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A Step Away From Globalization



When the Cold War ended, governments and companies believed that stronger global economic ties would lead to greater stability. But a perfect storm of circumstances is helping dismantle the global economic system built over the past few decades, pushing the world in the opposite direction. The coronavirus pandemic and supply chain disruptions triggered governments to wonder why more essential needs were not produced at home. Russia's invasion of Ukraine has further induced governments and companies to examine their reliance on other nations, reevaluating their dependencies and reanalyzing their manufacturing and assembly footprints.

For decades, executives have pushed for globalization to expand their markets and to exploit cheap labor and lax environmental standards. China especially has benefited from this, while Russia profits from its exports of minerals and energy. They tap into enormous economies: the Group of 7 industrialized nations make up more than 50% of the global economy, while China and Russia together account for about 20%.

Russia's invasion of Ukraine is a much smaller conflict than World War I (or II), but the clash is nonetheless a giant step away from globalization, and it comes at a time when the world has already been moving away from economic integration: trade's share of global GDP peaked in 2008 and has been falling for the past decade. So, the war in Ukraine doesn't necessarily mark a sharp break in history. But it underlines and will perhaps cement the decline of globalization. China, for example, is on a drive to make critical industries selfsufficient. President Xi Jinping's "Made in China 2025" initiative, isn't about creating jobs, it's about securing economic space for China to operate with political autonomy. Similarly, when Vladimir Putin's Russia got hit with sanctions in 2014 after taking over Crimea, it responded not by withdrawing from Crimea but by launching a crash effort to sanction-proof the economy by emphasizing domestic production. China has been in talks with Saudi Arabia to pay for some oil purchases in China's currency, the Wall Street Journal reported; Russia was in similar discussions with India, showing a desire to move away from dollar-based transactions, a foundation of American global economic power.

Of course, anyone can see the value of autonomy. When the Covid-19 pandemic hit, national sovereignty took precedence over free trade almost everywhere. The question of where exactly masks and other personal protective equipment were produced suddenly became very relevant. Similarly, the U.S. and Europe got vaccinated not only before low-income countries, but also before other rich countries, because they had the production capabilities. In the U.S., one issue on which President Joe Biden hasn't broken with his predecessor is making the U.S. less dependent on Chinese imports, promising "to make sure everything from the deck

of an aircraft carrier to the steel on highway guardrails is made in America from beginning to end. All of it."

There might be some good reasons for all this deglobalization. Some countries could benefit from focusing on building up their domestic industries. And the acceleration towards greener sources of energy in many parts of the world, also to wean off Russian oil and gas, has turned into a top global priority. But it's important to note that nations of the world didn't link up their economies just for fun. Consumers around the world reaped large benefits from a world of specialization, comparative advantage, just-in-time shipping, and elaborate supply chains. The economic impact of such a change is highly uncertain. For sure, there is a price to pay. And as more countries step away from globalization, the price will get steeper. The emergence of new economic blocs could accelerate a massive reorganization in financial flows and supply chains, potentially slowing growth, leading to some shortages, and raising prices for consumers in the short term. But the longer-term effects are harder to assess. A poorer world offers fewer customers for everyone's exports, and a world less economically connected is one in which disruptions and conflict are more thinkable. We're going to miss globalization when it's gone.

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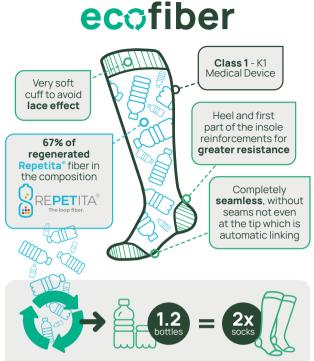
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GIANO HR DC



by taking into account the actual diagnostic needs, while the new 10" touch screen control panel makes workflow even more versatile and user-friendly.

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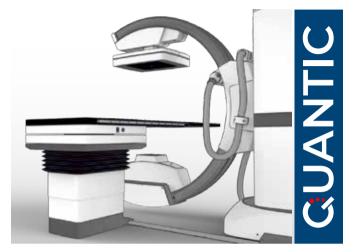
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market outlook

Capital: Helsinki

> Official Languages: Finnish, Swedish

GDP per capita € **43,508**

Stor a loss

Economic Freedom: World rank 9th -Regional Rank 6th (among 45 countries in the Europe Region)

16



Unemployment rate 6.7%

Finns comprise 1.1% of the total EU population A democratic, parliamentary republic, in December 2019, Sanna Marin of the Social Democratic Party (center-left coalition), became the world's youngest prime minister



The northern region of Lapland comprises the home area of the Sami, where about half of Finland's indigenous Sami (Lapps) population lives





Author: Silvia Borriello Editorial Director silvia.borriello@infodent.com

Finnish Health Care: Towards an Historic Social and Health Care Reform

Experied Time 9.00 min

Considered a right rather than a privilege, Finland's health care system is, for this, more appropriately managed by the Government rather than the private sector. Even if the system compares favorably to many EU countries, in terms of efficiency and quality of services, public funding is shrinking for future generations, and unless Government implements structural changes, the Finnish health system could become more unequal, with poor people and those who live in remote areas increasingly excluded from the very system that was designed to serve them.

Formerly part of Sweden and later part of the Russian Empire, Finland gained independence in 1917, joined the European Union in 1995, adopted the euro in 1999, and became member country of the Schengen Area in 2001. The export-led economy is centered on manufacturing, principally in the wood, metals, ship building, telecommunications, and electronics industries. However, in the past few years, new areas have emerged, such as medical technology, the software and games industry, and broader electronic products and services. Finland is one of the few countries in the world that exports more health technology than it imports.

The central national government is based in Helsinki, while local governments are located in almost 300 selfgoverning municipalities (cities and urban centers), with more than half of them having fewer than 6,000 residents. Many responsibilities are devolved to the level of municipalities: they levy taxes, and, with government subsidies, they play a key role in providing basic services, such as highly subsidized social and health care, free primary education, cultural services, and infrastructure. Administrative reform seeking to centralize health and social care in fewer regions has long been in the making and is gradually materializing (gradually coming into force by January 2023). Due to the shift in public spending to the local level, municipalities have experienced indebtedness and challenges with long-term provision and financing of public services. This is particularly

Finland is the most advanced digital economy in the EU according to DESI 2020 - The Digital Economy and Societal Index - and this also extends to healthcare.

severe in areas that have lost working-age and younger people to regional centers, larger cities, in search of better economic opportunities. Nevertheless, Finland remains a relatively equal country with extensive public services supporting fairly high standards of social and living conditions, a highly regarded educational system, and access to childcare and social care.

	Finland	EU28 (average)
Life expectancy at birth, total	81.7	80.9
Infant mortality rate (per 1000 live births)	2.0	3.6
Maternal mortality rate per 100 000 live births (World Bank, 2019)	3	8
Self-reported chronic depression	11%	7%
High blood pressure	25%	21%
Smoking (daily smokers of cigarettes), 2014	11.6%	18.4%
Alcohol (consumption every week)	36.6	29.6

Source: Eurostat, July 2019 (European Commission, 2019), unless noted otherwise

INDICATORS	2020	2021	2022	2023	
GDP growth (%, yoy)	-2,8	3,5	3,0	2,0	
Inflation (%, yoy)	0,4	2,1	2,6	1,9	

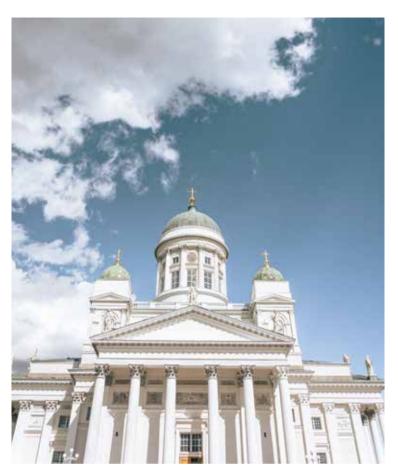
The bulk of the population is concentrated in the urban areas of the southern and western parts of the country, while 15% of the population lives in rural areas.

PARLIAMENT PASSES HISTORIC SOCIAL AND HEALTHCARE REFORM

Passed in June 2021, a major health care reform will replace the health care and social services centered on public provision with a market-oriented system and enhanced competition between public and private sectors. An impending reform, known as Sote, will lead to a historic change in how social and healthcare services are organized and provided. Responsibility is set to pass from Finland's almost 300 municipalities across the country to 21 new regional authorities, plus the city of Helsinki, by the beginning of 2023. In the new model, funding for the services comes from the state.

The planned reform is the biggest in Finnish health care in 50 years and it follows the global wave and international policy movement towards marketing and competition as a way of challenging the public services, today often seen as "inefficient and unresponsive" and politically outdated. People have moved from the countryside to towns and cities and a large proportion of the municipalities have become too small to administer health and social services. In addition, care and service needs have changed. The reform attempts to address challenges arising from Finland's aging population and deteriorating public finances. It targets to reducing health inequalities across the country and ensuring better access to treatment. The laws will come into force gradually by January 2023. Finland had higher unmet needs for medical checks or treatment than the European Union average in 2018, according to Eurostat. Its workforce has been shrinking for a decade, swelling the ranks of pensioners who on average use more health services.





Not only is the vast majority of the population - 88% happy with the system, its highly subsidized care for all means that no Finn has ever been in the red because of medical costs alone (though that doesn't mean there aren't complaints).

A High-Income Welfare State

Finland is a high-income welfare state with a low poverty rate. Its 130-yearold health care system is based on public health care services to which everyone residing in the country is entitled, and a much smaller private sector. Universal health coverage includes a wide range of preventive and curative services for the population with a relatively high degree of cost sharing (user fees) across a wide range of services, delivered primarily by publicly owned and operated providers.

	Finland	Sweden	Norway	Denmark	Netherlands	Germany	UK
Current Health Expenditure (CHE) per Capita (in PPP US\$)	4,112	5,387	6,204	5,093	5,251	5,463	4,178
Current Health Expenditure (CHE) as % of GDP	9.2	10.9	10.5	10.4	10.4	11.1	9.8
Public Expenditure on Health as % of CHE	77.4	83.5	85.1	84.1	81.0	84.7	80.2
Public expenditure on Health as a share (%) of General Government Expenditure	13.1	18.5	17.6	16.2	19.3	21.4	18.9

Source: WHO (2018a)

WHAT ARE THE KEY STRENGTHS AND WEAKNESSES OF PRIMARY CARE?

The role of primary care in Finland differs from the solo GP practice model of many other European countries – a GP in Finland is expected to and is able to diagnose and treat patients independently to a degree typically seen in specialized their duties have expanded rapidly. Moreover, the population base in health centers is biased towards the socially and medically demanding, i.e., the very young and the aged, and those of lower socioeconomic or educational level. This is due to the co-existing occupational and private health care systems. Primary care is in theory the backbone of the

are generally avoided and the survival rates are high for patients admitted following a heart attack or stroke, and for

Despite severe and prolonged winters, Finns' positive outlook is boosted by low levels of crime, access to nature, affordable childcare, heavily subsidized healthcare and, crucially, free education.

> Although the Ministry of Social Affairs and Health (MSAH) has the highest decision-making authority, the municipalities (i.e. local authorities) are responsible for organizing and financing health care, enjoying a large degree of freedom in the organization of its services.

> Health promotion and disease prevention are cornerstones of the Finnish health system and care is delivered through three parallel provision channels: the principal system is publicly financed and organized by the municipalities, for all levels of care. The other two systems are private and occupational health care, mostly providing ambulatory primary and some specialist services.

> Municipal primary care is provided by health centers, delivering a wide range of services, although waiting times can be long. Public special

ist and inpatient care is provided through 20 hospital districts; these provider networks have been undergoing centralization as well as a shift from inpatient care to other settings. Municipalities, the private sector, the National Health Insurance (NHI) svstem and employers are the main actors in the health system:

· Municipalities are responsible for organizing the health services for their residents and have a comparatively large autonomy in decisionmaking. The array of services provided in health centers is in most cases wider than that seen in GP (general practitioner) practices in other countries. Also, inpatient departments in health centers are a specific feature in Finnish primary care. Apart from organizing health services for their residents, municipalities are also responsible for many other public services, such as social care and primary and secondary (free) education. The share dedicated to health is decided simultaneously with the budgets for other municipal services.

· In parallel, residents can use private health services, mainly financed through out-of-pocket payments (with partial NHI reim-

Finland introduced legislation to tackle smoking, aiming to make the

country smoke-free by 2030.

bursement, averaging 16% of the cost of the visit), and **voluntary** health insurance (approx. 17% of the population), which is complementary and usually covers part of out-ofpocket payments not reimbursed by NHI. Outpatient care, pharmaceuticals, and long-term care account for about three quarters of all out-ofpocket payments.

· In addition, employers also play a part in the organization of health services, as they are obliged to organize preventive occupational health services for their employees, while many large- or medium-sized employers also provide employees with access to curative medical care.

· The statutory health insurance scheme (NHI) reimburses occupational health care for the working population. It also reimburses, for the whole population, the vast majority of outpatient prescription medicines (approx. 38% of costs), part of the cost of private health care (14-16%) and 86% of travel and ambulance costs.

It is funded by the state and employees through mandatory incomebased insurance fees collected alongside income tax. Employers

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Average income of health workers in Finland in 2018, \in per month

	Regular Working Time	Total (incl. extras)
Dentist	6,089	6,299
Physician	4,732	6,316
Nurse	3,081	3,159
Dentist at health care center	6,057	6,383
Physician at health care center	6,420	6,782
Medical specialist	5,325	8,866
Chief pharmacist	5,456	6,246
Pharmacist	2,644	2,960

Source: Statistics Finland (2019b)



The Nordic country, home to just 5.5 million people, scooped top spot in the UN's World Happiness Report -- which ranks countries by how content their citizens perceive themselves to be -- in both 2019 and 2018. Furthermore, it has consistently ranked in the top 10 -- since the first report in 2012.

> only contribute to the income insurance part of health insurance which is used for financing occupational health services. In occupational health care there are no service fees for patients.

> The majority of Finnish hospitals are public. The public hospital network, consisting primarily of 15 central/ regional hospitals and 5 universityowned teaching hospitals (Helsinki, Turku, Tampere, Kuopio, and Oulu), is owned by the country's 20 hospital districts (federations of municipalities). These hospitals offer an extensive scope of secondary care services with tertiary level care provided mostly by the university hospitals. The municipalities and hospital districts also run and finance a network of primary and secondary care facilities, as well as separate psychiatric care institutions. A wave of hospital closures and mergers has substantially reduced the number of facilities and beds since 2000. In addition, the hospital districts and municipalities maintain smaller local general hospitals, which provide a narrower scope of services. There were only 21 local public hospitals registered in 2016. The number of private forprofit hospitals that provide specialized (e.g., surgical, cardiac, or ophthalmological) services was 45 in 2017. In 2015, there were 330 public sector inpatient care facilities in Finland, such as specialist and primary care community hospitals. Private

hospitals provide approximately 5% of hospital care in Finland, although the number of privately or jointly owned hospitals is increasing. Private providers have a large impact in many services, such as the care for older people, occupational health services, dental care, and outpatient specialist services. Concerns that extensive user charges may lead to issues with accessing services and financial protection led to the introduction of an annual ceiling for health care costs. Once the ceiling is reached, service users can claim a certificate (based on receipts) from a municipal health care provider, relieving them of further user fees. After that, patients receive outpatient services free of charge, and pay for hospitalization at a reduced daily rate. In 2018-2019, the ceiling for user charges in municipal health care was €683. The ceiling covers outpatient charges for most chargeable services, such as visits to the health center, physiotherapy, and hospital care, but it does not include charges for dental care and ambulance services, and services with income-related charges. Dental care, certificates, diagnostic tests based on private sector referrals and patient transportation are excluded from the ceiling, but there is a separate cap for transportation. Although ceilings have gradually increased over the years, the proportion of people affected by catastrophic out-of-pocket payments has been relatively low - around 1% on average and 3.6% among retired persons. Other mechanisms of financial protection are, among others, exemptions for children and for treatment of specific diseases. Also, welfare benefits exist for lowincome households to assist with meeting the cost of living, including health care costs.

The health sector employs 80,724 employees, more than three quarters of whom working in the public sector. After 2008 the shortage of medical doctors in health centers has decreased substantially however, there are significant variations in vacancies between regions. According to national data, 66% of physicians work in the municipal sector with 44% working in hospitals and 22% in health centers; 18% of physicians work in private medical centers or clinics. Medical doctors and dentists in the public sector work usually as salaried employees. However, payment systems in municipal health centers are somewhat different from that of other employee groups and vary between municipalities. GPs' salary schemes vary according to specific work description and gualifications. In 2019, the most common salary scheme is a monthly salary with some extra feefor-service payments for selected services or minor procedures, plus compensation for out-of-hours and overtime work. It is common that medical doctors working in public hospitals also work in private clinics during evenings on a fee-forservice basis. In the private sector, physicians usually work as autonomous practitioners and are free to set their own rates. In recent years, many small private clinics have merged into larger provider organizations. In these cases, physicians tend to work there as salaried employees. There is no re-accreditation system in Finland: medical and other health care professionals are responsible for engaging in continuous education themselves. According to the legislation, employers are responsible for providing professional training, but the implementation varies across health care organizations. The nurse-todoctor ratio in Finland is one of the highest among the OECD countries with 4.4 nurses per doctor and 14.3 nurses per 1000 population. There is a movement towards a larger role of nurses in coordinating patient processes especially in terms of chronic, long-term, and minor acute health conditions at primary care level. In 2018, nurse consultations covered 50% of the total number of non-urgent outpatient visits in health centers and they typically work in multidisciplinary teams or in pairs with physicians. After attaining a requlated postgraduate gualification. the nurses have also been able to prescribe some drugs to patients suffering from common conditions.





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Health Financing Sustainability



A highly decentralized system leads Finland to a large variation in state subsidies as well as municipalities' spending on health care, creating differences between municipalities in the basic profile and scope of services provided. The recently approved reform envisages a centralization of health services and funding, an increase in patient choice and provider competition. Due to the complex financing and provision arrangements for health care, there is no predefined overall public budget for health in Finland. However, there are two main pooling mechanisms: municipalities act as pooling agencies for municipal health care services, and *Kela* (the Social Insurance Institution running the statutory NHI scheme) pools funds for private and occupational health services, as well as for health care costs related to services and benefits, such as outpatient drugs, transport, and sickness allowance.

Overall, Finland spends less on health than its Nordic neighbors and many other EU countries. Spending as a percentage of GDP has decreased in recent years, while per capita health expenditure has more than doubled since 2000. Also, over the past five years, the share of public funding for health care has slightly decreased, and out-ofpocket spending has increased, now comprising over 20% of current health expenditure. While a large part of public financing for health (coming from income tax) is progressive, an increasing share of out-of-pocket payments undermines progressivity.

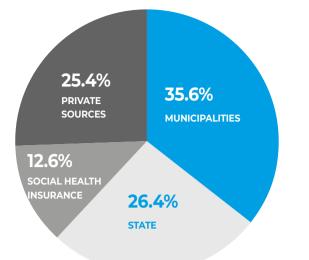
About three quarters of health expenditure in Finland comes from public sources and public financing comes mainly from state and municipal taxes. Health financing is very fragmented, with municipalities, the national health insurance system (NHI), employers, and households all contributing substantial shares. Together, they finance municipal, private, and occupational health services. As municipalities play a key role in financing health services, they are subsidized by the state. With populations ranging from hundreds of thousands of people to fewer than 100, municipalities receive funding for health care services based on the size of the taxable population, which can make it more difficult to provide services in remote and larger areas - where those services are also more expensive to begin with. Such decentralized nature is not only very expensive to maintain, but also can produce vast disparities in the quality of care.

Fiscal sustainability remains a much-discussed issue especially as the country's population ages and birth rates fall, the number of taxpayers paying into the system is diminishing - while the overall population is living longer and putting greater strain on resources. In order to increase equality, accessibility, and efficacy, and to simplify the service funding, the Finnish healthcare system is undergoing a structural social and healthcare reform (Sote), that passed in June 2021. In the reform 21 newly formed counties (regional authorities), plus the city of Helsinki, would be responsible for service coordination and the actual service provision would be auided by freedom of choice and market forces among public and private service providers. The reform aims to cut costs by centralizing services and

EXPENDITURE FOR SELECTED HEALTH CARE FUNCTIONS, BY HEALTH CARE FINANCING SCHEMES

	Inpatient Care (Inc. Day Care)	Outpatient Care	Long- Term Care	Pharmaceuticals and Medical Goods	Preventive Care	Health System Admin	Other Services	Current Health Care Expenditure (CHE)
Public expenditure	22.6%	24.3%	15.8%	6.7%	2.5%	0.7%	2.6%	75.2%
General government	20.9%	22.1%	15.8%	0	1.7%	0.1%	1.1%	61.7%
Social health insurance	1.6%	2.2%	0	6.7%	0.8%	0.6%	1.5%	13.4%
Private expenditure	2.2%	8.7%	3.2%	5.6%	1.4%	0.2%	3.6%	24.9%
Private out-of-pocket	1.3%	6.6%	3.2%	5.5%	0	0	3.6%	20.2%
Private insurance	0.9%	2.1%	0	0.1%	1.4%	0.2%	0	4.7%
All financing schemes	24.7%	33.0%	19.0%	12.3%	3.9%	0.9%	6.2%	100.0%

FINANCIAL FLOWS IN THE FINNISH HEALTH SYSTEM



introducing more private options. But centralization is proving tricky in a country that is sparsely populated in some areas, and where the health care system was designed to serve even the most remote parts of a country that stretches all the way up to the Arctic Circle.

Reforms that have taken place in the past decade have largely been incremental and mainly focused on modifying existing features without fundamentally changing the structure of the health system. A series of measures were taken to reduce the share of public spending on health. Some of these translated into reduced levels of reimbursement for medicines, and increased user fees. Back in 2013, the international Organization for Economic Cooperation and Development (OECD) was already warning that Finland was lagging behind many other OECD countries in having high rates of unmet needs. At the time, more than 4% of Finnish people reported unmet medical needs due to cost, travel distance or waiting lists - a proportion significantly higher than in Denmark, Norway, Sweden, and the Netherlands.

Digitalization and development of ICT (Information Communication Technology) systems is tightly connected to the reform strategy. Today, the national digital patient data repository, covers both the public and private health care sectors. All Finns have online access to their health records and their e-prescription history, which makes Finnish health data unique in terms of breadth and depth. The healthcare system has also accumulated blood and tissue samples in biobanks for many years. From the research point of view, the Finnish legislation on biobank operations is highly progressive, and it is being further revised and improved in a research-friendly manner. In the fall of 2017, a unique study that combines genome information with digital health care data, was launched. Finn-Gen Research Project plans to analyze up to 500,000 unique blood samples collected by a nation-wide network of Finnish biobanks. This project, expected to continue for six years, has four main aims: to produce medical innovations by combining health registry and genome data; to support Finland in becoming a pioneer in biomedicine and personalized healthcare; to create a cooperation model between the public sector and the health care industry; and to provide early access to new personalized treatments and health innovations for all Finns. In March 2019 the Finnish Parliament accepted the Act on the Secondary Use of Health and Social Data, which will facilitate easier and more efficient use of valuable material for research and development activities, for both domestic and foreign companies.

Medical equipment is the largest health technology segment in Finland. Public sector health care units fund medical equipment from their annual budgets. There is no state-level control over the acquisition of medical equipment, although, through their planning and coordination responsibility, the university hospitals and hospital districts have some steering control on purchases within their areas. In 2019 exports of medical equipment rose 5.1% to \$1.9 billion, accounting for 70% of all health technoloav products exported from Finland. Imports of medical equipment, meanwhile, rose from \$789 million to \$793 million in 2019.

Among main sources:

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-"The 'dark side' of Finland's famous free health care"- https://edition.cnn. com/2019/08/15/world/finland-health-careintl/index.html, By Saskya Vandoorne and Melissa Bell, CNN

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-www.heritage.org/index/country/finland - https://ec.europa.eu/info/business-economy-euro/economic-performance-andforecasts/economic-performance-country/ finland/economic-forecast-finland_en

DIAGNOSTIC EQUIPMENT IN FINLAND AND THE EU, PER 100 000 POPULATION

EQUIPMENT	FINLAND	EU AVERAGE
Computed tomography scanners	2.4	2.2
Magnetic resonance imaging units	2.6	1.4
Mammographs	3.1	2.3

Medscape Physician Lifestyle & Happiness Report 2022

In the wake of a global pandemic, many are re-evaluating their lifestyles and where they can find happiness. For physicians, the struggles that COVID-19 continues to bring, like dealing with vaccine misinformation or adjusting to hybrid work models, can affect their lives beyond practicing medicine. This year's Medscape report explores the ways in which physicians are prioritizing wellness, work-life balance, how their relationships have fared, and more. More than 13,000 physicians, practicing in the U.S., across 29 specialties responded to the survey in the period June-September 2021.

Happiness

The stress and strain of the pandemic has clearly affected physicians' happiness. Overall, only 6 in 10 physicians said they are currently "very" or "somewhat" happy, compared to last year's 8 in 10, and a greater percentage of male physicians, say the "always" or "most of the time" have time to focus on their own health and wellness. Furthermore, a higher percentage of female physicians (60%) are willing to take a cut in pay for better work-life balance or more free time compared with their male counterparts (53%).

Internet Use

A little over a third of both male (37%) and female (38%) physicians spend 11 or more hours per week n the internet for personal use. The majority of physicians are spending up to 10 nonwork hours online weekly. For context, the average US internet user spends nearly 7 hours per day, according to a report by Hootsuite and We Are Social. When it comes to spending 11 or more hours on the internet for their work, female physicians (35%) have a slight edge on their male peers (31%). A large majority of physicians are online up to 10 hours per week for work. However, the number of physicians spending 2] or more hours online for professional use increased from 2% last year to 15% this year, indicating that the use of telemedicine among physicians and patients is growing amid the pandemic.

Relationship

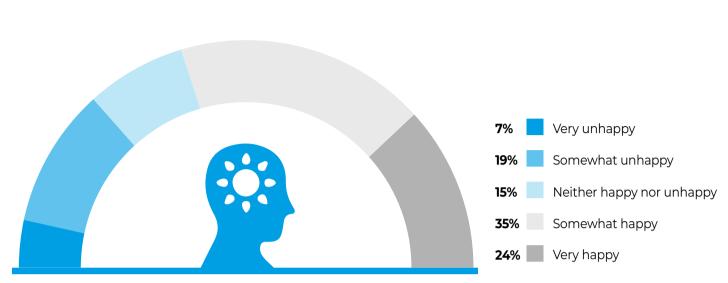
The majority of physicians overall are in a committed relationship, with 83% either married or living with a partner. This percentage is higher for male physicians (89%) than female physicians (75%). Eight in 10 physicians overall say they are in a "very good" or "good" marriage, similar to last year's report (85%).

For full Medscape Survey visit https://www.medscape.com/ slideshow/2022-lifestyle-happiness-6014665#1

About Medscape

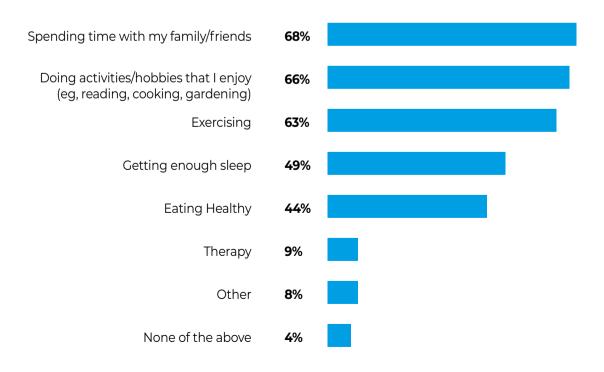
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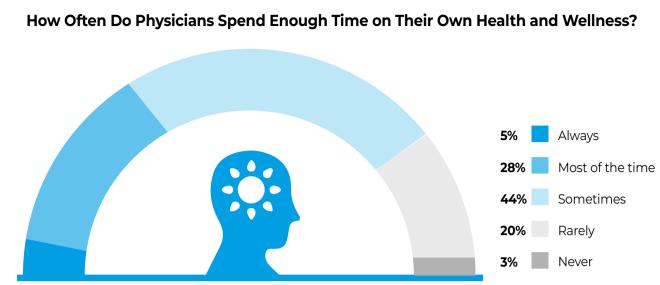
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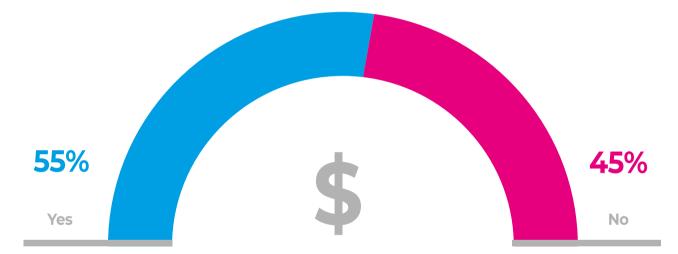
What Are Physicians Doing to Maintain Their Happiness and Mental Health?

How Happy Are Physicians Outside of Work Currently?

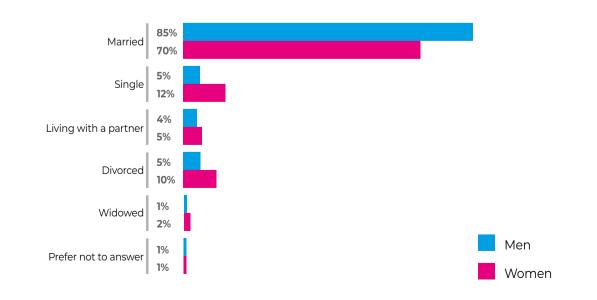




Would Physicians Take a Salary Reduction to Have Better Work-Life Balance?

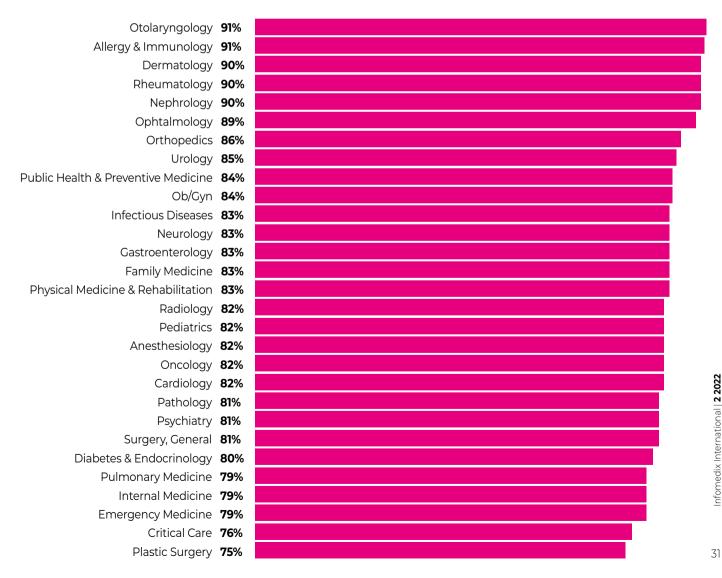


Are Physicians Married or in a Relationship? (by gender)



How Do Physicians Describe Their Marriages? Very good 50% 32% Good 14% Fair 3% Poor Very poor 1%

Which Specialists Have the Happiest Marriages?



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Landmark Study Approved To Evaluate Hip Innovation Technology's Reverse Hip Replacement System

HIT's Reverse Hip Replacement System could revolutionise total hip replacement surgery

Hip Innovation Technology, LLC (HIT), a medical device company developing innovative orthopaedic device solutions to advance the quality of life and quality of care for patients, has received FDA (Food and Drug Administration) Investigational Device Exemption (IDE) approval to initiate a pivotal clinical study to further evaluate the company's Reverse Hip Replacement System (Reverse HRS) for use in primary total hip arthroplasty (THA).

The clinical study objective is to evaluate the safety and effectiveness of the Reverse HRS in patients undergoing THA. Safety will be assessed through the collection of device-related adverse events and patient quality of life metrics. Effectiveness will be evaluated using clinical, radiologic, and patient-reported outcomes.

"The Reverse HRS is a unique hip implant design that represents a significant advancement for patients requiring total hip arthroplasty," said George Diamantoni, Hip Innovation Technology's Co-Founder and Chief Executive Officer. "In our pivotal study we will further evaluate potential Reverse HRS patient benefits including hip stability at extended ranges of motion, reduced risk of device dislocation, and greater latitude for placement of hip components."

In an ongoing 100-patient clinical study, the company has collected outcomes data from multiple sources including radiostereometric analysis (RSA). RSA is a state-of-the-art x-ray technique used to evaluate device micro-motion and wear. Data from the first 21 patients demonstrates minimal migration between 12 and 24 months for both the femoral and ace-tabular components. Mean migration was below detection and no migra-



tion concern was identified among all study patients. Importantly, patient Recorded Outcome Measure (PROM) data suggest significant improvement from pre- to post-operative patient and physician perspectives.

"The Reverse HRS first phase RSA clinical data evaluating implant micromotion of the acetabular and femoral components has demonstrated each to be at a "not at risk" category for aseptic loosening indicating predictable long-term fixation," said Steve MacDonald, MD, Professor and JC Kennedy Chairman of Orthopaedic Surgery at the University of Western Ontario in London, Ontario, Canada. "The FDA IDE trial that will begin in 2022 will further assess the Reverse HRS clinical performance in multiple sites, in the U.S."

Total hip replacements are one of the most effective ways to reduce joint pain and improve functioning for patients with advanced hip problems. According to the American Academy of Orthopaedic Surgeons (AAOS), over 450,000 hip replacements are performed each year in the U.S. For more information, visit: www.hipinnovationtechnology.com

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Titanium-nitride Coatings On Orthopaedic Implants

Authors Harry Hothi, Anna Di Laura, Johann Henckel and Alister Hart, of The Royal National Orthopaedic Hospital, discuss their two published studies examining retrieved hip implants manufactured with ceramic coatings

Background

In the past three years in the UK alone, more than 510.000 patients received a hip or knee replacement [1]. These devices often consist of components made of cobalt-chromium (CoCr), titanium and stainless-steel alloys, as well as ceramic and polyethene components. The challenges in the use of CoCr metal-on-metal (MOM) hips have been widely documented; these have primarily been linked to wear of the CoCr alloy leading to adverse reactions in patients and ultimately revision of the implant. Whilst the use of MOM hips has virtually ended, CoCr alloy is still widely used in hip and knee implants as part of metal-on-polyethyl-



ene articulations. The risk of CoCr wear in these still exists, particularly in the presence of 3rd body debris (albeit at a lower risk than in MOM hips). Addi-



Figure 2: Three retrieved femoral heads coated with titanium niobium nitride. Coating removal is macroscopically visible on all heads [5].

Figure 1: Examples of different TiN coated implants for (a) total knee replacement, (b) partial knee replacement, (c) hip resurfacing, (d) shoulder replacement [3] and (e) a dual-mobility hip [4].

tionally, it is believed that around 15% of the population has some level of metal hypersensitivity to nickel, and a small percentage to cobalt, chromium and/



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or molybdenum, which are the constituent metals of CoCr alloy [2].

Ceramic Coatings

CoCr alloy remains the preferred metal within these bearing surfaces due to its high hardness and wear resistance (relative to titanium and stainless-steel). Manufacturers have for several decades made use ceramic coatings in orthopaedics and we have seen examples of various hips, knees and other devices coated with Titanium Nitride (TiN), which has a distinctive gold colour, Figure 1.

These coatings have been designed to serve as a 'protective layer' between patient tissue and the underlying CoCr, theoretically minimising the risk of CoCr wear ions being released (and also reducing the risk of wear of the opposing polyethylene component) or protecting patients with metal hypersensitivity [5]. Ceramic coatings offer other theoretical advantages compared with using CoCr alone: greater hardness, low surface roughness, increased wettability, and a lower coefficient of friction, helping to improve the lubrication between the metal and polyethylene components.

Wear simulator testing has shown these coatings to perform highly favourably in terms of enhancing wear resistance and maintaining the integrity of the coating itself, however a clear clinical benefit of coatings is not yet conclusively proven [6]. Retrieval studies have shown however that simulators are not always able to predict what will happen to an implant whilst in the patient.

Our group has published two studies examining retrieved hip implants manufactured with ceramic coatings. The first study reported on three MOM hips received at our centre that had been coated with titanium niobium nitride (TiNbN) in order to minimise wear of the underlying CoCr [7]. All three hips were revised within 33 months after being implanted and two patients were found to have levels of cobalt and chromium in their blood that were significantly above 'normal' levels, measuring a maximum of 55 and 46ppb of cobalt and chromium ions respectively. All three were measured as having experienced significantly more wear than would be expected for a well-functioning implant. Macroscopically there will clear

regions of coating loss (Figure 2). The second study involved 43 retrieved MOP hips which had a TiNbN coating applied to the CoCr femoral heads [8]. 15 of these had clear macroscopic evidence of coating loss and this was associated with increased wear of the corresponding polyethylene liners, compared with liners in which the head coating was intact.

These two studies present examples of the clinical impact of coating failure in patients. The underlying cause of coating removal in these cases is unclear however they point towards a need for optimising the coating application method. There are several different methods which can be used, including physical vapour deposition (PVD), chemical vapour deposition (CVD) and plasma spraying [9]. These all have advantages in their use such as the ability to coat complex shapes or their relative costs however all are associated with challenges in delamination or low initial adhesion.

Conclusion

The use of titanium-nitride ceramic coatings on CoCr bearing surfaces can create a hard biocompatible layer, minimising wear against polyethylene components. Indeed, there are several coated implant designs that demonstrate good medium to longterm clinical success (their advantage over not coating is still unclear). These coatings also enable patients with metal allergy, in particular to nickel, to be able to safely use these implants. Retrieval data does show however that coating loss can occur during use in patients, which can adversely impact function and require revision surgery. Further enhancements of this coating technology and its application methods are necessary to fully optimise their clinical use.

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Source:

"Landmark Study Approved To Evaluate Hip Innovation Technology's Reverse Hip Replacement System" - taken from: https://www.opnews.com/2022/04/reversehip-replacement-system/17430 "Titanium-nitride Coatings On Orthopaedic Implants" – taken from: https://www. opnews.com/2022/02/titanium-nitridecoatings-on-orthopaedic-implants/17355

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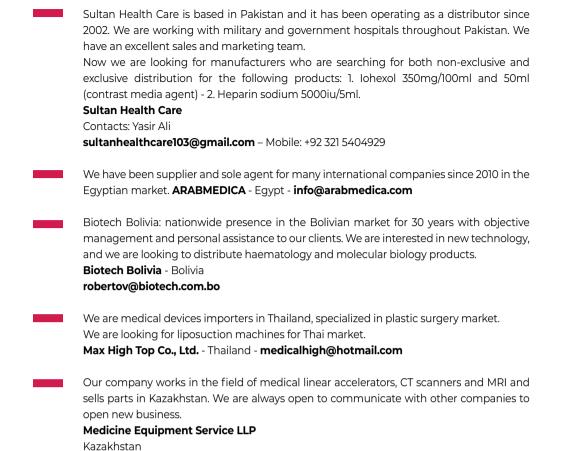
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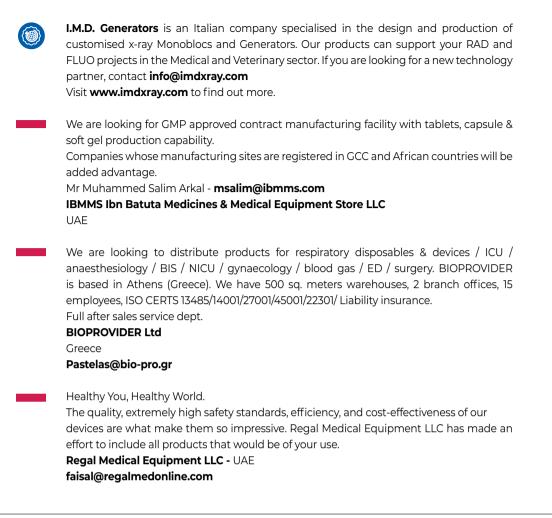
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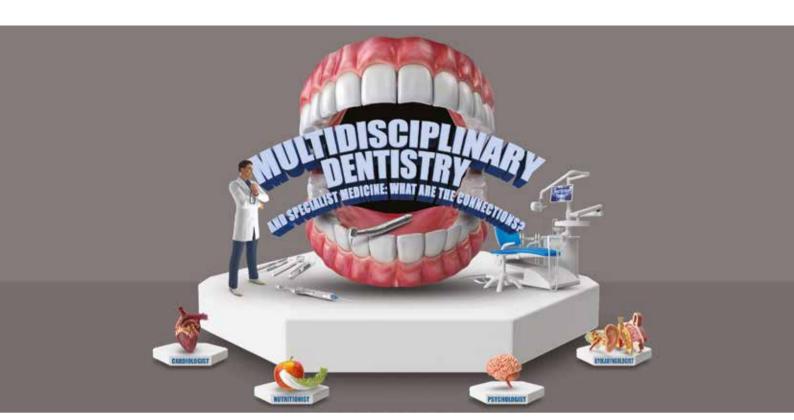
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13-17/07/2022

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Onsite congress 13-17 July 2022

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UK Digital Health Technology Improves Outcomes For Patients In The Gambia

Definition Health has announced that part of its total digital surgical solution, initially developed for patients in the NHS and private hospital sector, is now being deployed in The Gambia.

Its LifeBox pre-operative health assessment (ePOA) app is now being used to enable remote care of orthopaedic patients and provide Gambian clinical teams with remote assistance from medics in the UK to help them in diagnosis and treatment. It is the first national virtual fracture clinic in the world to run off a single digital platform and already data is showing that it will prevent 50% of patients having to travel long distances for treatment.

In March 2022, Dr Rosie Scott, a consultant radiologist, and co-founder of Definition Health, volunteered in the Gambia, as part of the Gam Med Charity (Gambia Medical UK Partnership) to train local medics on the LifeBox ePOA. The Gambia lies in West Africa and is the smallest country within mainland Africa, with a population of 2.1 million people. By western standards healthcare provision is extremely limited. Most secondary healthcare is provided in the Edward Francis Small Teaching Hospital (EFSTH) in the capital, Banjul.

In The Gambia, many patients with injuries use traditional medicine and healers. Fractures are often bound with sticks which result in malunion or non-union leading to significant permanent deformity. The resulting deformities would pose a significant orthopaedic challenge to reconstruct the limb in the western world, let alone in The Gambia. Adding to this challenge, many patients will travel over 100 miles to EFSTH with these injuries without an initial consultation or appointment - often leading to overwhelmed clinics, delayed treatment and in many cases, disappointment for patients.

In 2018, Dr Kebba Marenah was employed as the country's first Gambian orthopaedic consultant. He com-



pleted his medical training in the UK, including his orthopaedic registrar training in Brighton and Sussex University Hospitals NHS Trust (now known as University Hospitals Sussex). Dr Marenah led the orthopaedic arm of the West African College of Surgeons Outreach programme to the Gambia. He, along with Mr James Gibbs and Ms Lisa Leonard, both orthopaedic consultants at University Hospitals Sussex, performed surgery and taught in EFSTH for a week.

Out of that trip, the Gam Med charity was formed, and UK healthcare professionals continue to give longterm help and support to Dr Marenah in his ambition to raise the standards of hospital treatment in the Gambia. Each year, Mr Gibbs and a group of NHS surgeons, anaesthetists, radiologists & physiotherapists spend a week working and operating on a wide range of conditions. These volunteers include Definition Health's Dr Scott.

During the most recent Gam Med trip in March 2022, Dr Marenah has been working with Dr Scott to provide access and training to the Definition LifeBox system in Edward Francis Small Teaching Hospital, as well as five other satellite hospitals throughout the Gambia. The use of Definition LifeBox will enable re-



mote care, monitoring and planning for patients between Dr Marenah at EFSTH and the satellite hospitals. Where needed, information can be uploaded for teams in the UK to view and offer remote assistance to the Gambian clinical teams in diagnosis and treatment plans for patients.

"It was my complete privilege to work with the medical team in The Gambia and to offer them support with our Definition Health digital platform which allows them now to record conditions and treatment as well as monitor patients from a distance. For some patients, this saves them a journey of over 100 miles," said Dr Scott. "I hope we can continue to support their everyday appointments with their patients, wherever they may live, and then with safe and efficient onward referral to the specialist where necessary. I feel happy that our technology is creating the greatest benefit where it is most needed."

For more information on Definition Health's Total Surgical Solution, visit **www.definitionhealth.co.uk** or email **hello@definitionhealth.com**

Source: www.opnews.com/2022/03/ uk-digital-health-technology-improves-outcomes-for-patients-in-thegambia/17415 Photo: (left) Dr. Rosie Scott, cofounder of Definition Health with team of Cambian medics. (Right) One of the Gambian doctors using Lifebox.

INFOMEDIX INTERNATIONAL 2/2022



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