

In the case of healthcare, this mechanism does not work. On the one hand, there are extensive barriers to entry (from education to contracting); on the other hand, the patient has minimal ability to raise the asking price because the amount of resources in the system is determined by the public budget. While providers can theoretically increase the wages of health professionals beyond the legal minimum, in practice they are limited by the total amount of resources that is given by the budget.

However, there are exceptions in the form of more or less fully commercialised sectors, like dentistry. For example, young (under 40) doctors accounted for less than 25% of dentists in Slovakia in 2009, and 40% in 2020. The sector clearly has no problem attracting workers. Similarly, in the case of vision correction or beauty clinics, the abundance of health professionals is not a problem.

In a market economy, there is exactly as much labour as customers will buy. Scarcity only emerges when we start comparing the situation to some hypothetical ideal state (every citizen should have access to healthcare, food, housing...). The attempt to eliminate the perceived scarcity leads to the creation of various measures that distort the supply and demand mechanism (the creation of a centrally planned system) and consequently a scarcity also arises within the existing productive capacity of the economy. In other words, scarcity in such a system is larger but more evenly distributed.

Notwithstanding this theoretical exercise, previous figures have shown us that the current health workforce will change dramatically in the coming years. If the current inertia in the system is maintained, the Slovak healthcare system will quickly reach a state in which the theoretical availability of services will be only paper and many services that are still common today will become unavailable in reality. The problem will not only encompass complex examinations or operations as it does today, but also routine visits to a specialist or general practitioner.

There is no simple, quick and painless solution. A gap is swiftly opening between supply and demand in the health sector, and it cannot be closed by a single law. The original title of the following chapter was ‚solutions‘, but we have changed it to the more realistic ‚improvements‘.

1.4 Improvements

We have divided the steps to improve this into two subgroups. One is extensive, dealing with quantity, i.e. how to increase the absolute number of health workers, or at least maintain or slow their decline. The other deals with intensive changes, i.e. how to produce more services without the need to supply more workers of today's typical medical qualifications.

Sectoral change always comes from below, by entrepreneurs, professionals and customers starting to do things differently than before. Telecommunications was not changed by political reform, but by companies like Ericsson, Nokia and Apple. Transport has been changed by Standard Oil, Ford and Ryanair, and is being changed again by Uber and Bolt. Office work has not been changed by the European Commission's 350-page strategy, but by Google, Microsoft and Zoom. They all succeeded only because customers wanted and allowed it. If there is going to be a revolution in the way healthcare works, it too will come from below. However, it will not happen without the ‚permission‘ of the state. The following points are an example of what that change could look like and what the state can do to bring it about.

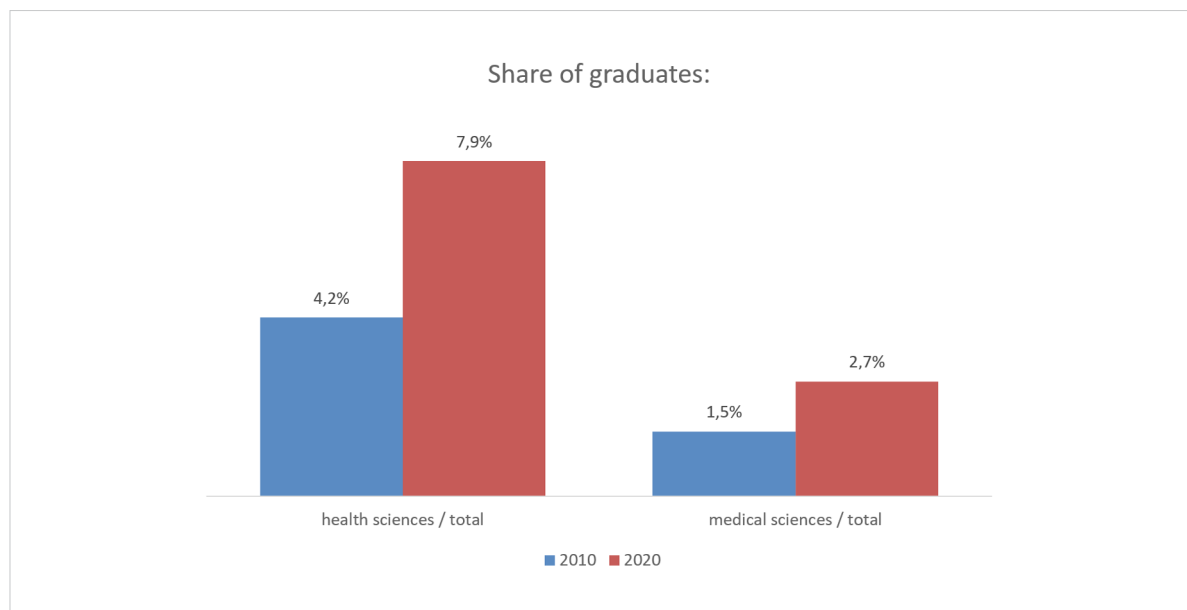
2 More white coats

Changing the absolute number of health workers is the most straightforward step to improve the availability of their services. But it is also a more difficult path. Due to ageing, the working age population will gradually decline, the competition for health professionals is international and it will be difficult for Slovakia to compete with richer countries.

2.1 Education - Doctors

Universities are factories producing health professionals, so the first glance when trying to increase the number of health professionals goes there. Health sciences graduates accounted for 4% of graduates in Slovakia 10 years ago, and today their graduates account for up to 8% of all graduates (after deducting foreigners). If we look at medical sciences alone, the share of 1.5% in 2010 has risen to 2.7% in 2020, again without counting foreigners. Although the total number of university graduates in Slovakia has fallen significantly over this period (from 42 000 to 26 000), the number of graduates in both subgroups has also increased even in absolute terms. Moreover, these numbers do not include graduates from abroad, especially from universities in the Czech Republic.

Chart 7: Percentage of graduates



Source: CVTI

Increasing the number of available places for students at medical faculties will thus have only a limited effect. The proportion of secondary school students who want to pursue a career in health care, especially medicine, cannot grow indefinitely.

Also in the case of recent graduates, the main problems are going abroad and achieving further qualifications (postgraduate). Medics are used as cheap hospital labour in practice during their regular studies and later also during their specialisation studies, they do not get access to new technologies, their older colleagues do not have time for them. Initial financial remuneration is poor and career progression is cumbersome; postgraduate practice is often prolonged. In reality, a doctor is often in his or her 30s by the time he or she starts to function „normally“.

Improvement #1: Reform medical education and postgraduate practice.

The word „reform“ is not a magic wand and does not conjure up more time for trainers or nicer hospitals to wow medics. There is no need to fix our gaze on big changes. There is also space available to make relatively quick and inexpensive changes - to help medics with getting a training place in hospitals, with quick training in administration and IT systems, to introduce mentoring, and so on. However, setting incentives for hospitals in the system is key. It must be the case that the stay of a budding doctor is perceived by the hospital as a benefit not only morally, but also operationally (for example, in the form of a commitment to the student after successful certification). In 2020, there has been a reduction of the specialty training period for some specialties by one year. This should be the long-term goal for all specialties - innovation is also moving forward in education. If the career of a qualified doctor lasts 40 years, reducing the study period by one year means an increase in supply of 2.5%. There are a number of illogical, even absurd, settings in the Slovak system of postgraduate education. For example, non-recognition of work experience when changing specialisation, non-recognition of foreign work experience (often in a better quality workplace than in Slovakia...), restriction of circulation of doctors, low number examinations dates and many others.

Residential study

This model of subsidised places in private practices resident called “residential study” was introduced in 2014, partly following the example of the Czech Republic, where it has been in place since 2009. Residential study does not „produce“ additional doctors, but seeks to make the most critical specialties more attractive. The original setup of this programme targeted only general medicine and paediatrics, as these are purely outpatient specialties for which there is no opportunity to work in a hospital.

In 2021, the Supreme Audit Office prepared an extensive report²³ on the programme, in which it stated, „After six years of implementation of the Residential study, the Ministry of Health of the Slovak Republic is thus unable to tell the public in an accountable and demonstrable manner whether the funds allocated for its implementation have been used efficiently and effectively and what the results of the residential study have actually been. The success of the residential study has not been monitored and evaluated by the Ministry of Health at all.”

The deeper problem of residential study, but also of the various subsidies for the opening of this or that clinic, is its unsystematic character. The public administration tries to get the missing numbers in its spreadsheets by lavishing money and creating various special benefits and schemes. Such efforts are doomed to (un)work accidentally. Several experts consulted for this publication have expressed the need for a major expansion of the residential study, especially due to the reimbursement possibilities that it entails.

Improvement #2: Reflecting on the SAO report on residential studies, setting of goals.

Financial incentives for specialty choice must be systemic. If there is a disproportionate shortage of general practitioners or allergists, their „price“ - how much health insurance companies will pay for their services - must rise. The state should, first of all, realistically set up the network. Residency training should function as a transitional phase with clearly defined goals.

2.2 Education - other health professionals

As we have shown above, the proportion of health graduates in Slovakia today is 8% of all graduates. We cannot expect a massive change in student interest in the near future. Everyone has heard the formula ‘working conditions of health professionals need to be improved’, but its fulfilment is more a question

²³ https://www.nku.gov.sk/documents/10157/1407476/Sprava_NKU_rezidentske+studium+lekarov.pdf/4658b793-6284-4a7e-9dba-cba52ddebe4b

of the managerial skills and professionalism of individual employers in the health sector, rather than a question of a law or an amendment. Similarly, the issue of wage increases is a question of economic resources in the health sector.

In the case of the subgroup of health professionals with secondary education, we can help ourselves to another report by the Supreme Audit Office in 2021, Efficiency and effectiveness of secondary education in the health sector²⁴. This audit was not flattering either. The SAO blamed the absence of strategic documents, the lack of priorities, the disparity of data in analytical documents, as well as the complexity of the system of enrolment of pupils in the first years, resulting from the dependence on the decision-making processes of superior organisations. However, the good news was that the interest in studying health fields (in the schools audited) was more than twice as high as the number of pupils that the schools could admit.

Only the redefinition of some of the requirements for health professionals, which we will mention in the second part of the qualitative improvements, can bring about a more significant change. Greater stratification of competences will also require the definition of training for (new (?) professions.

Improvement #3: Explore the possibility of increasing the capacity of secondary medical schools

Improvement #4: Reflect the SAO's findings on secondary health education

2.3 Conditions for senior health professionals

The high average age of the healthcare workforce means that over the next few years many healthcare workers will face the choice of continuing to work or retiring. But it is not inevitable that this decision will be at the 0-1 level. The health sector will also benefit if the worker decides to continue in retirement on a part-time or even one-third-time basis, possibly under new conditions better suited to their physical capabilities. It is first and foremost the role of employers (providers) to actively look for ways to keep employees in the workforce longer.

Since 2011, the Labour Code has only allowed overtime or night work to be ordered for health workers over 50 with their consent²⁵. On the one hand, this increases the incentive for workers to remain working in the institution; on the other hand, the fixed limit does not reflect the shift in the average age of health workers. However, it is likely that shifting the age limit to compulsory services would increase the incentive for older health workers to leave working in inpatient facilities. The situation will vary from workplace to workplace, so there is room to mention again the need for greater autonomy for providers in operational management issues. However, there is open space for the state to at least look for additional legislative and tax incentives to remain in work at retirement age.

Improvement #5: Analysis of barriers to the further development of part-time work in health care

2.4 Roma communities

The health status of the Roma community is significantly worse than that of the majority, and it is only due to the lower average age of the Roma population that this problem still exists under the surface. Without early intervention, the gradual ageing of the large population of (now young) Roma will place a further burden on the health system, as they will develop health problems earlier than the majority. One of the ways to improve the situation is to provide targeted support for the training of Roma health professionals, where the best response is expected from the community. The USA and Canada, for example, face a similar problem

24 <https://www.nku.gov.sk/documents/10157/265201/96772-0-110.pdf>

25 <https://hnonline.sk/prakticke-hn/419350-nocnu-a-nadcas-mozu-zdravotnici-odmietnut>

in indigenous Indian communities, where efforts are being made to motivate members of these ethnic groups to choose health careers²⁶, albeit with variable results²⁷.

The state's ability to reach Roma communities is negligible, so we assume the role of non-profit organizations. However, the state can be helpful in these activities, for example, by creating materials in Romani, initiating cooperation with various health associations, through secondary health schools, etc.

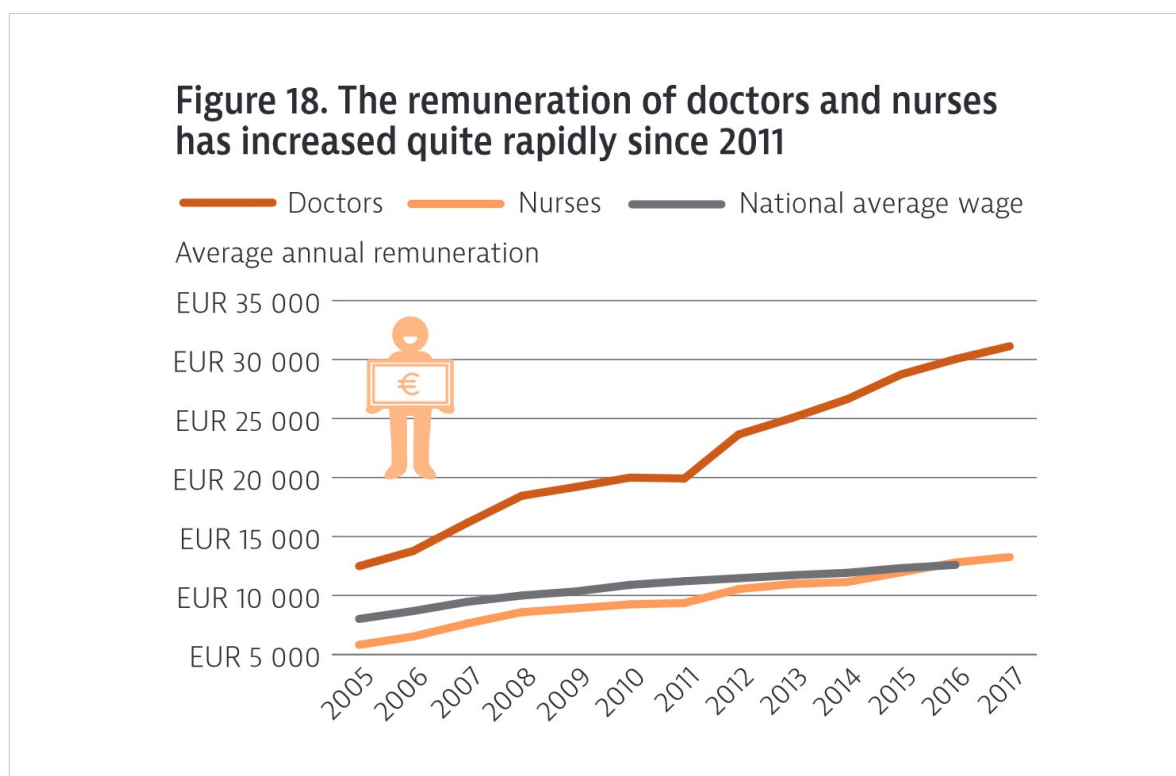
Improvement #6: Create a strategy for recruiting Roma health workers

2.5 Payroll

There are two facts on the issue of wages of health professionals in Slovakia. Firstly, the average wages of health professionals have grown above average over the last 15 years. Secondly, wage growth will have to continue in the face of global competition, despite the fact that these wages will drain an increasing proportion of healthcare finances.

Average physician wages are roughly three times the average wage in the economy²⁸. Wage growth for nurses has been significantly slower, but still above the labour market average.

Chart 8: Comparison of average annual wages in the economy (grey), nurses (orange) and doctors (red)



Source: OECD²⁹

26 <https://www.aamc.org/news-insights/more-native-american-doctors-needed-reduce-health-disparities-their-communities>

27 <https://nunatsiaq.com/stories/article/nunavut-struggles-to-recruit-inuit-health-care-workers/>

28 <http://sozzass.com/wp-content/uploads/2022/01/statistika-rok-2021.pdf>

29 <https://read.oecd.org/10.1787/c1ae6f4b-en?format=pdf>

The onset of the Covid 19 pandemic accelerated wage growth even further (at least temporarily) thanks to the pandemic surcharges. Health workers' wages will continue to rise, but there is already limited scope for further acceleration of this growth. Therefore, the bigger issue is the pay structure. This is built to no small extent on spreadsheets and, like any spreadsheet, this leads to pressure for mediocrity.

Improvement #7: Gradual retreat from the payroll vending machine.

Setting a high threshold for the vending machine does not allow most providers, especially among hospitals, to differentiate pay based on qualitative and quantitative indicators. A system with a vending machine is a system without financial incentives.

In the outpatient sector, the initial costs of setting up an outpatient clinic are a more significant problem than wages. The various subsidies and loans are unsystematic. The logic of territorial contracting of ambulances creates an artificially scarce good (the contracted ambulance) in the market. This is partly mitigated by the possibility to claim reimbursement for (part of) the cost of health care also provided by a non-contracted physician. A longer-term improvement is to modify the system to allow for the emergence of different insurance products with varying degrees of provider contracting (differently sized networks, as in the Netherlands), which would allow even non-fixed contracting practices to compete.

Another branch of improvement is the organization of outpatient practices into larger units (whether through the municipality/local government, or business entities or otherwise structured „platforms“) so as to relieve health workers of managerial business tasks. Regulatory conditions for more efficient functioning of large-scale clinics (rules on telemedicine, ordering, doctor-nurse-administration competences) need to be analysed and then adapted.

Improvement #8: Improving regulatory conditions for the development of outpatient clinics and clinic networks, allowing for the emergence of more types of contractual networks

2.6 Foreign workers

The points described above worked with increasing the number of health workers from domestic „sources“. However, many developed countries have come to understand that increasing the number of health workers is beneficial to the country, no matter what country the health worker comes from. In Slovakia, the discussion so far has been primarily about health workers from nearby countries such as Ukraine or Serbia. Such a view is very short-sighted. The exodus of health professionals from these countries has been going on for a long time, and they, like Slovakia, have a problem with an ageing population. Therefore, many countries are already looking to (especially) Asian countries, where there is a young population with a great hunger for education and career opportunities.

For example, in the Czech Republic, the „Ukraine Project“³⁰ „ has been operating since 2016 to facilitate entry into the labour market for highly skilled employees, including health professionals. The numbers of Ukrainian and other foreign doctors in the Czech Republic have been growing before.

³⁰ <https://www.mpo.cz/cz/rozcestnik/pro-media/tiskove-zpravy/navrh-mpo-na-zatraktivneni-pilotniho-projektu-zvladni-postupy-pro-vysoce-kvalifikovane-zamestnance-z-ukrajiny-byl-schvalen--174110/>

Table 3: Doctors with foreign medical faculty in the Czech Republic

	2000	2005	2010	2015	2018	2019	2020	2021
Total	624	1711	1948	2644	3232	3246	3321	3341
Slovakia	524	1564	1679	2008	2218	2223	2241	2223
Ukraine	16	38	79	261	562	564	607	636
Russia	49	72	98	186	234	236	239	243
Poland	2	11	17	24	37	37	41	42
Belarus	1	4	9	27	34	34	36	37

Source: CMC

In total, there are about 50 000 active doctors in the Czech Republic (the table does not include foreign doctors graduated in the Czech Republic). However, the situation in the Czech Republic is not rosy either. Apart from the obligation to master the Czech language, the approbation exam in five disciplines (in the dimension of the state examinations) takes place on a single day, while ordinary students have state examinations consecutively throughout the year. Approximately 15% of the applicants³¹ in the Czech Republic pass the aptitude test on their first attempt. As in the case of Slovakia, the main resistance to modifying the conditions in the Czech Republic comes from domestic medical interest groups.

The migration of nurses from Kerala, India, to Europe³² has a roughly 50-year tradition. Educational institutions specializing in nursing in India have grown at a breakneck pace in the past decades. While in 2004 there were 187 institutions offering higher nursing education in the country, in 2010 there were already 1 244. Thousands of nurses from the Philippines and other Third World countries are also working in Europe. Former colonial presence is a frequent link (e.g. Indonesians or Surinamese in the Netherlands), but often these are new relationships (e.g. in 2008 there were almost 2 000 Peruvian nurses in Italy). The German Federal Employment Agency has signed³³ an agreement with the Government of the Indian state of Kerala for the recruitment of nurses as part of the „Triple Win” programme. Kerala thus joins Bosnia, the Philippines, Tunisia and Vietnam, which already have an agreement with Germany. There is also great interest in nurses from other countries such as Mexico³⁴.

The invasion of Ukraine and the subsequent refugee crisis is bringing historically unprecedented numbers of refugees to Slovakia. Some of them are also health professionals of various degrees. Any Slovak bemoaning of their involvement will be very short-sighted. If we do not give them a chance here, other countries will very quickly jump at them. Unfortunately, their inclusion is often most strongly resisted from within the sector.

Improvement #9: Programme for smooth entry of third-country health workers into Slovakia, especially for Ukrainian refugees

31 <https://www.e15.cz//domaci/ukrajinske-zdravotniky-ceka-v-cesku-karierni-propad-zustanou-bez-ministerske-vyjimky-1388568>

32 <https://www.mea.gov.in/images/pdf/InternationalMobilityofNursesfromIndia.pdf>

33 <https://socialeurope.eu/germanys-reliance-on-its-healthcare-brown-angels>

34 <https://www.dw.com/en/germany-looks-abroad-for-nurses-caregivers/a-54576126>

3 There will not be more health care workers

We begin this chapter with bad news. There will not be more health professionals in today's terms, given the needs in the coming decades. Even if large-scale changes can be pushed through that would mean an increase in those interested in the job, the work of today's health professionals into deep retirement, the return of emigrant health professionals, and the arrival of foreign health professionals in Slovakia, similar reforms will happen in countries around the world. At best, we can optimistically hope that the total number of health professionals will be about the same as it is today. However, it is certain that health needs will increase. The number of traditional health professionals per "need" will thus decline inexorably. This is a fact that no reform, government or politician can move.

But good news immediately follows. In a market economy, productivity grows non-linearly. With the right mix of labour, capital and innovation, it is possible to achieve significant productivity growth. It is possible to achieve a situation where more services are available to meet health management needs without increasing the absolute number of people now referred to as 'health professionals'. In the following subsections, we present some ideas and improvements to achieve this.

To help the reader better understand the intent of this chapter, we will use a personal anecdote from the author. At the height of the pandemic, the author's relative was approaching her deadline for her next dose of the tick-borne encephalitis vaccine. The process for completing this was as follows: several attempts to phone the GP until a response came. Electronic prescription only at the patient's request is impossible, personal visit the GP is necessary. After a considerable wait in the outpatient clinic and looking at the patient's paper records, an electronic prescription was issued. Vaccine picked up at the pharmacy, stored in the home refrigerator, later waiting again at the doctor's office, until the vaccine is injected and finally entering it into the records (thankfully electronic this time). The result was several hours of time spent on the patient's part and roughly half an hour of the doctor and nurse's time, fragmented into several phone calls and write-ups.

The vaccine could be dispensed by a pharmacist (*competence*), on the basis of authorised (*privacy*) access to the customer's electronic health record (*e-data*) and automated assessment of the data therein (*artificial intelligence*), or on the basis of informed consent (*emancipation of the patient*). The vaccine could also be administered directly by a pharmacy worker and recorded in the patient card (again, *competences*). The customer would not pay anything for the vaccine, because he would apply it directly to his insurance company's benefits (*vertical integration*). However, someone must first discover this chain of events (*profit-driven business discovery*) and bring it to life (*investment*).

This is just one example among thousands of healthcare activities and processes that can save many hours of precious time of health care professionals. To make as many such changes as possible, it is not enough to change one law, but we need to start looking at the production of health management services through a new lens. The following is an overview of the improvements that could bring about such a shift.

3.1 Change of competences

Competence is one of the magic words (like "entitlement" or "patient's interest") that is much talked about but little done in Slovak healthcare. One of the fundamental problems is that discussions about competences often go round in circles. An example is the competences of general practitioners. Most of the sector agrees that their competences should be greater, in order to increase the attractiveness of this specialisation in the eyes of medics, but also the efficiency of the system as a whole. However, the moment we start to increase the competences of existing GPs, we run into the problem that there are too few of them and the additional tasks would overburden them even more.

Changing competencies within a closed group will at most help to put out some local fires (if there are fewer cardiologists than internists, some of the work will shift from one shoulder to the other). But the basic point of changing competencies must be to expand the pyramid of people who provide health management services. The obvious way is to shift competencies within health care delivery vertically from the highest qualification (medical) to the lower ones (assistants, clerical staff). It is also important to shift (or at least clarify) competences horizontally, for example between doctors and pharmacies, or between social and various community support providers.

Many competencies in healthcare are “cemented” by both relevant and perceived patient safety concerns. These rules need to be regularly re-evaluated, both on the basis of innovation (e.g. new patient monitoring options) and on the basis of reality on the ground (acute shortages). Often, however, there are battles between interest groups within the sector, as we could observe in the quarrel between GPs and specialists over prescribing in February 2022³⁵.

A nice example of how small competency changes can affect the availability of labour was seen in the experiment with “practical nurses”. These were created by the renaming of healthcare assistants in 2018, whose scope of practice had changed prior to that, in 2017. According to the Association of Secondary Schools of Nursing, the number of applicants to study to become a healthcare assistant/practical nurse in 2020 was 40% higher than in 2018. The increase in applicants is also indicated by the SAO in its report³⁶, although it does not provide a figure. In 2021, the renaming of nurse practitioners as health care assistants was reversed due to opposition from interest groups and non-compliance with European standards. The impact of these retrospective changes on student interest is not yet known.

A foreign example is the vaccination against Covid 19 in the USA. In addition to traditional locations (clinics) and large-scale vaccination centres, retail chains (Walmart, CVS) were quickly involved in vaccination. In the interest of rapid vaccination, vaccines could be administered by pharmacists, pharmacy technicians, and in some states, even interns under the supervision of pharmacists or veterinarians³⁷.

If the aim is to increase the availability of services, the system must be set up to continuously reassess competences with the predefined aim of extending them. For example, an accredited hospital assistant course in the Czech Republic lasts 180 hours (100 hours of theoretical training, 80 hours of practical training), a hospital assistant in Slovakia must have completed secondary education in the field according to the current legislation³⁸.

The question of the formal involvement of untrained doctors also remains open. If a medical student has successfully completed 3-4 years of medical school but has not completed relevant (nursing) high school, his or her education is considered nil.

However, greater ‘stratification’ of competences is the key. For example, the UK knows of up to three types of ‘instrumentalist’ (in the surgical theatre) - surgical care practitioner, operating department practitioner, theatre nurse. The basic role of these professions is similar (procedural and technological management of the patient and the theatre before, during and after surgery), but the level of competence differs, as does the level of education or experience required. Similarly, in the USA they know both surgical assistant and surgical technologist. The higher level of competence typically requires a university degree, but for the lower level, a 1-2-year post-secondary course and possible internship/job shadowing in the field is sufficient. This stratification of competencies has several advantages - it saves the time of more expensive staff, allows for the involvement of lower educated staff in more challenging tasks, and allows for long-

35 <https://ekonomika.sme.sk/c/22818614/zmena-podmienok-predpisovania-liekov-poskodi-pacienta-i-lekarov.html>

36 <https://www.nku.gov.sk/documents/10157/265201/96772-0-110.pdf>

37 <https://www.healthaffairs.org/doi/10.1377/forefront.20210303.890600/full/>

38 <https://dennikn.sk/blog/2529213/bez-reformy-vzdelavania-sa-nepohneme/>

term career growth (education for higher level competencies can usually be completed while working at a lower level). However, the layering of competences must not only occur at workplace level, but must start at training level.

Compulsory education does not necessarily have to be tied to years long attendance. In the UK, for example, there is a Healthcare assistant category whose certification consists of a course (which can be taken online) and a six-month internship³⁹. As an HA (but also as a Dietetic Assistant or Maternity Support Worker, for example) you can later qualify as an Assistant Practitioner⁴⁰. Clear career progression opportunities thus increase the attractiveness of even the most basic health professions, with practice being the key, not the number of hours clocked up at school. In the case of Slovakia, it is possible to explore, for example, the scope for paramedics to practice in hospitals in the emergency room and so on, or the scope of competences of future paramedics during their practice/study.

There is a specific English term for the pragmatic approach of involving new staff in health processes - task shifting; the less provocative term task sharing⁴¹ also appears in more recent literature. WHO defines task shifting as "the rational redistribution of tasks within health teams" and has official recommendations and guidance on it⁴². Task shifting is mentioned primarily in the context of developing countries, often with an emphasis on community-based HIV monitoring. Several examples can also be found in the field of ophthalmology, where screening for diabetic retinopathy or glaucoma in the population is helped (for example by measuring intraocular pressure) by nurses⁴³, or even by trained lay people within their communities⁴⁴.

In poor countries, where access to health care is significantly lower than in the West and the regulatory environment is looser, there is more room for experimentation. But in recent years, this phenomenon has increasingly emerged in developed countries as well. A 2020 meta-study⁴⁵ analysed 21 studies looking at task shifting, with only two studies from lower- and middle-income countries. Roughly two-thirds of the studies looked at task shifting to nurses and one-third to pharmacists. They tracked task shifting in the management of chronic patients (hypertension, diabetes, HIV/AIDS), but also shifted prescribing authority to nurses and pharmacists⁴⁶.

The lesson of competency modification or task shifting can be summarized in three points: new categories of health professionals, skills upgrading linked to competency upgrading, family involvement in health activities.

Improvement #10: Regularly review the competencies of all participants in the sector to increase engagement, including training conditions. Involving a large network of pharmacies in health care delivery and reassessing mandatory education and roles for junior health staff, including the creation of entirely new roles, is offered as a starting point.

3.2 Administrative activity

One way to increase the availability of skilled workers is to take administrative and low-productivity work off their shoulders. By administrative work we can think of reporting and various paperwork (sick leave confirmation, etc.). But there may also be less obvious, broader duties involved. To quote Peter Stachura,

39 <https://www.healthcareers.nhs.uk/explore-roles/healthcare-support-worker/roles-healthcare-support-worker/healthcare-assistant>

40 <https://www.healthcareers.nhs.uk/explore-roles/wider-healthcare-team/roles-wider-healthcare-team/clinical-support-staff/assistant-practitioner>

41 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5767666/>

42 https://www.who.int/workforcealliance/knowledge/resources/taskshifting_guidelines/en/

43 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5767666/>

44 <https://hbr.org/2018/07/task-shifting-could-help-lower-costs-in-u-s-health-care>

45 <https://www.tandfonline.com/doi/full/10.1080/13814788.2021.1954616>

46 <https://pubmed.ncbi.nlm.nih.gov/27873322/>

former Secretary of the Department of Health⁴⁷: “... we have nursing professors who invent all sorts of things that in practice just burden nurses unnecessarily and make them reluctant to work. The nurse should be at the bedside with the patient and should not be writing out nursing diagnoses and the nursing process.” Especially absurd are situations where trivial documents (“sick leave confirmation” for kindergarten or school) have to be dealt with by a doctor. The technical possibilities to generate such documents automatically have been existing for years.

Improvement #11: Regular audit of bureaucratic obligations in health care and their elimination

3.3 More actively influencing demand for health services

If there are not more health professionals (supply), improvements may have fewer patients (demand). At first glance, demand in healthcare appears to be an independent variable - it is, after all, determined by viruses, bacteria, injuries or age. But this is not entirely the case. A large proportion of procedures are non-acute, and it is also up to the patient to decide when to start demanding such a service. Reducing demand for healthcare across the board is not the best way to go. Fewer simple procedures (preventive check-ups) may mean more difficult procedures (acute) over time. However, there are a number of situations where influencing demand makes a difference. These can be overly defensive medicine (check-ups “for the sake of feeling good”), bypassing waiting times (use of emergency rooms), misuse of paramedic services, substituting social care (long term hospital stay), but also lack of emancipation and self-confidence of patients (demanding trivial interventions, such as tick removal).

There are two ways to influence demand - financial and non-financial. The financial ones take the form of changes in direct payments (fees). In Slovakia, the so-called “Zajac” fees (named after former Minister of Health Rudolf Zajac), i.e. the 20-crown fee (former Slovak currency, comparable to 1 euro today) for a doctor’s visit from 2006, are still remembered. In response, visits to general practitioners fell by 10% in the second half of 2003. Visits to the first-aid service fell by 13%. The decline in visits to specialists and hospitals was much smaller (both down slightly by 2%).⁴⁸

Since doctor’s fees are quite widespread in the world, there are much larger studies of their effects. A 2013 meta-study analysed 47 studies of developed countries from 1990-2011 in terms of the effect of fee changes⁴⁹. It concluded that most studies found that fees reduce drug consumption, visits to general practitioners and visits to specialists, but do not reduce hospital admissions. However, the study notes that the larger reduction in consumption comes on the low-income side.

The introduction of flat fees is a guaranteed way to reduce demand in the outpatient sphere, but a more sophisticated version of them should include tools such as annual caps or exemptions for certain population groups (e.g. based on chronic diagnoses, completed prevention, etc.).

Complementary to fees is the development of an insurance market where policyholders could choose from a variety of over-designed products, some of which would allow the policyholder to share (through reduced premiums or other benefits) in the resources saved through their reduced health care consumption. While fees are a straightforward and effective tool, in the long run it is preferable to have a system in place in which the savings from responsible health behaviour are shared between the state, the manager (the insurer) and the insured. However, such a change would require a significant rebuilding of today’s pseudo-insurance system towards a true insurance system in which risk is priced.

Improvement #12: Introduction of fees

47 <https://dennikn.sk/2683507/byvaly-statny-tajomnik-stachura-polne-nemocnice-ani-povinne-ockovanie-by-som-nezaviedol-s-triedenim-pacientov-sme-zacali-skoro/>

48 <http://www.hpi.sk/2013/05/zajacove-20-korunacky-inspirovali-strednu-europu/>

49 https://www.researchgate.net/publication/256290834_How_does_copayment_for_health_care_services_affect_demand_health_and_redistribution_A_systematic_review_of_the_empirical_evidence_from_1990_to_2011

The second way of limiting demand is non-financial, in the form of the creation of various formal and informal time and administrative barriers. A typical formal example in Slovakia is the “specialist recommendation ticket” issued by GP and required to see a specialist, an informal example is the non-existent ordering systems and waiting lists. Many barriers are hybrid - the main reason for their existence is to follow the correct medical procedure and patient safety, but the „bonus” is also to reduce demand. The best example is indication and prescribing restrictions⁵⁰. Thus, in the near future, there will be a proliferation of cases where, although formally reimbursed modern medicines will be available, patients will wait for months to see a specialist who will prescribe them.

These barriers do, by definition, work to reduce demand (although part of their effect is subsequently offset by, for example, increased emergency room visits). However, the impact of the two tools on the patient is different. Unlike fees, waiting times reduce demand across the board, do not allow the decision to be left to the patient (if my need is of high urgency, I can pay the fee, but I cannot bypass the waiting list), and create uncertainty about the actual availability of the service. Their use should be more sophisticated, for example in the form of alternatives to the exchange ticket and fee, or transparent waiting times and lists.

A relatively simple but workable tool may be the mandatory completion of a phone call (or use of other means of communication) before the actual visit to the doctor at no charge, at least for some diagnoses/specialists/populations (exception for difficulty in communicating, etc.). There is considerable scope here to use health call centres at the level of insurance companies or other larger entities (local authorities, etc.) and reduce the burden on health professionals through economies of scale.

Enhancement #13: Alternative to the specialist care recommendation ticket

Improvement #14: Gradual build-up of eligible waiting time databases

Improvement #15: Simplify administrative access to treatment (prescribing and indication restrictions)

Improvement #16: Mandatory remote (phone, app) interview before free doctor visit

3.4 Outsourcing

As the workload of health professionals grows, both their own dissatisfaction and that of patients with the healthcare covered by public health insurance will grow. Both groups will begin to build a parallel commercial system, to which some doctors and patients will flee. This will create a negative feedback loop - the more health professionals move into the commercial sphere, the worse the situation in the public health system will become and the more health professionals will be motivated to leave it. It will create a two-track system of (relatively) affordable commercial healthcare for patients with higher incomes or simpler diagnoses and a severely lagging public healthcare system.

The goal of health policy should be to keep these two tracks as close together as possible. This means looking for ways to offer the opportunity to serve public system insureds as well as non-contracted providers and, conversely, to allow providers in the public system to develop their business outside the strict confines of the conditions of today's rules.

There is no reason to limit this thinking to the geographical borders of Slovakia. If the patient is willing and able (for example, with the help of his/her health insurance company) to arrange for the procedure to be performed abroad, it is necessary to look for a way to use the existing health insurance - for example, in the form of reimbursement of an aliquot part of the costs without unnecessary bureaucracy. To put it bluntly - if Slovak medical professionals do not return from the Czech Republic, we will send the procedures

50 <https://mykysuce.sme.sk/c/22825364/lekarka-z-kysuc-posobi-v-cechach-nejde-mi-o-peniaze-ale-o-kvalitu-zdravotnictva.html?ref=trz>

to them. In time, it is possible to think in even broader terms, for example in outsourcing data analysis (laboratory tests, scans, etc.), where, thanks to the Internet, physical distance plays an increasingly minor role.

Some options are already open (e.g. the use of the gamma knife, which is not available in our country, is frequent), so it is important that the state openly communicates such alternatives to patients as well.

Improvement #17: Developing the possibility of aliquot reimbursement for relevant procedures also abroad

3.5 A more emancipated patient and family

Everyone instinctively catches a bleeding wound. Almost every person is able to wash and patch a minor abrasion or heal a cold sore. Slovakia has a supply of 5.4 million „medics“. It is crucial that people's knowledge of how the body works and how to treat it grows. Thanks to computing and the Internet, everyone has a world of information and analytical tools at their fingertips. „Doctor Google“ is not an enemy, but an ally in the face of the looming crisis in the availability of health services.

Patient transformation and greater emancipation is a society-wide issue where the state has limited tools for change. A more significant change may be, in particular, the greater inclusion of subjects oriented towards the human body and health in the curricula of primary and secondary schools. Here we are faced with the problem of decentralisation - because of the central curriculum, schools cannot, on their own, replace teaching about the life cycle of invertebrates with a discussion with an allergist.

Improvement #18: Significantly strengthening health and body education in schools

Even today, the family is a key support for the patient. As the health workforce shrinks, its role will grow beyond psychological support. In the absence of nurses and paramedics, family members will increasingly be forced to manage nursing and diagnostic tasks. Active family involvement in health care delivery is common in the developing world, but the American Hospital Association offers it as one of its 10 prescriptions for workforce shortages⁵¹. The well-known Indian hospital network Narayana Health (to be discussed later) had a course developed by Stanford University, Noorah Health⁵², instructing families on how to care for patients after they have completed intensive care in hospitals (the instruction takes place while the patient-family member is visiting).

Even in this case, there is no straightforward recommendation on what to change, rather a few suggestions - courses for lay people in medical schools, training staff, quality instruction manuals (dressing, pressure ulcer prevention, rehabilitation...), but also the legislative possibility of shared responsibility for the patient. Unless the health professional has the possibility to protect himself from the possibility of being penalised, family shared responsibility will not be possible.

Improvement #19: Create legal and moral space to involve family members in the delivery of health care

51 <https://www.healthcareitnews.com/news/aha-offers-10-tips-how-deal-workforce-shortage>

52 <https://extreme.stanford.edu/projects/noora-health/>

3.6 Gig economy in healthcare

Recent years have seen the birth of platforms and the so-called „gig“ economy. Instead of the traditional employee-employer relationship, internet platforms (virtual marketplaces) have emerged to mediate contact, terms and conditions and payments between the customer and the supplier. The services traded can be of a variety of IT and administrative tasks (e.g. Amazon Mechanical Turk, Upwork) or narrowly focused on a single activity (e.g. Uber).

This concept is nothing new in healthcare. History since the 19th century⁵³ has known both „travelling doctors“ and nurses. This method of temporarily filling vacancies for health professionals is also known by the Latin term „locum tenens“ and was formally developed in the USA in the 1970s. In recent years, with the rising shortage of paramedics, this model is experiencing a renaissance in the U.S. In 2019, 6% of physicians worked in this way and the proportion of clinics using locum tenens has risen from 11% in 2016 to 21% in 2019⁵⁴. Other surveys⁵⁵ even speak of as many as 85% of health care facilities using temporary paramedics. This mode allows healthcare professionals to try out working at a specific location without making an initial large commitment, giving them more flexibility and the ability to „switch off“ once every few months or years. A variation of this work mode are clinics that serve as platforms for physicians. One of the better known is the Surgery Center of Oklahoma. It is owned by 40 physicians and functions as a platform to sell their services, including „e-commerce“ sales via the Internet⁵⁶, exclusively for self-payers. It offers transparent and significantly lower prices than what is normally charged by US hospitals when using health insurance.

The gig economy in the modern sense, i.e. as real online marketplaces and not just lists of vacancies, has only started to develop in healthcare in the last 2-3 years. In 2021 alone, apps and platforms like ConnectRN, Trusted, ShiftMed, Nomad, CareRev or HealthGigJobs have collectively raised nearly \$400 million from investors for development⁵⁷. All of them connect supply and demand for healthcare professionals in some way, with some also managing the financial side of the contracts, just as Uber manages pay-per-ride.

The use of platforms in healthcare is not limited to healthcare professionals. As an example, the Modivcare platform, which focuses on non-emergency medical transport in some US cities, connects the demand of less mobile patients with conveniently equipped and trained drivers.

As is always the case with startups, many of them end in dead ends. But the gradual retreat from traditional employment contracts towards „on demand“ relationships will spread inexorably through the healthcare sector. Thanks to the fact that part of the activities can be done online (image evaluation, consultations - for example, the Slovak project diagnose.me), this trend will not be strictly geographically limited. The question is whether the Slovak legislation will look at this trend passively, or whether it will take the opposite step.

Improvement #20: Setting the legislative stage for more flexible forms of contracts between providers and health professionals

53 <https://fusionhcs.com/a-brief-history-of-the-locum-tenens-industry/>

54 <https://www.healthleadersmedia.com/clinical-care/locum-tenens-use-widespread-2019-survey-shows>

55 <https://www.staffcare.com/siteassets/resources/thought-leadership/staffcare2020survey.pdf>

56 <https://www.econtalk.org/keith-smith-on-free-market-health-care/>

57 <https://www.axios.com/the-gig-economy-is-trying-to-solve-health-cares-burnout-crisis-b9ff5715-3f89-42d1-9edf-e71857287b84.html>

4 Technology-enabled evolution

It would be hard to find anyone who would not expect innovations to improve the situation in healthcare. In the remainder of this publication, we will introduce a number of technology concepts and tools that we see as having the potential to make better use of the healthcare workforce.

At the outset, however, it is necessary to curb the optimism that often bubbles up from technology-oriented commentaries. Artificial intelligence, big data, e-health, wearables, robotics and other innovations have huge potential for change. But looking at recent history, we must conclude that we should expect evolution rather than revolution. The real challenge often lies not in discovering but in bringing a new concept to life. In 2016, Geoffrey Hinton, one of the world's foremost experts on artificial intelligence, told radiologists to stop studying because within 10 years they will be completely replaced by computers⁵⁸. But the deployment of AI and associated technologies in the field shows that there are still a serious number of shortcomings. For example, a 2021 meta-study showed that 94% of AI systems tested were weaker at recognizing breast cancer than the evaluation of a single human radiologist. If there were two radiologists, they beat 100% of AI systems⁵⁹.

Artificial intelligence must be fed with quality inputs. Thus, it is not just the imperfection of the technology itself, but also the lack of infrastructure in healthcare. However, technological evolution must also be 'enabled'. Just look at the Slovak healthcare system. While things like electronic communication or electronic databases have been commonplace in most sectors for two decades, they are only just beginning to penetrate healthcare. In the commercial sector, deploying innovation is one of the ways to stay competitive. Socialised healthcare built on bureaucratic principles tends to do the opposite. Innovation changes established orders, threatens the existing power structure, requires capital, decentralised decision-making, flexibility, rapid feedback and direct motivation of stakeholders. This is why the penetration of innovation in healthcare, especially process innovation, has been very slow. An example is telemedicine. Although it has been technologically possible for decades, it only became an official part of our healthcare system thanks to a pandemic, until then it was waiting to become an official procedure with its own code. The good news is that the situation can change very quickly. In 2020, only 7% of people in the U.S. have had the experience of a virtual doctor visit. In just one year, the pandemic has increased that proportion to 32%⁶⁰. However, this is not just a failure of the state - changes often happen only under pressure from patients, who are often (also due to age) conservative about change.

The slow implementation of process and IT innovations in healthcare and how to accelerate it are the subject of many studies and strategies. For example, we draw the reader's attention to Empowering the health workforce: Strategies to make the most of the digital revolution by the OECD⁶¹, or The Impact of New Technology on the Healthcare Workforce by MIT⁶², which discuss IT in the context of healthcare workers.

We will just briefly mention medical innovations. These are a double-edged sword in terms of workforce utilisation. One blade increases the availability of services. A typical example is same-day surgery. If a patient spends only 8 hours in hospital instead of 72, it means 9 times less need for service staff in the ward. However, even here, these innovations are often hampered by system settings, be it reimbursement mechanisms or network regulation (let's see what the optimization of the hospital network in Slovakia will do to the development of outpatient solutions...).

58 <https://moreisdifferent.substack.com/p/ai-deep-learning-radiology-medicine-overhyped?s=r>

59 <https://www.bmj.com/content/374/bmj.n1872>

60 <https://www.accenture.com/us-en/insights/health/digital-adoption-healthcare-reaction-or-revolution>

61 <https://www.oecd.org/health/health-systems/Empowering-Health-Workforce-Digital-Revolution.pdf>

62 <https://workofthefuture.mit.edu/wp-content/uploads/2020/10/2020-Research-Brief-Bronsoler-Doyle-VanReenen.pdf>

The second cutting edge of medical innovation is the aforementioned fact that medical innovation increases patient demand for health services, and thus the demand for health professionals. Additionally, the medical standards system minimizes the official ability to choose between more time-consuming and less time-consuming interventions.

4.1 Henry Ford from India

Dr. Devi Shetty has earned the nickname Bypasswale Baba in India, something like „bypass-giving saint“. Not only because he has been involved in more than 15,000 heart operations, but especially because he has made healthcare much more accessible to hundreds of millions of poor Indians. Over 20 years ago, he founded the Narayana Health network of hospitals in India. Bypass surgery at these hospitals costs less than \$2 000 (with the long-term goal of pushing the price below \$1 000), while quality indicators (e.g. mortality rates within 30 days of surgery) are equal to or better than the average in the US, where a similar operation costs around \$100 000. The network offers „club cards“ with benefits, or daily dynamic pricing (based on the network's current utilization and financial performance), so that patients with less money have a chance to get the surgery, or even for free. Reportedly, up to 60% of patients pay lower prices than those listed in the price list.

He achieved this „miracle“ by applying the principles of Henry Ford⁶³ to manufacturing in medicine. The clinic buildings are designed economically (on cheap land, with low energy consumption) and efficiently. The key to his project's success is workflow. Each hospital has a few dozen surgeons, operating from 6am to 10pm. Patients are „dissected“ by younger surgeons, with more experienced ones coming in only for a key part of the operation, then moving on to the next table. Thanks to this example of task shifting⁶⁴, the most expensive doctors perform roughly 4 times more surgeries per day than in the US. This represents not only a financial saving, but also a pathway to rapid growth for young doctors. Similarly, the utilization of expensive machines is much higher as they run non-stop most of the day. The patient's family is motivated to take an active role in post-surgery care (also thanks to the Noorah Health crash course mentioned above), which further takes the financial strain off the hospital.

The clinics combine the traditional approach of the developing world (family involvement) with state-of-the-art technology. Continuous vital data is collected from all patients from all hospitals into a central IT system. This data is used both for immediate staff intervention if a patient becomes unwell at the bedside, and with the help of artificial intelligence and a huge data base (Narayana's network has 2.5 million patients a year), it also allows the incidence of complications in a particular patient to be estimated in the future and actively prevented. In addition to clinics, Narayana has 800 telemedicine centres and mobile stations visiting rural communities.

Narayana Health is a standard public limited company whose shares can be bought on the Indian Stock Exchange. It is an example that even in healthcare, it is possible to achieve significant economies of scale through managerial change and the application of innovation - all in an environment with a moderate amount of capital.

4.2 Technologies of tomorrow(?)

New technologies have the potential to replace the workforce, in particular thanks to robotization (performing manual repetitive tasks), artificial intelligence (image diagnostics, planning and prediction, etc.), or data collection and analysis (remote and lay monitoring...). For example, the consultancy OliverWyman estimates⁶⁵

63 <https://iness.sk/sk/spotrebitelska-revolucia-v-zdravotnictve>

64 <https://pubmed.ncbi.nlm.nih.gov/26699352/>

65 <https://www.oliverwyman.com/our-expertise/insights/2019/sep/health-innovation-journal/the-role-of-digital-and-technology/how-an-infusion-of-tech-will-reverse-the-worker-crisis.html>

that artificial intelligence can replace the equivalent of the work of 2,500 radiologists in the US by 2025, by reducing the time to evaluate an MRI scan from 50 to 10 minutes. Other examples include easing the administrative work of medical assistants (the equivalent of the work of 95,000 people by 2025). Another example is also the advanced evaluation of retinal scans, saving time for ophthalmologists. Specific examples of technologies⁶⁶ are ultrasound systems such as Venue, which can automate image evaluation in the office, or cloud services such as Edison True PACS, which offer image storage, processing, visualization and evaluation by artificial intelligence and a complete workflow for radiologists. Mural Virtual Care, in turn, caters for remote monitoring and analysis of patients in intensive care.

Two „improvements“ in the form of apps in 2021 were introduced by Apple. The first focuses on preventing falls in the elderly. By monitoring indicators such as walking speed, length of strides and the time both feet are on the ground, the app monitors gait stability and warns of impending danger, reducing the need for constant supervision. The second feature Apple has come up with is sharing user health data with other people. Thus, data such as pulse and blood pressure can be accessed by another person (or up to 5 people) in addition to the user. If the app determines that the user's health status has changed based on the collected data, it will send an alert to the selected person. The latter can then intervene or come to the aid more quickly. In the US, you can even share your app-collected health data with selected healthcare providers.

However, it is important to remember that while many innovations save time for healthcare professionals, they require increased involvement of IT and technology specialists.

Greater involvement of innovation cannot be supported by narrowly defined improvements. It requires a comprehensive change of mindset, greater autonomy for all stakeholders (but primarily hospitals), flexibility in the regulatory environment, capital inflows based on clear financial return criteria (as most technological innovations require significant capital inputs). Acceleration of the digitalisation of healthcare, including legislative treatment (protection from data sharing, etc.) is a necessity.

Improvement #21: Technology thrives in a system where innovations are not mandated from above, but are sought after by system participants themselves because they give them a competitive advantage. The spread of innovation in healthcare therefore needs a less directive and more competitive view of the system.

66 <https://www.gehealthcare.com/article/the-future-of-the-healthcare-workforce-5-predictions-for-2022>

5 Conclusion

Although the absolute number of health professionals in Slovakia will only start to change significantly in the coming years, there is already a decline in their relative number in relation to the needs, mainly due to the ageing of the population and thus an increase in the incidence of health problems. This is not a Slovak specificity, but a worldwide phenomenon.

If we want to maintain the current standard of health care in Slovakia in the coming years, including the density of coverage, frequency and timeliness of health services, we will lack a large number of health professionals to achieve this goal. Several forces are at work in the deterioration of the situation (retirement of health workers, health workers leaving the public system, the increasing average age of the population, increasing demands on the quality of services). The challenge is therefore greater than the current view of the health workforce might suggest.

This situation can be improved from two perspectives. One view is expansive - aimed at recruiting additional health workers. The space for this exists, albeit limited.

The second view is intensive - focused on increasing the productivity of existing and future resources, as well as influencing demand for health services. Here the scope for progress is very wide. It includes changing competencies, a more flexible view of health services, but also technical innovations.

In the publication we have presented 21 different steps to improve the situation. However, the rule of thumb with reforms is that the actions themselves can be easily deduced by observing the sector and discussing them with the actors involved. The key is implementing change, which needs political capital and the courage to challenge inertia and entrenched views. Unfortunately, as in other heavily regulated professions, the greatest barriers to inducing change in health care are found within the sector.

About author



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The Institute of Economic and Social Studies (INESS) is an independent non-profit think tank founded in 2005. INESS' vision is Slovakia endorsing free enterprise, prosperity, individual liberty and peace, a country, where its citizens are aware of the functions and benefits of the market mechanism and the impact of government interventions in the economy.

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