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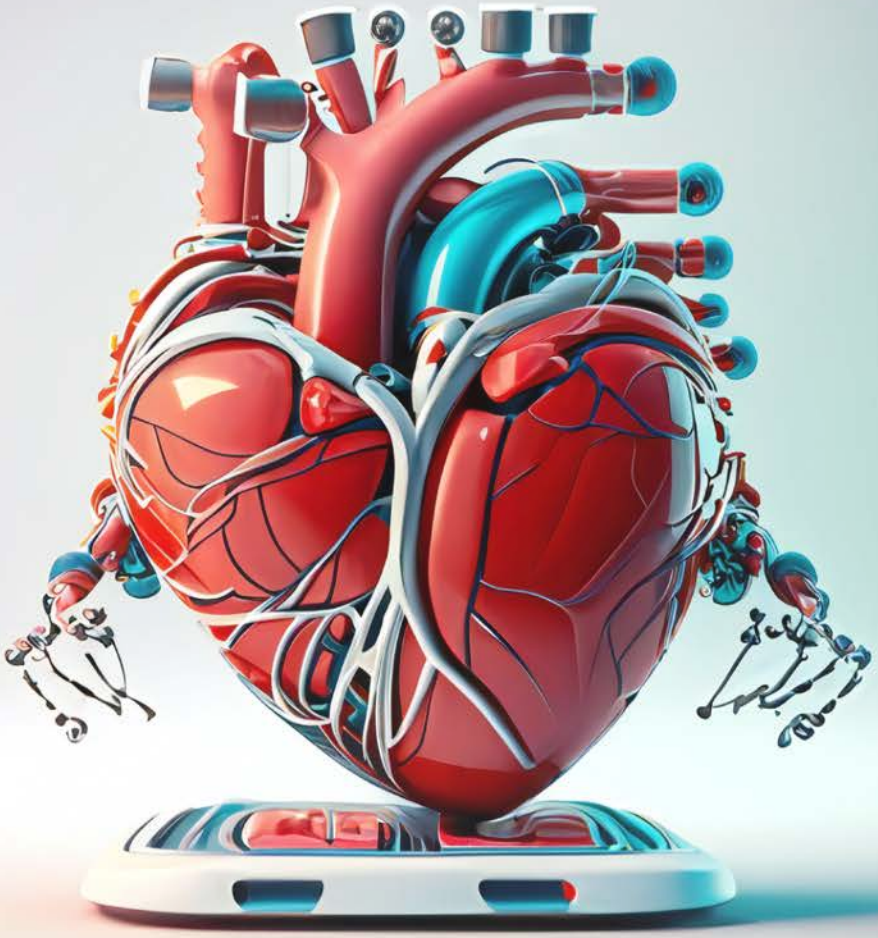
Futuremover

WINTER 2023 / 2024



How Healthy Will Our Future Be?

PODCAST

More about this issue's contents in the podcast by Board member Christina Kehl:
globalance.com/zukunftbeweger-christina-kehl

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With AI and common sense.
We created these images with the use of AI tools.

A Journey through the Future of Health

The subject of health has always played a central role in our society, but never before have we had so many opportunities to redefine and shape health as we do today. In this issue of the *Futuremover*, we delve into the fascinating world of the future healthcare landscape, which is unfolding at the interface between technology and human wellbeing.

We are living in a time of rapid technological developments. Innovative technologies such as artificial intelligence, genomics and personalised medicine are revolutionising prevention, diagnosis and treatment. At the same time, we are becoming increasingly aware of the importance of mental health, a work-life balance and a healthy environment. The future of our health is multi-dimensional and promises to increasingly affect every aspect of our lives.

> Never before have we been able to shape health as we do today.

We explore how the integration of high-tech and high-touch, the fusion of cutting-edge technology with human empathy, is transforming healthcare. We look at breakthrough innovations that could not only cure diseases, but also prevent them from occurring. We also explore the challenges and opportunities that ageing brings to our society and how we can promote long, healthy lives.

Our journey through the future of health is not only a voyage of discovery through medical advances, but also an invitation to reflect on our own wellbeing and that of our society.

Join us on this inspiring journey into a future where health is more than the absence of disease – it is total wellbeing that touches every aspect of our lives.

With best wishes for a healthy and hopeful New Year,

Reto Ringger
Founder and CEO

How Healthy Will Our Future Be?

Photo: PeopleImages/iStock

MAIN TOPIC

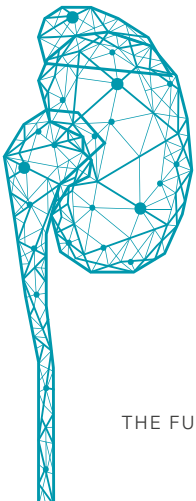
Recipe for Growing Old

Take 700 grams of organic vegetables from your own garden every day, add several hours of exercise in the fresh air and a close network of family and friends: these are the three secret ingredients of centenarians from what are known as the "blue zones", which are home to some of the oldest people in the world. Read how technological progress is extending lives in our part of the world too on **page 6.**

AI AND MEDTECH

People Wanted

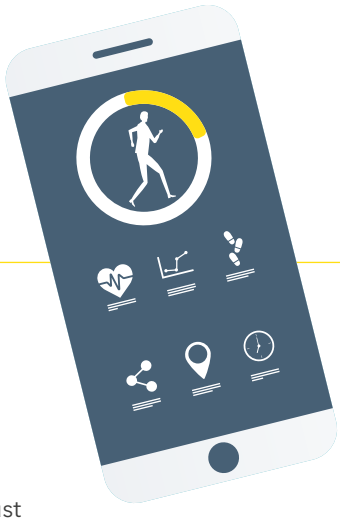
When algorithms perform better than real human beings, this is the first step towards a new normality in our healthcare system. In the future, doctors and other specialists will once again focus more on their basic human skills – while artificial intelligence will relieve them of the burden of diagnoses, studies and much more. **Page 8.**



INNOVATIVE SOLUTIONS

Who Is Moving Towards the Future

Some companies simply seem to be a few years ahead of the majority. We are keeping a particularly close eye on these pioneers – and of course we definitely want to make sure you are in the know. Our future movers around the globe have recognised the trends of our time and are developing sustainable solutions. We present them to you on **page 10.**



WEARABLE HEALTH TECH

In Synch with Our Body

Smartphones, watches and fitness trackers can do much more than just count steps. Wearables monitor our heart rate, analyse sleep patterns and detect elevated blood sugar levels. The data collected helps researchers develop better health tips. Find out what else the doctor on your wrist can do on **page 12.**

PERSONALISED MEDICATION

Gentastic Health

Things are getting personal now: as in many other areas of life, the healthcare sector is realising that individuality must be taken into account more. This trend is supported by the developments in genome sequencing, which is becoming increasingly suitable for large-scale use and allows for the comprehensive analysis of our genetic material. Find out more on **page 14.**

HEALTH DATA

Safe for Our Data

As promising as data is for our future health, the risk of misuse is just as great. Our health data must therefore be protected in the equivalent to a virtual high-security prison. What role can blockchains play in this and where is this technology stretched to its limits? **Page 18.**

MENTAL HEALTH

Apps for Salvation

On **page 20,** we explore the question of which digital aids can strengthen our mental health. Virtually everything can be found on the market, from simple rituals to real online therapy. But what actually helps? A ranking including review of popular apps from different areas.

START-UPS

Skyrockets

About a watch flying to Mars and why synthetic molecules could revolutionise the drugs market. Our start-ups of the hour are the two American companies Empatica and Atomwise, which both offer huge potential for better healthcare. For more details, turn to **page 22.**

Technological Progress for a Long Life

AI-DRIVEN DIAGNOSES, GENETIC ANALYSES FOR THE GENERAL POPULATION, digital health as the new normal and a super safe for our medical data: the healthcare system is being reorganised worldwide. Which trends deserve a closer look – and what do they mean for us as a society.

Health is our most important asset. How much it means to us – how much it occupies us – is shown not least by the employment figures in the healthcare sector. It is the sector that employs the most people worldwide, but also the sector that is currently undergoing more change than almost any other. Whether as prevention or in the (virtual) patient chair: health apps, smartwatches and chatbots have long since found their way into our everyday lives. Algorithms recognise symptoms such as flickering eyes or the first signs of Parkinson's disease, wristwatches announce seizures to epileptics, and programmed conversation partners help deal with depression or anxiety disorders.

Key Task for the Future

A recent survey among 500 experts by the German Zukunftsinstitut revealed that digital healthcare products and services could reach up to EUR 979 billion worldwide by 2025. This is also in the knowledge that mental health is a key factor for our wellbeing that needs to be considered holistically. In a report, the institute writes: "The battle against the pandemic and the impact of Covid-19 on mental wellbeing are creating a new focus on health as a task for society as a whole. Shaping the environment in the interests of everyone's health will become the key task for the future." This means that health is moving away from the individual level and towards an all-encompassing, social goal.

Photo: demaerre/iStock

Achieving this goal is closer than ever before. Connected health data in particular present a huge opportunity: today, only three per cent of the available data is used because there are no structured analyses. If data were linked intelligently, all specialists would have the necessary information immediately, even in emergencies. Overall patient safety would improve massively, as would the efficiency and effectiveness of the healthcare system. The flip side of this coin is data security, which is currently still too patchy. Experts around the world are working flat out to meet this challenge. Analysts estimate that the market for IT security will quadruple by 2032. Innovative start-ups such as the US company Cynerio have taken up the cause of protecting smart, networked medical devices. It is mainly non-manipulable blockchains which are very promising as a secure access key to highly sensitive data.

Secret of the Blue Zones

The use of artificial intelligence is considered to be particularly effective in medicine. In imaging procedures, it already makes more accurate diagnoses than humans. Meanwhile, intelligent genetic tests reveal our genetic make-up and show which disease risks lie dormant in our DNA.

What we cannot delegate to advances in medical technology is our lifestyle, which according to studies can add up to twenty years to our lives. Research in what are known as "blue zones", which are home to some of the oldest people in the world, is uncovering recipes with astonishing similarities. Reports from these areas depict fit, very old people who grow organic vegetables, are practically always on the go and are integrated into a stable social network. It is also noteworthy that faith plays an important role in these regions. US journalist Dan Buettner, who found and researched the blue zones and recently made a Netflix series about them, says: "If you can count on three friends on a bad day, you gain eight years of life expectancy – no drug in the world can do that." Basically though, it is lots of small things, and not one single measure, that improve health or prolong life overall.

Translating Success Factors into the Modern Age

What can we take with us from these findings into cities and urban centres, where very few people live in the same house as their very old parents or want to go to church every Sunday? Instead of trying to copy the way of life in a diametrically different environment, we should recognise the underlying causes: people in the blue zones live longer because they eat healthily, exercise a lot and are socially integrated. Perhaps the motto here is simply mindfulness instead of religiosity or jogging instead of herding cattle. However, the success factors are ultimately the same in the reality of our lives – and are even intelligently supported by apps and algorithms.

Mental health is a key factor for our wellbeing that needs to be considered holistically.

THE GLOBALANCE VIEW

An in-depth understanding of long-term global megatrends is part of the foundation of the Globalance investment strategy. Around twenty per cent of all the revenue from the companies we select is generated in the "Health and old age" megatrend.

A working healthcare system is the basis for the future viability of society. Healthcare systems around the world are coming under pressure, either because they cannot guarantee care or because costs are exploding. Companies that can launch innovative treatments at lower costs are best positioned in this market.

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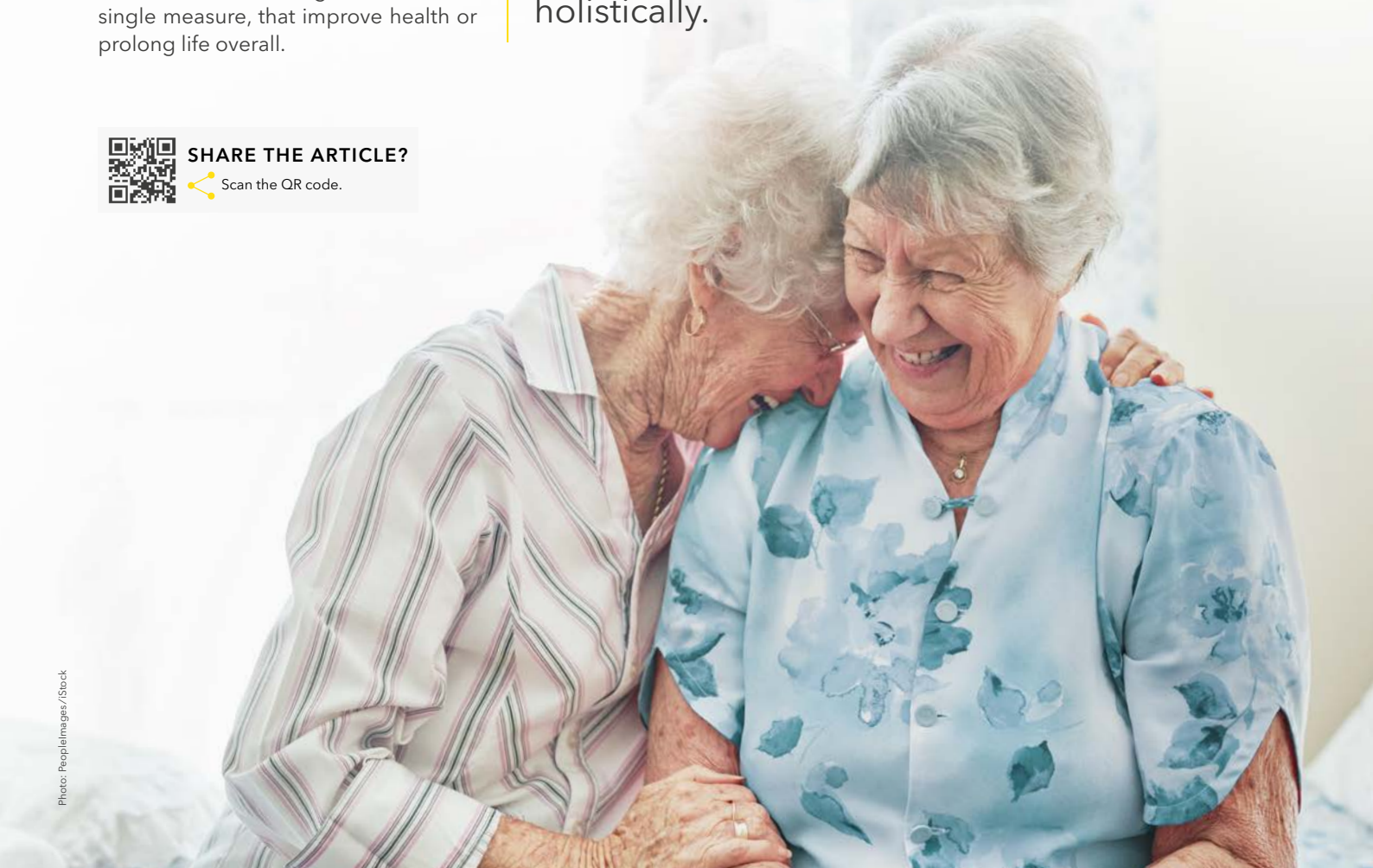


Photo: PeopleImages/iStock

The Silent Medical Revolution

ARTIFICIAL INTELLIGENCE IS A GAME-CHANGER IN HEALTHCARE.
The sector could become a prime example of how technology can make people's lives easier and reduce social inequalities.

AI diagnoses skin cancer more reliably than specialists, a robot scores top marks in medical theory tests and an algorithm estimates the chances of a coma patient waking up more realistically than the medical profession. These are not utopias at some point in the future, but real examples of recent cases. They show one thing above all: artificial intelligence has huge disruptive potential in medicine.

> AI correctly diagnoses skin cancer in 95 % of cases – humans in 87 %.

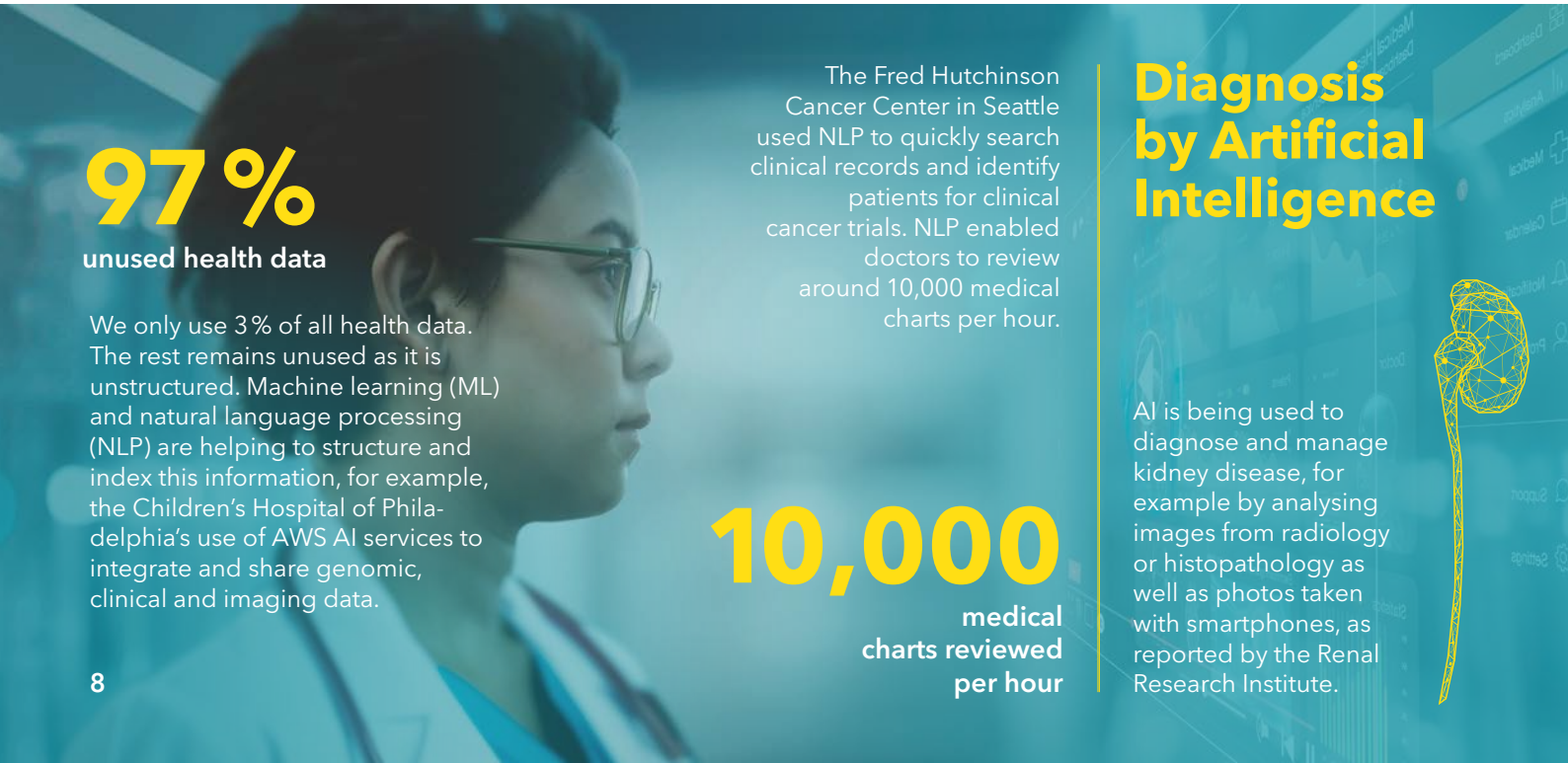
This offers unprecedented creative freedom. Why does a doctor still need to swot up on knowledge when they can also access it in digital databases? Why track your sleep two or three times in a lab when your smartwatch can do it all year round?

Four Key Areas of Application

In a recent Inside Report, the World Economic Forum (WEF) identified four areas as the most important use cases for sustainable, multilateral cooperation. These are AI-guided diagnosis, risk stratification, clinical trial optimisation and outbreak clarification and prediction.

The example of skin cancer mentioned at the beginning of this article illustrates how a diagnosis made by AI can trump human expertise. In the study, which was published in the scientific journal *Annals of Oncology*, the programme was fed a large number of images and the corresponding diagnosis. Once trained, it was able to correctly interpret new images 95 per cent of the time. The 58 experts achieved 87 per cent.

Experts use the term "risk stratification" to determine which factors lead to which course of the disease. Genetic tests are already providing answers to the question of which diseases we carry within us and which treatments we are likely to respond favourably to. This leads directly to more personalised and therefore more targeted medication. AI could also be used to make it easier to identify and recruit suitable study participants by systematically searching medical databases. In the event of an outbreak of infectious diseases,



97 %
unused health data

We only use 3 % of all health data. The rest remains unused as it is unstructured. Machine learning (ML) and natural language processing (NLP) are helping to structure and index this information, for example, the Children's Hospital of Philadelphia's use of AWS AI services to integrate and share genomic, clinical and imaging data.

The Fred Hutchinson Cancer Center in Seattle used NLP to quickly search clinical records and identify patients for clinical cancer trials. NLP enabled doctors to review around 10,000 medical charts per hour.

10,000
medical charts reviewed per hour

Diagnosis by Artificial Intelligence

AI is being used to diagnose and manage kidney disease, for example by analysing images from radiology or histopathology as well as photos taken with smartphones, as reported by the Renal Research Institute.

> AI frees up capacity and enables research into rare diseases that are currently financially unattractive.

algorithms are also able to recognise patterns faster than we can and make well-founded predictions based on this.

How the Healthcare System Is Changing

These and other areas of application are likely to have as profound an impact on the world's approach to disease as the advent of the smartphone has had on our communication behaviour. The great hope is that an AI-powered healthcare system will reduce the gap between the rich and poor by freeing up more capacity overall and because the rapidly advancing technology massively reduces costs. This could also lead to research into rare diseases that are currently financially unattractive. AI can help to alleviate the care crisis, exploding healthcare costs and increasing resistance to antibiotics. In general, prevention will become more important – be it through early risk assessments or with the help of technological gadgets that provide us with health-promoting tips.

The fear that humans will become obsolete in this system at some point falls on less fertile ground. People remain central to our human needs as we need an empathetic counterpart to build trust and feel that we are in good hands. Where machines relieve humans of time-consuming tasks, there will – hopefully – be more time for the latter for dialogue and care.

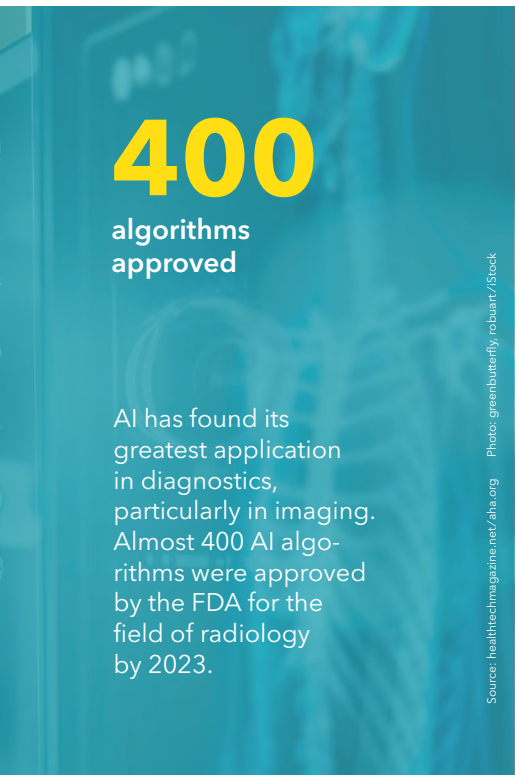
Regulatory Obstacles and Other Hurdles

However, because we are working in such a sensitive area in the healthcare sector, AI also has some major hurdles to overcome. Besides the need to channel and focus data across borders, what is lacking most at the moment is a regulatory framework. There are many efforts underway around the world to determine how highly sensitive data should be handled. Beyond the legal issues, there are also ethical questions that we as a society need to discuss. Can we forgive a machine the same mistakes as a doctor? And what do I personally do with the information that I have a 50 per cent chance of getting cancer – or even that I already carry a certain disease?

The story of the protein folding problem shows how much there is to gain by actively tackling this issue. This is a core problem in biology – specifically, how to predict the folding of a protein from the given amino acids – that was thought to be almost unsolvable. Deep Mind has solved this problem for virtually all endogenous proteins with the AlphaFold2 algorithm, making it one of the biggest scientific breakthroughs of the century.

THE GLOBALANCE VIEW

The human factor is the biggest source of error with technological applications. Self-driving cars have been proven to cause fewer crashes. Aircraft accidents are mainly due to human error. Doctors are also only human, as the saying goes. The use of artificial intelligence is not controversial if it prevents us from making mistakes. The principle must be: technology is there to support, improve and simplify. When selecting companies, we explicitly pay attention to their secure handling of data and robust risk management through sensible guidelines.



400

algorithms approved

AI has found its greatest application in diagnostics, particularly in imaging. Almost 400 AI algorithms were approved by the FDA for the field of radiology by 2023.

Source: healthtechmagazine.net/ahe.org Photo: greenbutterfly, robuart/iStock

Could this article be of interest to someone you know?

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The Globalance Future-movers

We introduce you to companies that successfully respond to worldwide megatrends and develop solutions for global challenges. These are the Globalance futuremovers. They use forward-looking concepts to replace outdated business models and achieve a positive footprint at the same time.

TOPICS

DIGITISATION — Companies that drive the digital, automated and data-driven revolution of business and society.

CONSUMER SOCIETY — Companies that are driving the transformation into a compatible consumer society in the areas of lifestyle, leisure, luxury and consumption in old age.

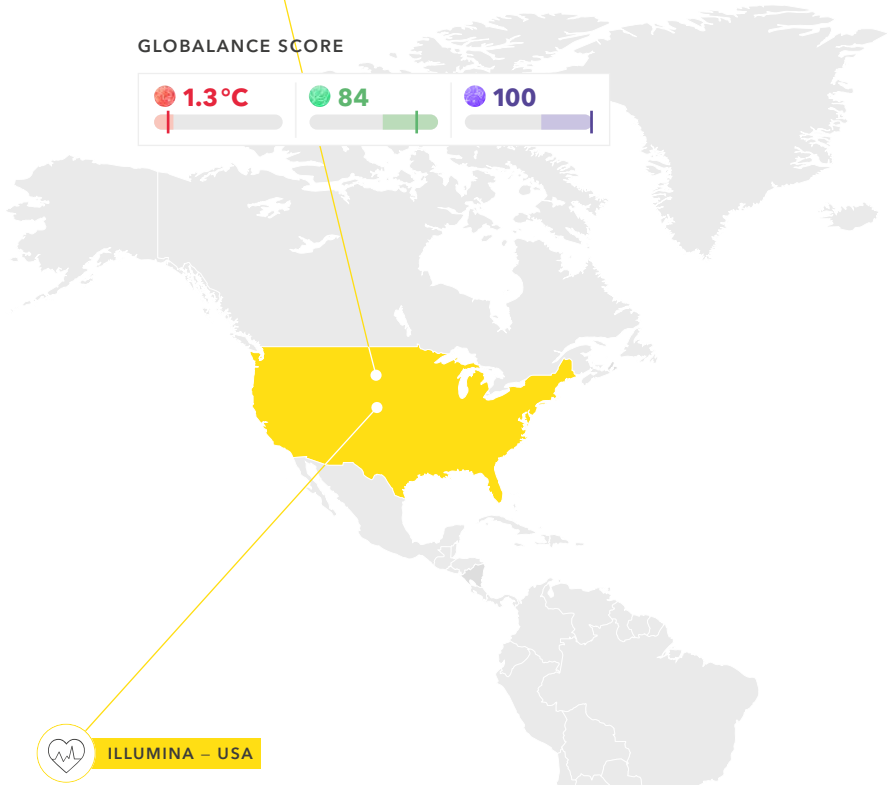
HEALTH AND AGE — Companies that develop efficient medical innovations for an ageing and in many places overweight society.

PALO ALTO NETWORKS – USA

Leader in Cyber Security

DIGITISATION — Palo Alto Networks' customers include some 60,000 organisations in more than 150 countries. This makes the US company one of the leaders in the field of network security. Palo Alto Networks' products reduce the social and economic risks associated with cyber attacks. The growth in revenue and profit is expected to be around 20%. Strong growth will allow further margin increases to over 20% in net profit and a return on equity of more than 40%. Thanks to the large free cash flow, Palo Alto Networks can also remain at the forefront of technology.

GLOBALANCE SCORE

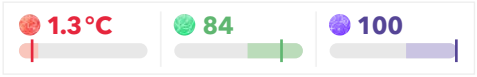


ILLUMINA – USA

High-Tech Genetic Engineering Machines

HEALTH AND AGE — The biotech company Illumina manufactures devices for genetic engineering to detect large-scale analyses of genetic variations. The devices are considered state of the art and are also used in studies that would have been unimaginable without them just a few years ago. The US company went public in 2000, two years after it was founded. Following a sharp drop in the share price, the company is now in a turnaround phase and is attractively rated in the medium term.

GLOBALANCE SCORE



ESSITY – SWEDEN

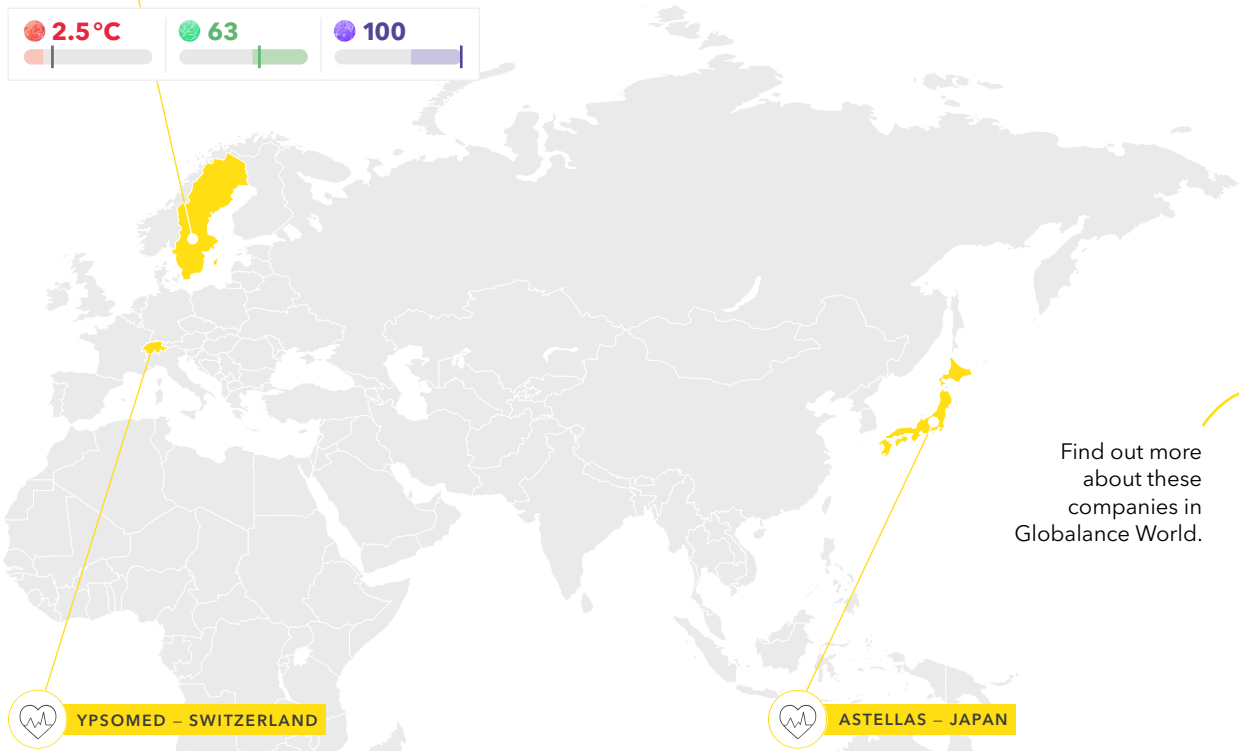
Body Care and Hygiene Products

CONSUMER SOCIETY — The Swedish company Essity specialises in the development, manufacture and marketing of personal care products and combines well-known health and hygiene brands under one roof – for example Tempo, Tena, Leukoplast and Tork. The name Essity is made up of the words "essentials" and "necessities". The company was founded in 1929 and has been listed on the Stockholm Stock Exchange since 2017. Essity works very efficiently and has operating profit margins in double figures. 5 to 10 % growth is expected in revenue and around 15 % in annual profit.

GLOBALANCE SCORE

2.5 °C | 63 | 100

GLOBALANCE SCORE	Key areas classified by Globalance:
Global warming potential	0 – 1.5 °C
Globalance Footprint®	57 – 100
Share in global megatrends	60 – 100



Find out more about these companies in Globalance World.

YPSOMED – SWITZERLAND

Self-Medication for Diabetes

HEALTH AND AGE — The predecessor to today's Ypsomed achieved great fame with the world's first micro insulin pump. Now, the Swiss company is a leader in the development and manufacture of injection systems for self-medication by patients. The devices are produced in the Swiss towns of Burgdorf and Solothurn, as well as in Germany. Despite the sharp rise in the share price in 2023, Ypsomed remains very attractive thanks to high margins and strong growth.

GLOBALANCE SCORE

1.4 °C | 77 | 100

ASTELLAS – JAPAN

Treatments from Japan

HEALTH AND AGE — Astellas Pharma Inc. products focus on therapeutic areas such as transplantation, immunology, infectious diseases, urology, oncology, neurosciences, diabetic complications and metabolic diseases. The Japanese company is active in the research, development and manufacture of pharmaceutical products for these areas. Profit is expected to grow by 30 to 40 % over the next three years. The valuation is particularly attractive following a sharp drop in the share price.

GLOBALANCE SCORE

1.4 °C | 68 | 100

Doctor on Your Wrist

MANY PEOPLE USE FITNESS TRACKERS to count their steps or measure their heart rate during exercise. The potential of the data collected is huge, both for us personally and for the healthcare system as a whole.

Smartwatches, fitness trackers and smartphones will revolutionise the healthcare sector. Various experts agree on this. Wearable health technology can detect serious conditions such as atrial fibrillation or Parkinson's disease much earlier than conventional tests. These devices' algorithms analyse the data collected daily – and at night, if the wearer so wishes – to make early diagnoses or plan tailored treatments. The widespread use of smart devices has the potential to reduce healthcare costs while increasing the effectiveness of treatments at the same time. However, there are still unanswered questions regarding data protection and socio-economic inequalities, as not everyone can afford a smartphone or smartwatch. In addition, the data collected is not always comparable and the devices are not always equally as accurate.

Precise Insight into Our Everyday Lives

If you have a fitness tracker and are an active user, you probably check your steps at the end of the day. A simple incentive to keep moving throughout the day and maybe take the stairs instead of the lift – if physically possible. After all, it is now undisputed that getting enough exercise reduces the risk of premature death, cardiovascular disease and even cancer. A new study by a consortium of researchers from different parts of the world shows the relevance of fitness trackers in healthcare and highlights a major problem in diagnosis: when we explain to a doctor what our everyday life looks like and how often we are active, this is often not the reality. For example, if we went to the gym for an hour, we didn't exercise for an hour, but we would probably tell the doctor that we did an hour of fitness. Wearables, on the other hand, can eliminate this discrepancy and more accurately reflect our daily routines.

In some cases, fitness trackers can provide us with more accurate data for diagnosing a condition than a visit to the doctor. By collecting and analysing data, wearables are able to identify behavioural patterns and provide person-

> Getting enough exercise reduces the risk of premature death, cardiovascular disease and even cancer.

alised recommendations on exercise, diet and sleep. These personalised plans are more effective and easier to follow than general recommendations. Fitness trackers are also important for research because of their accuracy. "Wearables have great potential to guide how much and what kind of exercise we recommend people do in their daily lives," says Jason Gill, Professor of Cardiometabolic Health at the University of Glasgow.

Social and Technical Challenges

There are clear socio-economic differences in the ownership and use of fitness trackers, smartwatches and smartphones capable of collecting health data. People in lower socio-economic groups have a higher risk of chronic disease and could benefit most from a healthier standard of living. However, purchasing one of these devices is often beyond their financial means. One way to address this problem is to make it easier for people in low-income social groups to access these devices. This could be achieved through government programmes or subsidies to make the purchase of wearables more affordable for these population groups.

Another challenge is that there is no standardisation of devices and data, making it difficult to compare data. Consumer devices such as Fitbit and Garmin also work with proprietary algorithms that are not transparent to researchers and public authorities.

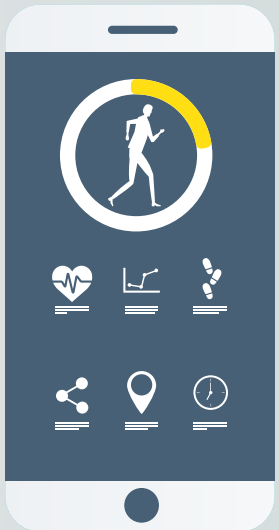
Overcoming these hurdles will require better collaboration between research, industry and the government to ensure that wearables are used effectively across all levels of society to diagnose, treat and, ideally, prevent chronic diseases. Ultimately, wearable health technologies are about improving the health and well-being of the entire population.

THE GLOBALANCE VIEW

Wearables in the healthcare sector represent an exciting interface between technology and medicine. They offer huge potential for personalised health monitoring, precise medical research and the more effective treatment of diseases. However, the challenges in terms of data protection, ethics and accessibility require careful consideration and innovation.

Wearables and Health

PROMISING POTENTIAL



EARLY DETECTION AND PREVENTION

Heart Health — Wearables can continuously monitor the heart rate and rhythm, which helps detect heart problems at an early stage. For example, the *Apple Watch* has an ECG function that can detect irregular heart rhythms

Sleep Monitoring — Devices such as *Fitbit* and *Withings* offer sleep tracking that analyses sleep patterns and can help identify sleep disorders.

IMPROVEMENT IN CLINICAL RESEARCH

Wealth of Data — Wearables provide continuous, real-time data that helps researchers to understand the health and behaviour of the population better.

Studies and Trials — For example, Stanford University conducted the *Apple Heart Study* to identify atrial fibrillation using the *Apple Watch*.

SUPPORT FOR CHRONIC DISEASES

Diabetes Management — Wearables such as the *Continuous Glucose Monitoring System (CGM)* enable a continuous monitoring of blood glucose levels, which is particularly beneficial for diabetics.

High Blood Pressure Monitoring — Devices such as the *HeartGuide* wristwatch from OMRON enable users to monitor their blood pressure on a regular basis.

DATA ON THE USE AND FUTURE POTENTIAL

Market Growth — The market for health wearables is growing rapidly. Forecasts indicate that the number of wearables in use worldwide will increase exponentially by 2025.

Data Integration — The integration of wearable data into electronic health records could revolutionise patient care.

Illustration: Feodora Chiosea /iStock

Tailored Medicine

WILL WE SOON HAVE CUSTOMISED MEDICATION like a tailor-made suit? And if so: will it remain a luxury good or be available to everyone? One thing is clear: the sequencing of the human genome is currently leading to a revolutionary rethink in medicine.

Our genes often play a decisive role in determining which diseases we develop and which treatments we respond to. We can now learn a great deal about this through genome sequencing, i.e. the analysis of our entire genetic make-up. It provides a basis for developing suitable, specific drugs and personalising treatments. For example, many types of cancer or purely genetic diseases are already being treated according to their molecular profile. And in the case of HIV, a genetic test can help identify a devastating intolerance to an active substance contained in the standard medication.

> In future, we will be able to assess the risks of certain diseases long before they occur.

Move Away from Half a Cancer

Our healthcare system is thus undergoing a paradigm shift: instead of averages that are often difficult to interpret – if fifty per cent of the population has cancer, not everyone has half a cancer! – individual fates are becoming more important. The development and adaptation of drugs are also moving away from the trial-and-error principle towards a systematic process.

Determining the individual's predisposition also makes prevention more important: in the future, we will be able to assess our risk of certain diseases much earlier than they actually occur. With the double-edged consequence that we will probably have to deal with them even before they break out and take responsibility for our lifestyle. After all, external factors also play a role in most diseases.

The EU Leads the Way

The European countries agree in principle that there is a future for genome sequencing and in particular for the established, faster variant of next generation sequencing (NGS). Germany has already created the legal basis to ensure that this personalised medicine, tailored to a person's individual genetic make-up, will be available to everyone as soon as possible. In January 2024, a five-year pilot project will be launched with the aim of setting up care structures, networking genetic medicine institutions and establishing uniform standards, among other things. Meanwhile, the EU's "1+ Million Genomes" initiative aims to sequence more than one million genomes in order to obtain more information about individual diseases. The resulting Europe-wide database is intended to sharpen the outlines of clinical pictures more than would be possible in individual regions or countries (with correspondingly less data).

SHARE THE ARTICLE?
Scan the QR code.

The global "next generation sequencing" market is expected to grow annually by over 20 per cent.

The Personnel Challenge

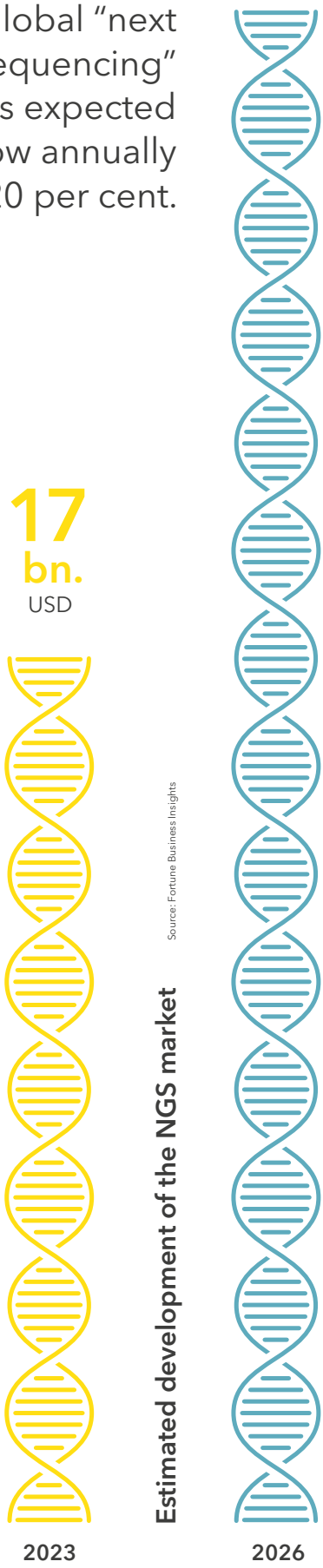
One of the challenges is data security. It is essential that employers or insurance companies never have access to an individual's genome sequence and that it is protected against misuse. In addition, it is not easy to achieve the goal that the new method should be accessible to everyone, as is currently being pursued in Germany. At the moment, full sequencing still seems too expensive for the general public, which is why partial sequencing is often used.

Health insurance companies in particular are also likely to be concerned about the cost implications of detecting more, often rare, diseases. Regardless, there is simply a lack of time and personnel at present to establish genome sequencing as a mass business.

Attractive Investment Opportunities

So while the technology is already quite mature, the method still has a long way to go in some cases. A lot is likely to happen in this sector in the coming years: the global NGS market is expected to grow by more than 20 per cent a year to around USD 31 billion by 2026. Major players include the American companies Illumina, Thermo Fisher Scientific and Agilent Technologies as well as the Swiss Roche Group. It is worth taking a closer look at the companies that are developing genome sequencing solutions. They have the potential to make us healthier in the long run, which should be worth a lot.

Personalised medicine is unlikely to significantly reduce healthcare costs. But it will make it more efficient and improve its quality. And that will ensure that we ultimately get more for our money.



Estimated development of the NGS market

Source: Fortune Business Insights

THE GLOBALANCE VIEW

The most important areas of application for personalised medicine are believed to be common diseases such as cancer, Parkinson's and Alzheimer's, which emphasises this technology's potential for growth.

In addition to bioanalytics and genetics, the keys to success can primarily be found in digitisation and data management. Computer-supported drug design and digital early diagnostics require very powerful computers and produce huge amounts of data that needs to be stored, analysed and networked. The rapid developments in biomedicine and IT are therefore opening up fascinating opportunities for new treatment approaches – and attractive investment options for investors.

Medicine of the Future – Technology and Ethics at the University Hospital Zurich

"AI Will Never Be Able to Replace Care by Actual Human Beings."

Ms Jänicke, will we live healthier lives in future?
Today we know a lot more about our metabolism than we used to, and scientific studies are investigating how various environmental influences or nutrition affect our health. Despite this, many people still eat an unhealthy diet, continue to smoke or prefer to use e-scooters instead of walking to get around in the city. This will in all probability not change in the future. There will still be people who live healthy lives and others who do not. The University Hospital Zurich (USZ) therefore wants to contribute to raising public awareness. Prevention is a top priority in many specialist areas at USZ.

Which innovative approaches in healthcare do you think have the potential to bring about fundamental change?
Digitisation has already led to major changes in other sectors. This trend is really just starting to take off in the healthcare sector. Of course, we already work with many digital devices and applications. But major transformation will probably come with full digitisation and, above all, networking digital applications. This networking should enable a fully digitally integrated patient pathway. This will enable us to network the healthcare system as a whole even more closely – in the best interests of patients.

"Full digitisation will enable a digitally integrated patient pathway and a more closely networked healthcare system overall."

“In radiology for example, there already are applications based on AI.”

Medicine is seen as an ideal field of development to leverage the potential of artificial intelligence. Is this already evident in everyday hospital life?
There are already some applications based on artificial intelligence, for example in radiology. I am convinced that this is just the beginning. At the same time, AI will never be able to replace care by actual human beings. And we will have to carefully weigh up the benefits and risks in all cases.

Thanks to genome sequencing and microbiome analysis, healthcare can now be much more personalised. What impact do you expect this will have with regard to drug development and individual patient treatment?
Personalised medicine has in fact come on leaps and bounds. It is showing promising progress in cancer treatment in particular. The aim here is not so much to develop new drugs, but rather to use the most effective treatments on an individual basis. This will enable us to achieve faster results with treatments in the future.

How can we ensure that these new possibilities are accessible to all patients?
As a hospital, we treat all patients equally. Our primary concern is which treatment is best for the individual patient. The USZ is one of those hospitals that often assume a pioneering role and are allowed to use drugs or treatments for the first time as part of scientific studies. The question of affordability and which treatments should ultimately be covered by health insurance and which should not, on the other hand, is a political issue that impacts society as a whole. The question is what kind of healthcare do we want.

How do you assess the potential impact of wearables such as smartwatches on patient autonomy and the role of the medical profession? How can patient privacy be protected in an increasingly connected and data-intensive healthcare landscape?
In principle, reliable health trackers present new opportunities, for example in health monitoring at home. In addition to the data protection issues you mentioned, other aspects are also relevant: if the data is really to be used for medical purposes, these devices must be validated as medical devices. In addition, the new option for care at home must not lead to people being left to fend for themselves. The tracker alone is therefore not enough: there must be clear instructions and a healthcare system that can cover this form of medical care.

And finally, a philosophical question: new technologies to prolong life always raise ethical questions. How do we find the right balance?
When people think about prolonging their lives, they always assume that they will remain healthy throughout that time. In my view, staying healthy is therefore always the top priority. And this is what we work towards.

MONIKA JÄNICKE
CEO of the University Hospital Zurich

Dr Monika Jänicke studied chemistry in Constance and obtained her doctorate at the University of Zurich in the field of organometallic chemistry. After initially working at Merck Sharp & Dohme AG, she began her long career at Novartis in 2003. In 2009, she took over the management of Novartis Switzerland, a position she held until she took over the management of Novartis France in 2018. She has been CEO of the University Hospital Zurich since June 2023.

How We Will Handle Our Health Data in the Future

IN THE FUTURE, ARTIFICIAL INTELLIGENCE WILL HAVE ACCESS TO OUR HEALTH DATA to suggest more efficient and effective treatment methods and preventive measures. But there are still a few hurdles to overcome before we get that far.

A woman arrives at a hospital's accident and emergency department and has to answer the doctor's questions about her state of health, previous illnesses and possible allergies. Her medical history with past consultations and data such as an X-ray would now be important for diagnosis, but this data is with the GP and it is now night time. The patient is provided with basic care and another appointment is made to request the necessary data from the GP.

This scenario is not uncommon in Switzerland. A person's health data is usually stored locally in one place and cannot be accessed by other organisations. This is why the Federal Council wants to introduce the future of digital healthcare with electronic patient dossiers. All of a person's important health data will be stored in a decentralised form in the electronic patient dossier and doctors can access the required information on a digital platform whenever necessary. But is this data then really secure? One promising technology for this issue is currently being discussed among the scientific community: the blockchain.

The blockchain is the key to our digital health data.

Photo: metamorworks/iStock

Blockchains for Our Health Data?

Blockchains are used in a wide variety of sectors. A blockchain is a decentralised system in which data is stored in blocks. Each block contains information about a transaction and is attached to the chain of previous blocks. Once data has been added, it can no longer be edited or deleted. This makes it impossible to manipulate the data.

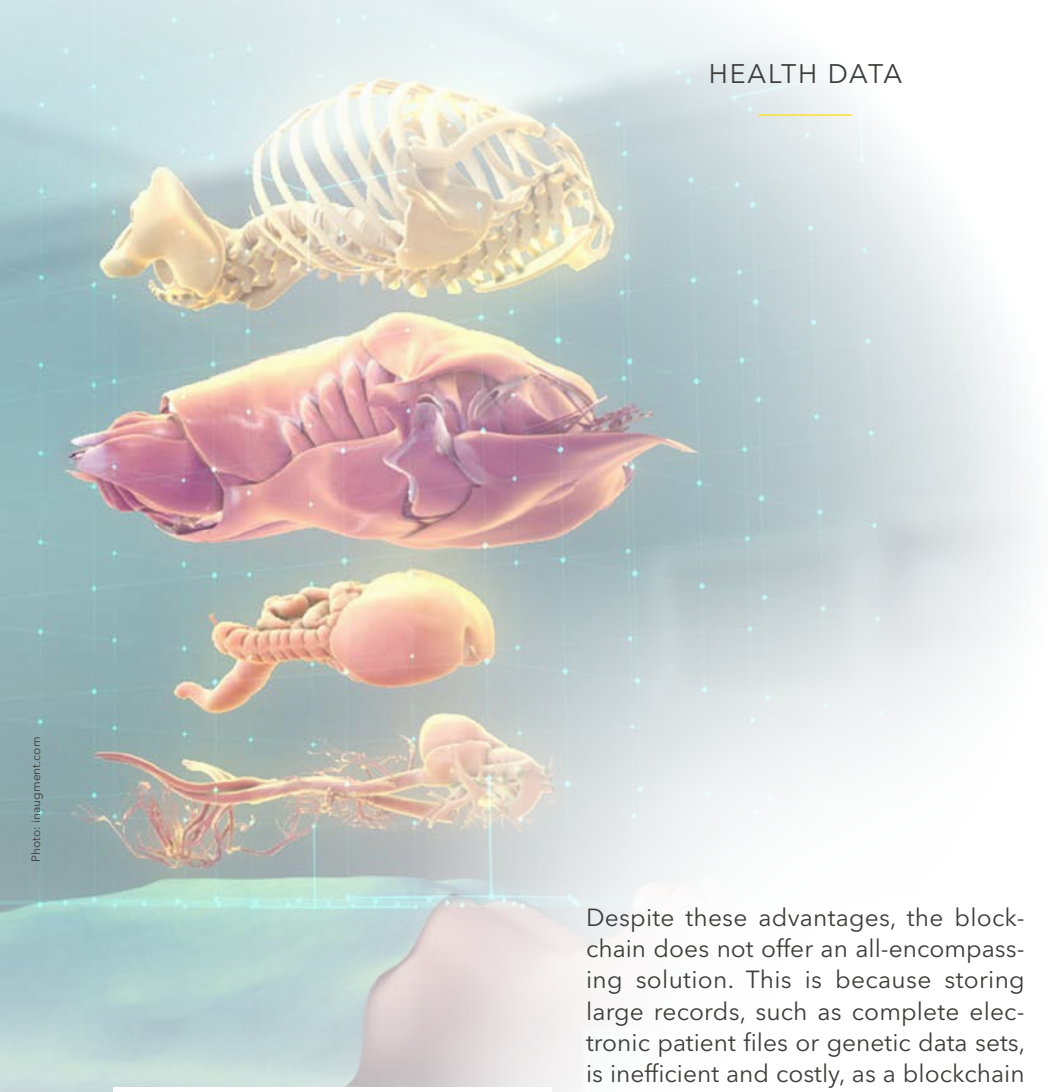


Photo: inaugment.com

BLOCKCHAIN USE

A blockchain can be used in various areas in the healthcare sector:

- **Dynamic patient consent:** Patients' consent to use and share their data can be dynamically managed with a blockchain, improving patient control and data security.
- **Transparency and traceability:** Healthcare transactions and records can be made transparent and traceable by using a blockchain, leading to greater accuracy and confidence in the treatment.
- **Supply chain management:** A blockchain can help track medical devices and drugs in the supply chain and ensure their authenticity and quality.

Despite these advantages, the blockchain does not offer an all-encompassing solution. This is because storing large records, such as complete electronic patient files or genetic data sets, is inefficient and costly, as a blockchain is not designed for large volumes of data. The technology therefore only makes sense if it is used in combination with other technologies. For example, as an access key for our personal "health safe".

Big Data: Opportunities and Challenges

The large amount of data generated in the healthcare sector, which will be stored digitally and be easily accessible in the future, offers incredible opportunities for the healthcare system. Algorithms and artificial intelligence help manage this mass of data by analysing this data and identifying patterns that enable faster and more effective treatment. Algorithms can take over administrative tasks and assist in diagnosing diseases. This can lead to faster and more accurate treatments, especially in clinical environments.

The development of such algorithms is challenging – especially on a social level. Algorithmic bias may lead to biased recommendations and an inequitable provision of healthcare. There is a risk that existing social injustices will be exacerbated. This is shown by cases in the US where people with dark skin colour were demonstrably discriminated by an algorithm and did not receive the same treatment as people with light skin colour. Researchers therefore suggest that algorithms in the healthcare sector should be developed by highly diverse teams with people from different specialisations and not just by AI specialists.

The challenges of big data in the healthcare sector are well known and solutions are being developed. At the same time, networked health data offers huge opportunities. Treatments will become much more effective and efficient, even for emergency admissions. This will also improve patient safety, for example by monitoring drug interactions and predicting the need for hospitalisation.

SHARE THE ARTICLE?
Scan the QR code.

THE GLOBALANCE VIEW

The potential of digitisation in the healthcare sector is huge and ranges from efficient patient care to early diagnostics and personalised drug development. But there is also a downside: the scope for cyber attacks has increased dramatically in the course of digitisation. In the US alone, over 40 million private US health records were stolen in the first half of 2023. From an investor's perspective, this challenge also creates exciting opportunities: analysts estimate that the market for IT security will grow from USD 20 billion today to over USD 80 billion, which corresponds to an annual growth rate of 17 %.

On the Couch with Dr Chatbot

IN A WORLD THAT FEELS LIKE IT'S SPINNING FASTER AND FASTER, mental health and psychological and physical resilience are among the key resources. The tools to maintain and promote these have long since moved into the digital space – and adapted to it. What are the most popular apps in this field? And how have games changed psychotherapy?

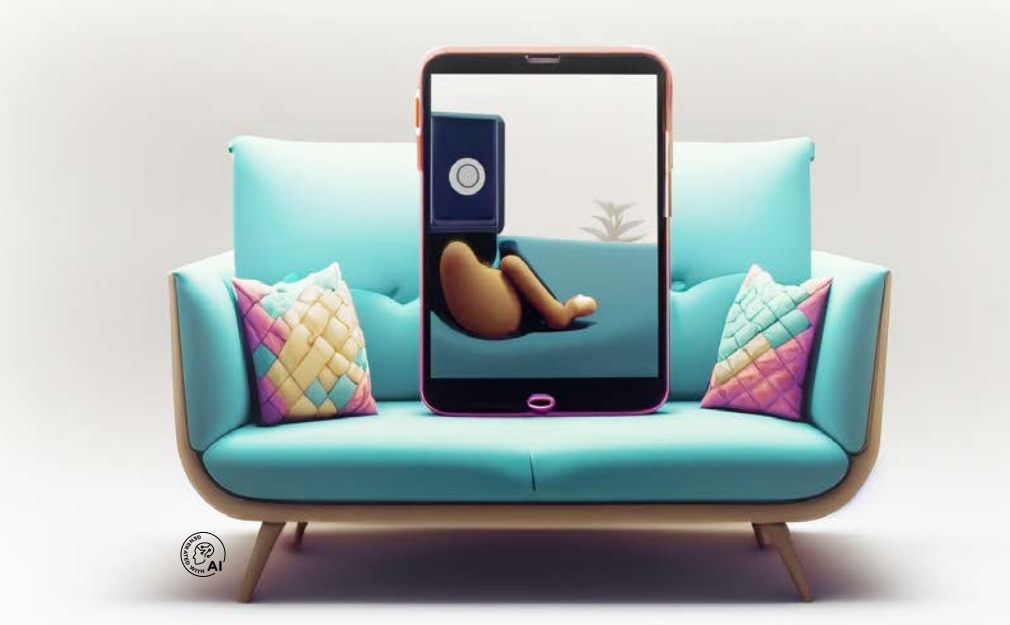
Live chat therapy sessions? AI-guided meditations? Mindfulness training as a video game? Critically dismissed as science fiction not long ago, such applications are already a reality – and are being viewed in a much more nuanced way. As a result, there is now a huge range of apps designed to strengthen mental health: from sleep aids to meditation and depression management. Below you will find a compact selection of the most popular apps.

Headspace is now the best-known meditation app with over 70 million downloads worldwide. Its recipe for success is short meditation exercises that can be easily integrated into everyday life. The individual exercises often only take a few minutes and – in addition to classic meditation – also address topics such as "exercise", "sleep", "concentration" and "creativity". The *Calm* app is also designed to bring calm into hectic everyday life and help reduce stress. In addition to meditation exercises, it is best known for its stories for falling asleep. Its speciality: some of the stories are read by celebrities. You can fall asleep to the voices of actors such as Matthew McConaughey and pop stars like Harry Styles and Kelly Rowland.

Games for the Mind

Game-like elements such as incentives, challenges and rewards have long been used in the treatment of mental illness. This approach is particularly well suited to the digital world. The best examples are the classic health apps that come as standard on Android and Apple devices. They use playful incentives, reward systems and other gamification approaches. For example, if you want to achieve your weekly jogging target, you will receive new "badges" or other virtual gimmicks to give you the extra motivation you need.

However, digital support is not only available for a more balanced everyday life. Psychological disorders can also sometimes be treated online. Online therapy by video call, chat and email can lower the inhibition threshold for seeking help. *BetterHelp* is the market leader in the English-speaking world. A subscription system gives you access to a wide range of qualified and licensed therapists. The Swiss equivalent is called *WePractice*. Please note that for legal reasons, psychological disorders can't be diagnosed online. However, if diagnosis has already been made, online therapy can be useful.



Daily Chat with a Chatbot

Routine aftercare or preventive check-ups are now available using programmed chat. The *Woebot*, developed at Stanford University, specialises in helping people to maintain their mental health. *Woebot* does this using short daily chats, curated videos and mood detection. Communication works like an instant messenger. If you submit a problem to *Woebot*, the bot responds immediately and offers self-help lessons, breathing techniques or other relevant tools.

Could this article be of interest to someone you know?

SHARE THE ARTICLE NOW!

The Best Apps for a Strong Mind

FABULOUS
Developing Routines

Fabulous also calls itself a happiness coach and has set itself the goal of breaking bad habits and/or developing good routines. Everyday tips, short workouts, meditation and yoga are among the most important functions.

User-Friendliness
Tends to be a bit packed with content, but attractively illustrated

Data Privacy
Unclear, as little information available

Compatibility
For iOS and Android

Costs
CHF 3.60 per month with an annual subscription

4.4 ★

MINDSHINE
Keeping a Diary

In Mindshine, you can document your thoughts every day to recognise your own patterns or difficulties. Practical exercises from neurosciences and psychology help you mature mentally.

User-Friendliness
Minimalist and clear

Data Privacy
The personal journals are stored in encrypted form and it is expressly stated that no data will be sold on.

Compatibility
For iOS and Android

Costs
CHF 5.40 per month with an annual subscription

4.6 ★

HEADSPACE
Living More Mindfully

Headspace promises mindfulness for every day with guided mini meditations, breathing exercises, courses and sounds. The app focuses on stress reduction, more restful sleep and more focus. The range of topics is quite broad, and users can set priorities.

User-Friendliness
Clear and intuitive

Data Privacy
Good compared to other meditation apps, but Headspace also collects data and passes it on to third parties in order to place targeted ads.

Compatibility
For iOS and Android

Costs
CHF 7.90 per month with an annual subscription

4.7 ★

SLEEP CYCLE
Getting Up Easily

Sleep Cycle monitors sleep through audio recordings and wakes subscribers in a time window of up to 90 minutes to time getting up in a sleep phase close to awakening. Sleep aids and statistics are other useful features. The latter can also be linked to lifestyle (e.g. alcohol consumption).

User-Friendliness
Informative diagrams with a large amount of information

Data Privacy
The fact that the app records noises at night and stores them in the cloud is problematic.

Compatibility
Für iOS und Android (can only be paired with Apple Watch)

Costs
CHF 2.40 per month with an annual subscription

4.5 ★

YAZIO
Eating Better

With Yazio you can improve your eating habits and achieve your dietary goals. Users of the app record their meals from a database of millions of food items and have an overview of calories and nutritional values based on a personalised plan.

User-Friendliness
Easy to use despite large data sets, good features even in the free version

Data Privacy
High, server only in Germany, no registration required for the free version

Compatibility
For iOS and Android

Costs
CHF 6.60 per month with an annual subscription

4.7 ★

FREELETICS
Daily Workouts

Freeletics is a kind of personal trainer with over 350 exercises and workouts. The motivational fitness app is an all-rounder among its peers and, in addition to workout planning, offers a chat with a "coach", nutrition plans and mindfulness exercises.

User-Friendliness
Good structure and navigation

Data Privacy
Collects and uses a lot of data, but only with consent

Compatibility
For iOS and Android

Costs
CHF 8.25 per month with an annual subscription

4.4 ★

THE GLOBALANCE VIEW

For all the potential of algorithms, there is a clear boundary that should not be crossed: no application should suggest to users that they are communicating with an actual human being. Especially when it comes to our mental health, content generated by a machine must be clearly labelled as such at all times.

AI-controlled applications: yes. Bots that pretend to be human: no. People are particularly susceptible to being manipulated in moments of illness or weakness. Exceptionally strict ethical requirements must therefore be imposed on providers of mental health products. The same applies to dating apps.

Change in the Healthcare Sector

IN THE HEALTHCARE INDUSTRY, START-UPS ARE NOT ONLY REVOLUTIONISING CURRENT PRACTICES, but they are also opening up completely new possibilities in research, treatment and prevention.

Whether it's artificial intelligence, remote patient monitoring or healthcare data security: the sector is being shaken up by countless start-ups. These young companies not only bring a breath of fresh air, but also offer solutions with new technologies and approaches that would have been unthinkable until recently. A key buzzword here is artificial intelligence, which is currently making waves in almost every industry. In the healthcare sector, AI has the potential to develop entirely new research and treatment methods. Coupled with the right hardware – such as smartwatches – this technology will not only sustainably transform healthcare, but our society as a whole. But the new technology has one major drawback: digitisation has made institutions and their connected devices more vulnerable to hackers. Unsurprisingly, solutions are already being offered for this problem.

NASA uses technologies from epilepsy research.

The market for "smart wearables" will grow to USD 172 billion by 2028.

EMPATICA – USA

Photo: empatica.com/en-eu/embraceplus

Remote Patient Monitoring
Monitoring patients with a special watch and detecting complications at an early stage: that's Empatica's main business. The US company produces medical wearables, software and AI-based algorithms to collect and interpret physiological patient data. Founded in 2013, the MIT spin-off is a pioneer in sensor-based remote monitoring of patients with neurological conditions. Its flagship product is a kind of watch called Embrace, which was launched through a crowdfunding campaign together with the Epilepsy Foundation. Embrace is used to monitor and warn of epileptic seizures. In January 2018, Embrace became the first medical wristwatch to receive the FDA approval (Food and Drug Administration) for use in epilepsy.

Today, Empatica's platform and technology are used by thousands of institutional partners for research purposes in studies on stress, sleep, epilepsy, migraine, depression, addiction and other conditions and diseases. NASA is also using the technology to monitor astronauts on the first manned mission to Mars.

ATOMWISE – USA

AI Revolution in Research
The US-based company Atomwise uses deep learning and neural image recognition to find novel chemical substances. The AI technology is highly scalable, enabling the screening of billions of molecules for multiple projects simultaneously. The technology has been extensively validated since the company was founded in 2012 and has been very successful in over 750 research collaborations to date. In 2022, Atomwise entered into a partnership with one of the world's largest pharmaceutical companies, the French company Sanofi. This gives Sanofi access to the AtomNet platform, a library of more than 3 trillion synthesisable molecules. If the collaboration proves fruitful, Atomwise could receive up to USD 1 billion in research, development and sales as well as tiered licence fees.

The company is developing a range of drugs based on its own research, with a focus on immunology and oncology.

Photo: ipopba/iStock

The Embrace wrist "watch" recognises epileptic seizures at an early stage.

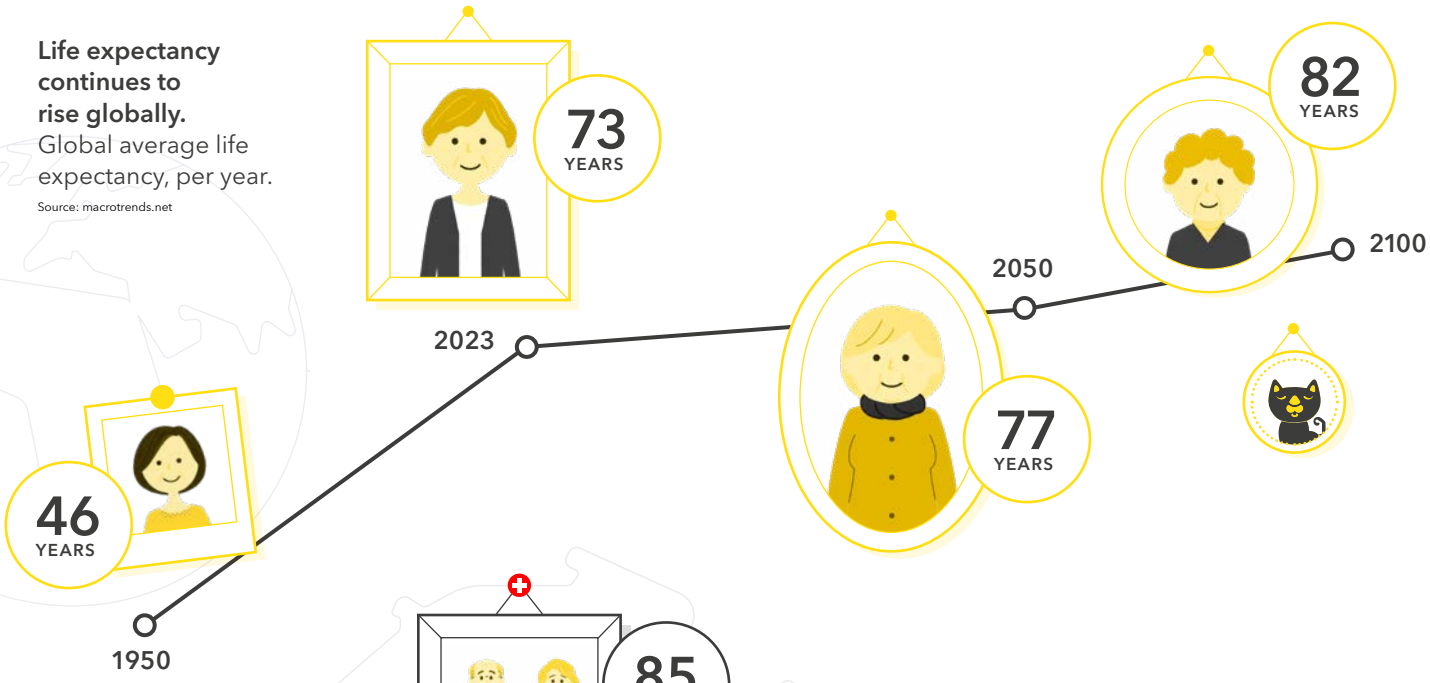
43 % of all hospitals in the US have already been the victim of a cyber attack.

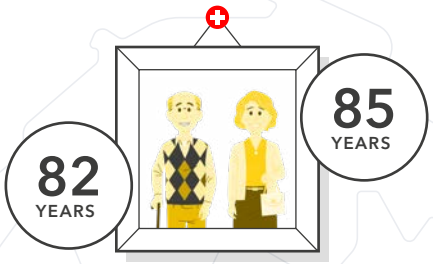
Health in Figures

SOMETIMES FIGURES ARE WORTH MORE THAN A THOUSAND WORDS: as current statistics and estimates show, the digital healthcare market is just taking off. The following charts show in black and white what this will mean for our life expectancy and the price we will pay for it.

Life expectancy continues to rise globally.
Global average life expectancy, per year.

Source: macrotrends.net



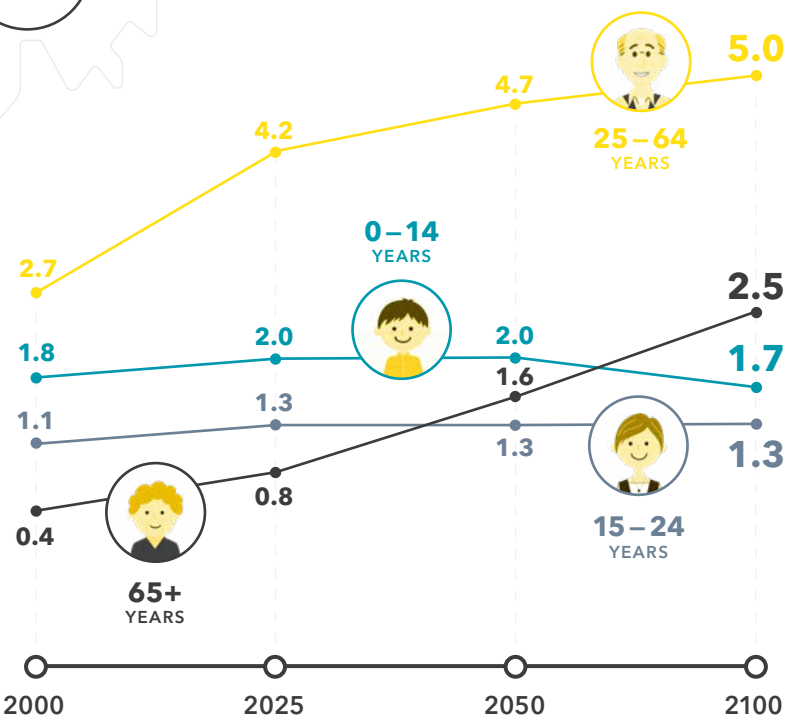


Average life expectancy in Switzerland.

Source: Federal Statistical Office, bfs.admin.ch

The "Golden Agers" are a growing population group.
Number of people per age group worldwide, in billions per year.

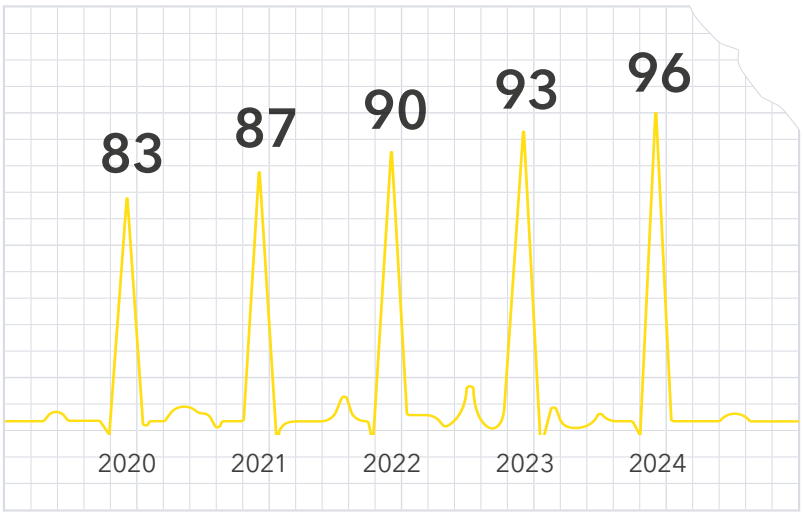
Source: population.un.org



Portrait illustrations: studiolaut, kbeis/iStock

Healthcare expenditure in Switzerland is rising steadily.
Expenditure per year, in billions of CHF.

Source: ETH-KOF 2022

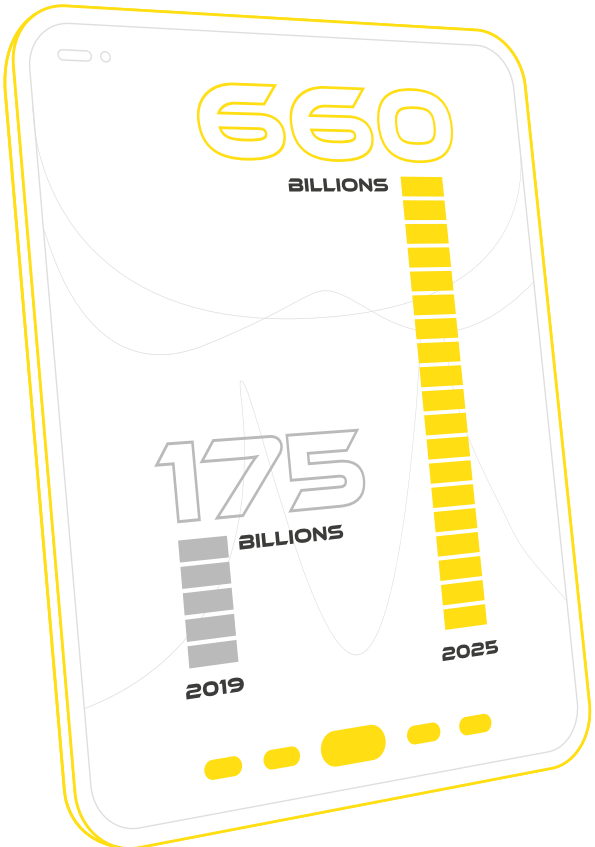


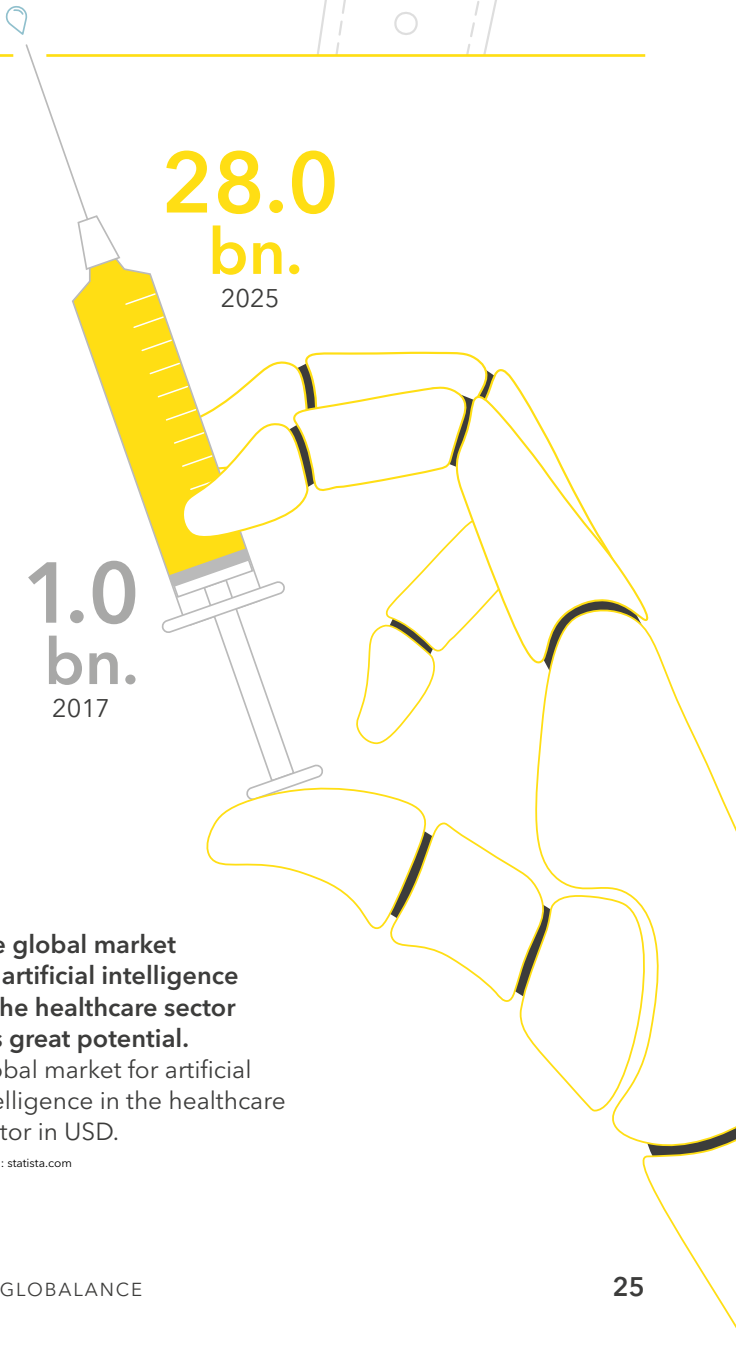
The market for smartwatches continues to boom.
Global market for smartwatches in billions of USD per year.

Source: statista.com

The market for digital health products could more than triple between 2019 and 2025.
Market value for digital health products per year, in USD.

Source: statista.com





The global market for artificial intelligence in the healthcare sector has great potential.
Global market for artificial intelligence in the healthcare sector in USD.

Source: statista.com

Prof. Dr Dr Heike Annette Bischoff-Ferrari

Chair of Geriatric Medicine and Gerontology, University of Zurich. Director of the "HealthAge Toulouse" research programme – Zurich.

Aging is the Future

… as an **expert for healthy longevity**

What has been your biggest lesson learned so far?
That we can significantly slow down the biological ageing process through healthy lifestyle factors. We also now know that lifestyle factors explain up to 90 per cent of the variability in our life expectancy, whereas our genetics alone only explain around 10 per cent. This is good news because we can have a significant influence on this.

What do you think will be the next breakthrough technological development in health research?
New geroscience biomarkers and therapies that directly measure and treat the ageing process of various organ functions and their interconnectedness. Such multi-omic clocks and treatments are being developed as part of the "HealthAge Longevity" research programme. This enables us to recognise disease risks at an early stage and prevent them in a combined manner.

If I were to found a medtech company …
Geroscience. We all want to stay healthy and feel young for longer.

… when **investing**

What has been your best investment so far?
As a researcher, the involvement in setting up the European DO-HEALTH study and the "HealthAge – Longevity & Geroscience" research programme approved by the French government in 2023, because one in three people in Europe will be 65 years and older already by 2050.

What is important for you when investing?
Innovations that bring prudent and sustainable benefits.

What would you change if you were to become queen of the financial markets?
I would attract investors for a global research network to jointly accelerate progress in the gero-science medicine of tomorrow, which focuses on the biological ageing process.

… personally

Are you optimistic or pessimistic about the future?
Optimistic, because I see many opportunities to enable people to stay healthy for longer and feel younger. I am not equally optimistic about the urgent environmental and global security issues and hope that we can find solutions together.

How do you recharge your batteries when your personal power level is low?
With my family, Donna Leon crime novels, yoga and as much walking as possible!

What I still want to learn:
French.

AWARD

Best Swiss Private Bank 2024

IN AN ANALYSIS BY THE RENOWNED FUCHS | RICHTER INSTITUTE,
Globalance once again demonstrated its leading role in private banking. The TOPS 2024 asset management rating named Globalance "Best Bank in Switzerland" for the fourth time in a row.

FUCHSRICHTER.DE/SIEGEL

Moreover, Globalance achieved an excellent third place in the DACH region with 86 out of a possible 100 points, moving up from 5th to 2nd place in the "All-Time Best List". This climb by three places in the FUCHS | RICHTER ranking is a sign of great continuity and proof of the outstanding quality of our services. Fuchsbriefe commented on this accomplishment: "The Zurich private bank has achieved impressive consistency with top performance."

Top marks for consultation and investment competence

Task: to Invest 20 Million Wisely
The task of the asset managers tested was to invest a family fortune of EUR 20 million from a property sale wisely and securely in a volatile market environment. The providers did not know that the enquiry was a test. Those providers who impressed the jury during the initial consultation in terms of their expertise and customer focus made it to the final round. Their investment concept and its presentation – also known as the "beauty contest" – were then analysed in detail. Globalance achieved top marks in the three categories "Consultation", "Beauty Contest" and "Investment Competence".

The award confirms that our ongoing commitment to customer focus, innovation and a future-oriented investment strategy sets us apart from the majority and is of interest to customers. Our experts were able to gain the trust of the testers and presented credible, promising and easy-to-understand investment strategies.

Triumph over 70 Providers
A total of 70 providers were tested, including 23 from Germany, 21 from Switzerland, 18 from Austria, 6 from Liechtenstein and 2 from Luxembourg. The best banks from Switzerland following Globalance (86 points) were Bank Vontobel (78 points) and Reichmuth & Co Privatbankiers (77 points). In the "All-Time Best List", Globalance ranks behind Bankhaus Spängler (Austria, 787 points) and ahead of LGT Bank (Liechtenstein, 766 points) with 774 points.

globalance.com/en/awards

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