



# eHealth



As the global COVID-19 pandemic continues to unfold, plans are being put in place to “build back better by design”. Recovery must be focused not just on the economy, but also on ensuring everyone has access to critical public services, such as healthcare, which has been under mounting pressure in recent years.

EU healthcare systems are struggling as **demand increases** and **supply constraints rise**, leading to **huge financial pressures**:

## Rising demand for care:



**An aging population:** 20.3% of the EU-27 population is over 65 years, up from 17.4% in 2009, and expected to grow to 28.5% in 2050. This group is also at risk of digital exclusion as they can be less confident with technology or find devices less affordable

## Growing rate of chronic diseases:

across Europe, rates of obesity and diabetes have increased **two-to-three fold** in the past 30 years, contributing to cardiovascular disease causing **more than half of deaths** across Europe



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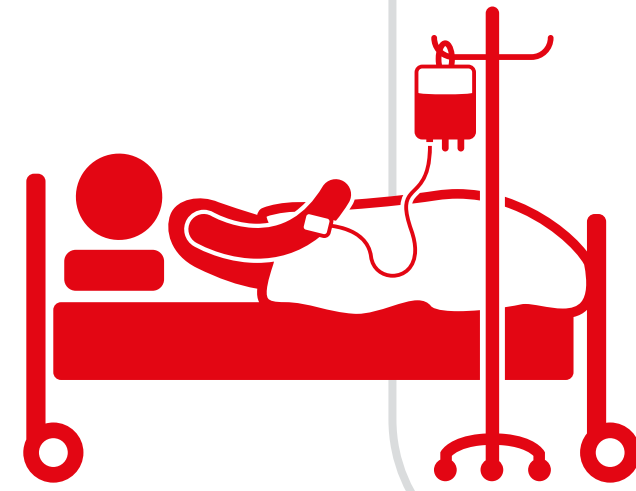
## Supply constraints:



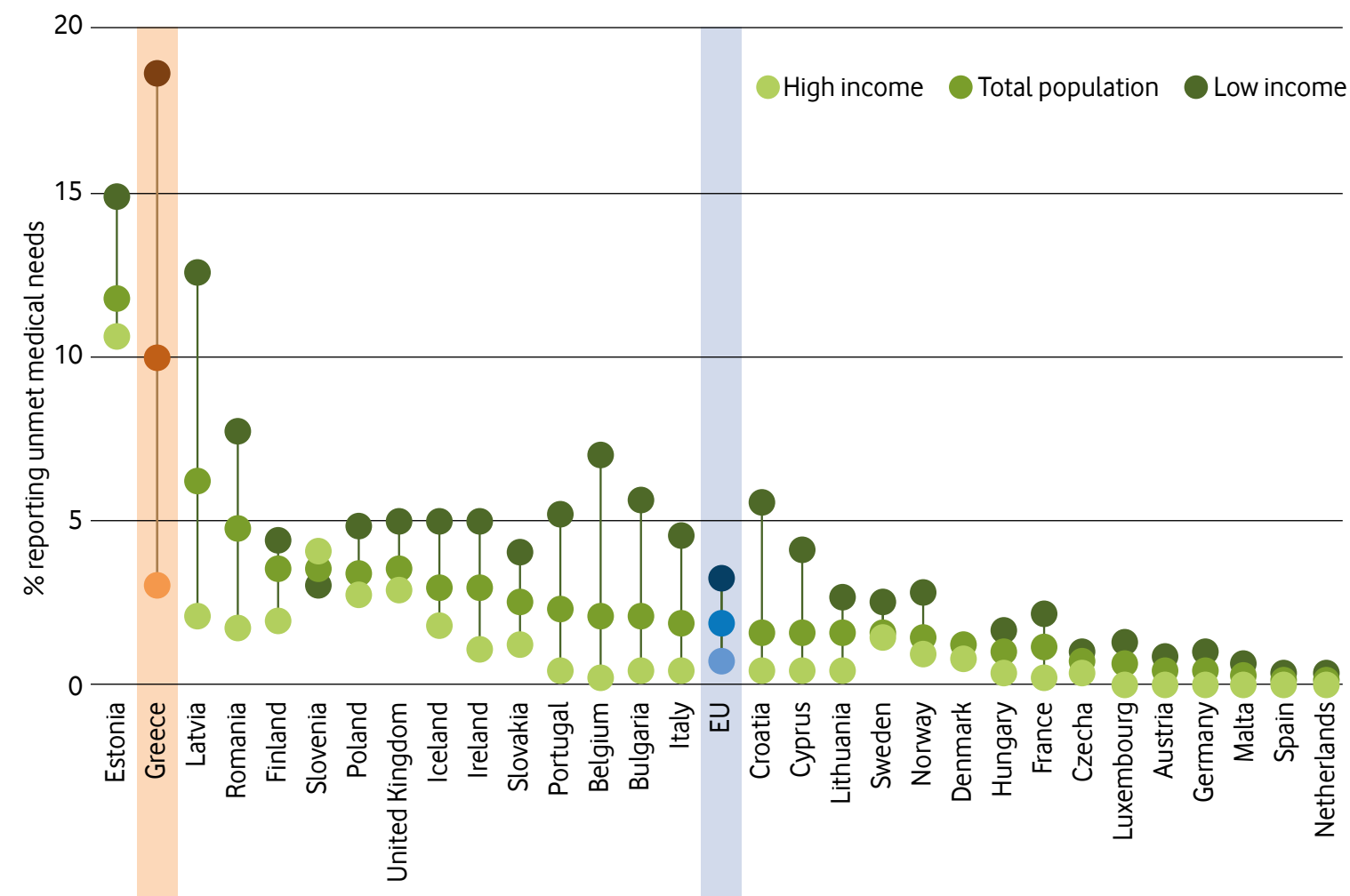
**Shortage of care professionals** in the EU is anticipated to reach **4.1 million in 2030**

## Shortage of hospital beds:

European countries have a **significant variation in acute care beds per 1,000 inhabitants**, with Germany on 6.0, France on 3.1 and Spain on 2.4, all below South Korea's 7.1



For example, from a **Deloitte study**:

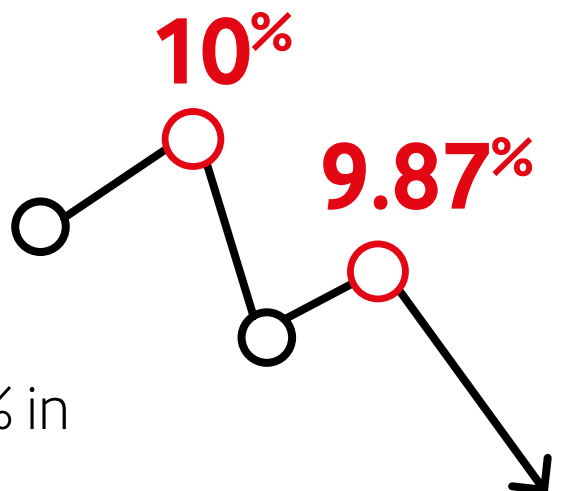


## Financial pressures on health and social care systems:



In Germany, **12% of hospitals** are in financial distress

The EU's current healthcare expenditure as a share of GDP declined by **0.13 percentage points** over three years, from 10.0% in 2014 to 9.87% in 2017



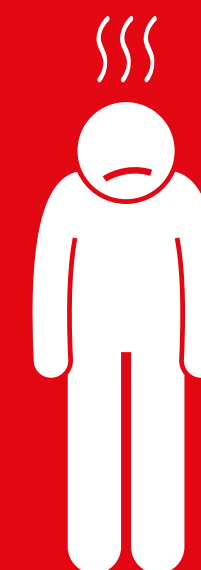
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COVID-19 has exacerbated challenges to care systems, as certain types of non-urgent care have had to be de-prioritised in order to provide the necessary capacity to respond to COVID-19. This has put the healthcare of individuals suffering from non-COVID-19 illnesses at risk as non-urgent procedures, prevention measures, social care and rehabilitation activities, have been postponed, leading to a backlog of patients needing care.

In addition, concerns about exposure to COVID-19 have caused potential patients to think twice before accessing health systems when required. Worrying evidence from Europe shows that **up to 50% of excess deaths in some regions are recorded as non-COVID-19**, potentially due to care avoidance, treatment delays and an over-stretched workforce. The relegation of certain illnesses cannot continue in a modern, compassionate and technologically advanced society.



As a result of COVID-19, **68% of Member States** have reported a disruption to monitoring and prevention of non-communicable diseases, including diabetes, hypertension and cancer



Isolation compounded by the economic recession are expected to negatively impact mental and physical health (particularly amongst those shielding with chronic conditions) – Belgium has already found that **depression rates have sharply increased from 10% to 16%** compared to 2018

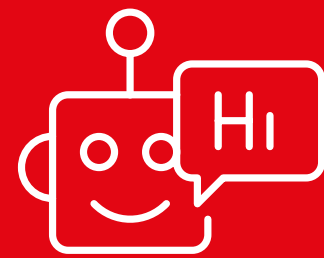
Now more than ever, digitalisation is seen as a key element of the future of healthcare services, helping to save lives by enabling more efficient use of resources, better training and 360-degree patient engagement. Digital investment has been prioritised to deal with pressures and inequalities in healthcare systems, enabling use cases such as:



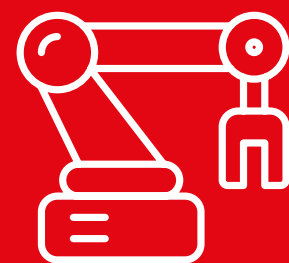
**Connected (IoT) wearable or implanted devices** to support out-of-hospital care, reducing costs of treating and monitoring issues with long-term chronic cases and post-acute treatments



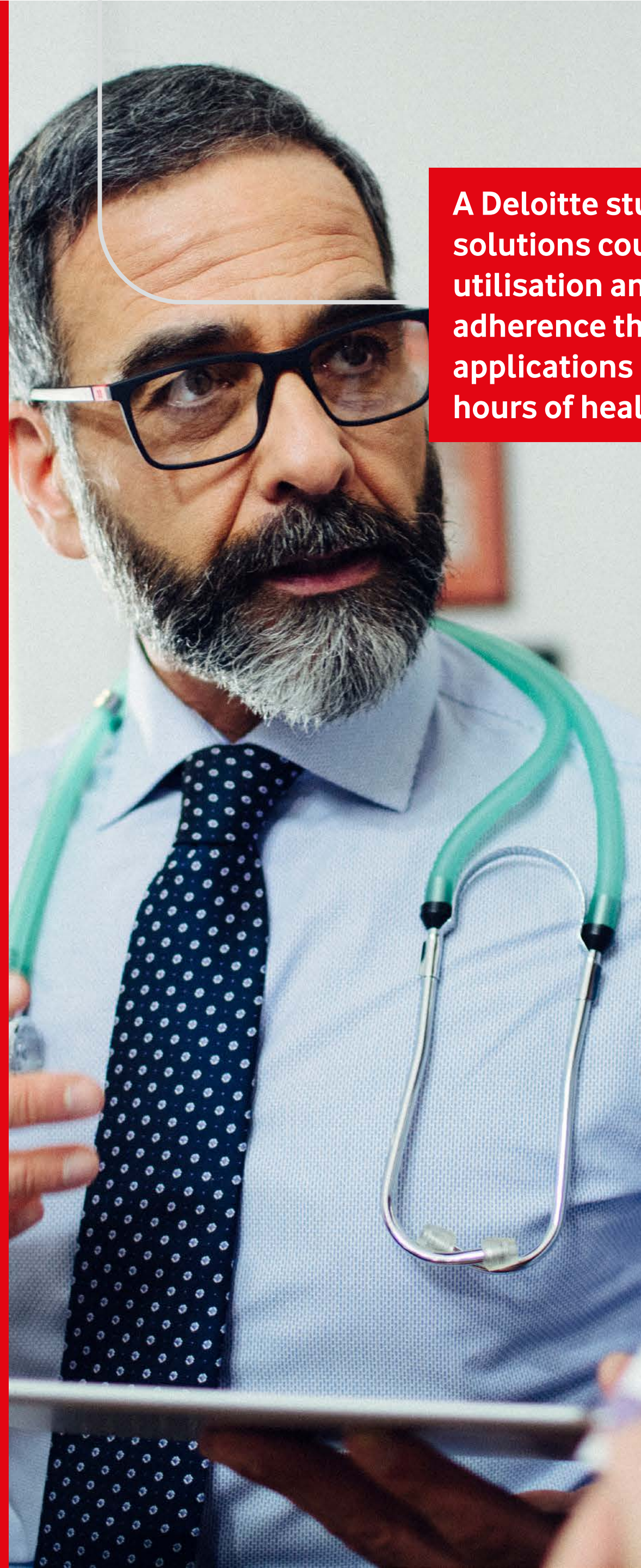
**Large-scale device (IoT) connectivity within hospitals,** enabling monitoring and optimal allocation of limited resources, such as beds, medical devices and even hospital staff



**AR and robotics to aid surgeries and remote expert support,** increasing both the quality of care delivered through digital assists and access to healthcare outside of the most advanced hospital systems



**Auxiliary robotics,** taking care of non-patient-facing work in hospitals, such as cleaning and restocking, so that doctors and nurses can spend more time with patients



**A Deloitte study commissioned by MedTech found that AI health monitoring solutions could contribute to significant improvements in resource utilisation and health outcomes. For instance, driven by greater medication adherence through monitoring and improved treatment decisions from applications predicting health events, it is estimated that up to 375 million hours of healthcare professional time could be freed up annually.**

Given complexity of investment, focus on short-term priorities and risk of disruption to mission-critical operations, it has been difficult and slow to push forward digital changes to health services. However, in order to deal with the added pressures of COVID-19 on capacity and provision of routine care, healthcare services have been forced to implement digital solutions overnight, with developments such as:



**Digital consultations for primary care**



**Updating reimbursement schemes to accommodate for digital/virtual care**



**Data-driven decision-making, e.g. symptom-reporting apps**



**Pooling of data to accelerate analysis and innovation**

COVID-19 has both accelerated progression in healthcare digitalisation, and highlighted the need for a more structured approach to digital investment. The benefits have been felt by both patients and clinicians as they recognise digital helps to deliver a more efficient, convenient and effective healthcare system that ultimately delivers better care provisions and health outcomes.



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# Patients and clinicians who have been forced to experiment with virtual healthcare services may be more eager to keep the convenience it affords, and it is likely this will continue given the ongoing pandemic



**Deloitte's Digital Consumer Trends** found that 14% of people had more remote appointments with health practitioners as a result of lockdown

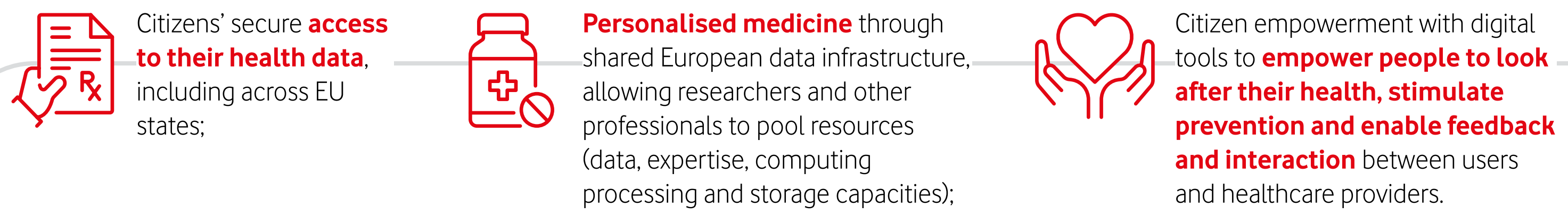
**A study last year** found benefits of digital care beyond online access to records, with participants expressing that the use of technology gives them a sense of safety and social support, helping them to monitor their health and keep in touch with their doctors and patient communities

In a **2019 DESI report on Digital Public Services**, 18% of EU citizens were found to have used online health and care services, with this much higher for some countries (e.g. Estonia, Finland, and Denmark) and lower for others (Malta, Germany, Hungary, and Cyprus)

At the same time, **Eurobarometer** found that 52% of all people in the EU would like online access to their medical and health records

In addition to patient care, auxiliary robots such as the **Moxi robot by Diligent Robotics**, are giving a helping hand to doctors and nurses by taking care of restocking, bringing items and cleaning

Healthcare investment and modernisation is complex, and critical for Europe to get right as it tries to cope with the growing pressures on its healthcare systems. Given this and the need to ensure safe, effective and efficient health services, decentralisation and digital technologies are required to play a bigger role in European healthcare. Governments, healthcare providers, insurance companies and technology companies must therefore collaborate to deliver on e-health objectives and priorities, as outlined in the EU's [Communication on Digital Transformation of Health and Care in the Digital Single Market](#), namely:



In this context, Vodafone is working on a number of initiatives that demonstrate the value of digital technologies to European health and social care, and that show how such technologies can address the pressures on these systems. A key area of investment is in connectivity to enhance digital health delivery and more equitable care access generally.



Vodafone is working with University Clinics Düsseldorf (UKD) to establish a blueprint for the use of 5G in clinics and hospitals. With €12m in funding, Vodafone, UKD, and other partners aim to deliver benefits across a range of use cases such as precision medicine, health monitoring, mobile diagnosis, mixed reality surgeries, remote consultation and virtual medical education.



Initiatives such as the Vodafone Telemedicine Programme (VTP) demonstrate the benefits medical IoT can deliver for patients, clinicians, and hospital systems, in particular by delivering:



**Improved quality of care and diagnosis**



**Improved clinical outcomes**



**Reduced healthcare costs**

Healthcare technology can deliver key benefits for rural areas, where a higher proportion of adults have unmet medical needs (2.0% in rural areas compared to c.1.6% in urban areas) due to cost, distance and time (e.g. lengthy waiting lists). eHealth represents an opportunity to help bridge this urban-rural divide through more efficient use of resources, better diagnosis and better training, making healthcare provision more inclusive for all.



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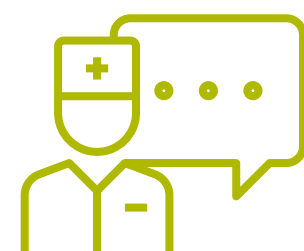
# Case Study

To demonstrate the potential for medical IoT, Vodafone implemented its Telemedicine Programme in Greece, which faces some particularly acute challenges:



Similar to many EU countries, there is an **aging population** often distributed widely across rural areas

More challenging than for other EU countries, however, the rural population is also distributed across islands, with **patients frequently needing to travel** to the mainland for healthcare in the absence of more evenly distributed access to healthcare



This can be **inconvenient, extremely costly and impossible** for some patients who may put off care and check-ups

In addition to resulting in poorer health outcomes, it can also lead in aggregate to **significantly more costs for healthcare systems**, e.g. transportation costs such as emergency air ambulances and ferries, longer hospital stays



Addressing these issues by increasing access through traditional means, such as **building more local facilities, may not be possible** or is too costly



## Greece in numbers

**10.4m**  
people

**21%** of Greece's population lives in a rural area

Greece has **227**  
**inhabited islands**

**22%** of Greece's population is above 65

**10%** of people report unmet medical needs, the 2<sup>nd</sup> highest in Europe and four times the EU average

**DESI Score: 37.3**  
(ranked 27th out of 28 overall, ranking better for eHealth services at 23rd)



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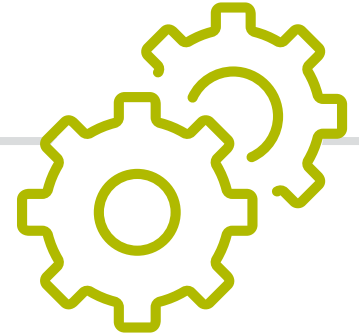
VTP in Greece is an end-to-end telemedicine care system to support monitoring and clinical care for chronic disease management (e.g. respiratory illnesses, diabetes) and post-acute monitoring and management (e.g. surgeries and other hospital treatments). The system includes a mix of technologies:



**Range of connected medical devices**, for use by doctors in clinics or house visits, and by patients outside hospital settings



**To allow remote patient monitoring** after hospital discharge, regardless of digital skills levels, thereby reducing patient stress



**Logistics and maintenance services** for hardware



**Software for aggregation of data and use by clinicians**, integrated to established clinical systems



**Communication software** for clinicians and patients to help manage conditions remotely



**Vodafone Telemedicine Programme in numbers:**



Implemented in **100 remote mainland regions** and islands



Covers a population of **500,000 people**



More than **500 GPs** trained in use of programme equipment



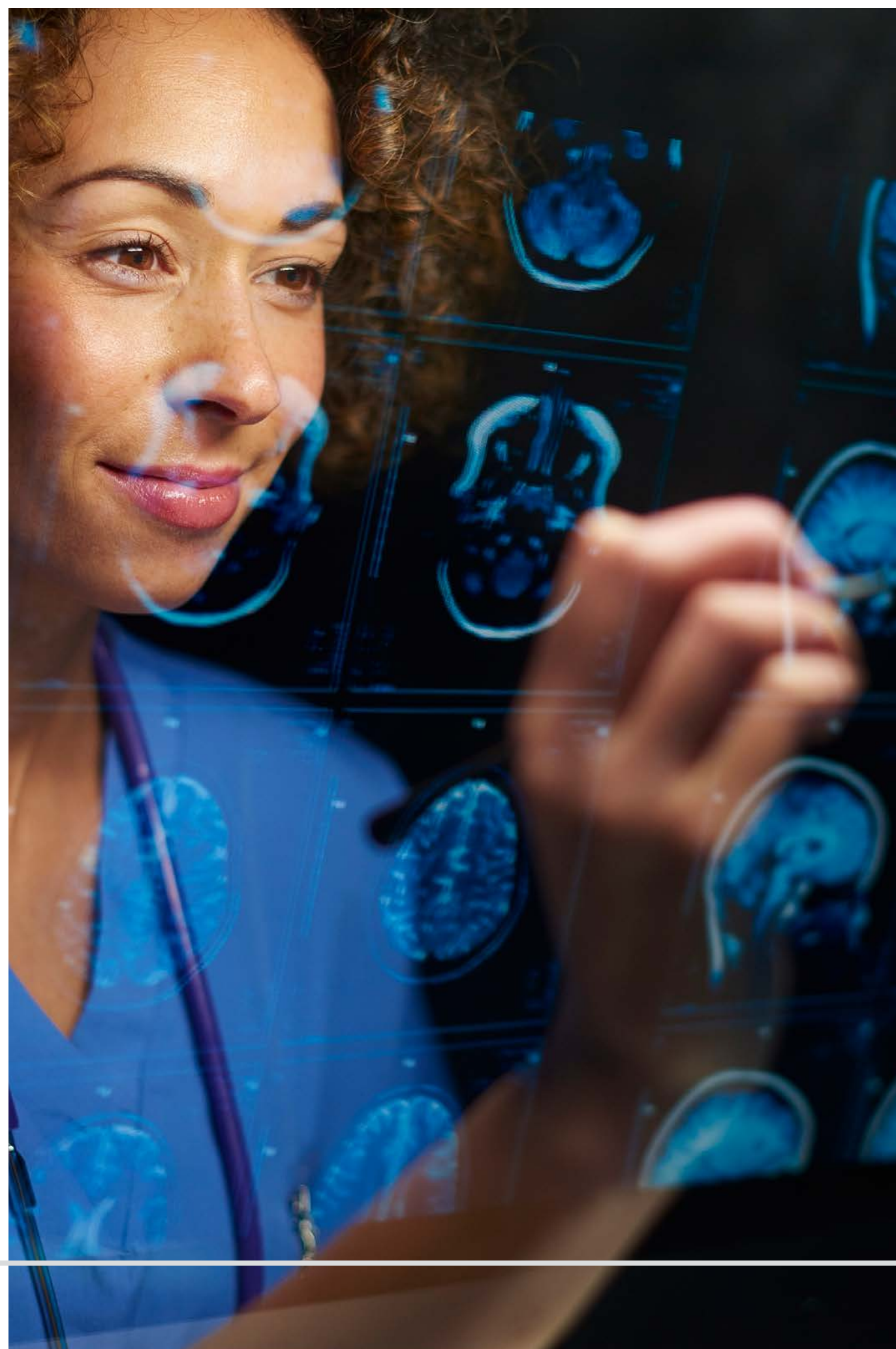
Since 2008, more than **51,000 examinations** carried out via the programme



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With VTP, health staff, GPs, and even patients, can **use these devices to conduct preventative examinations and diagnose issues early**, either in the doctor's office or remotely, e.g. for cardiovascular risk, osteoporosis, and menopause. It can then also allow GPs to draw on specialist clinicians when needed.



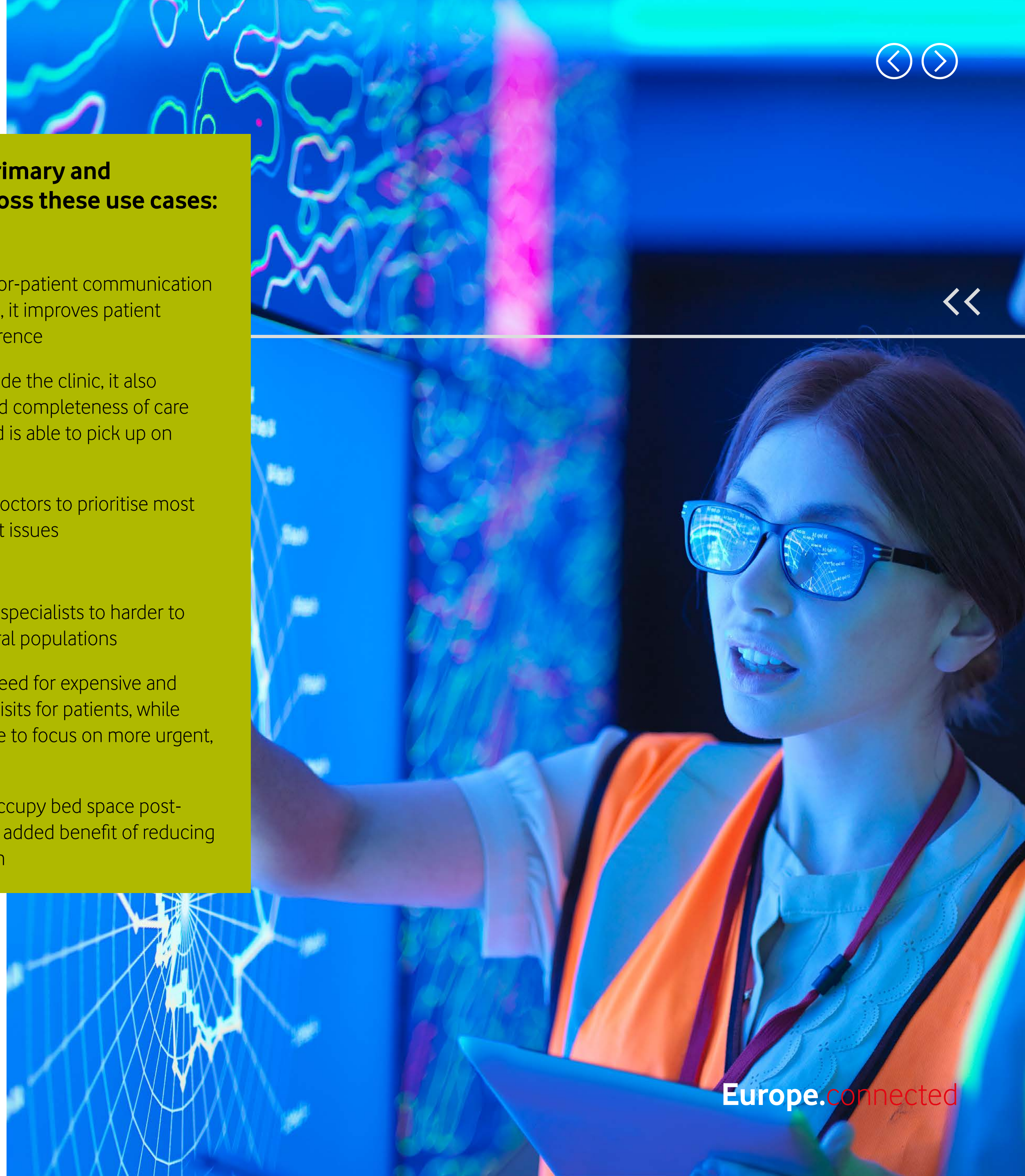
### Benefits for both primary and secondary care across these use cases:

#### Primary

- Through enabling doctor-patient communication and remote monitoring, it improves patient engagement and adherence
- By extending care outside the clinic, it also improves continuity and completeness of care amongst care team and is able to pick up on issues more quickly
- Together, these allow doctors to prioritise most urgent potential patient issues

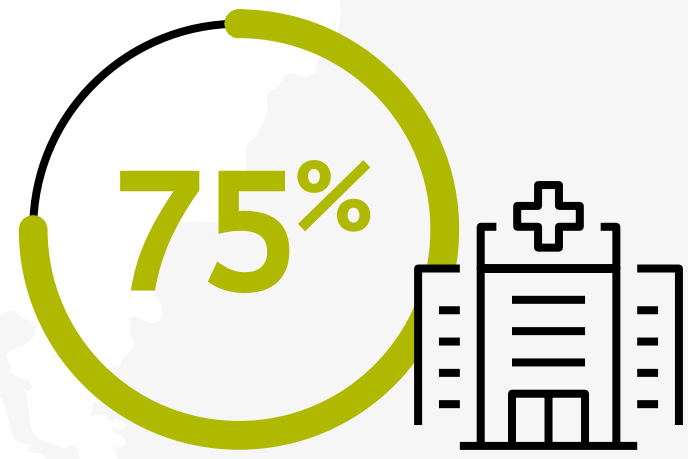
#### Secondary

- The increased reach of specialists to harder to reach areas, such as rural populations
- This also reduces the need for expensive and inconvenient hospital visits for patients, while freeing up clinician time to focus on more urgent, in-hospital cases
- The reduced need to occupy bed space post-acute care also has the added benefit of reducing risk of hospital infection

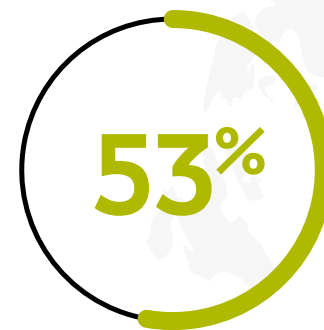




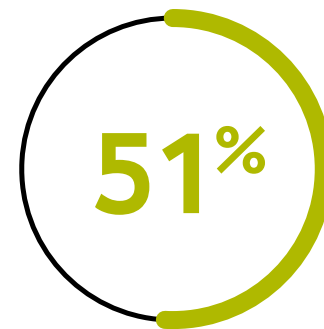
## VTP in Greece demonstrates the potential benefits to both patients and clinicians, with overall benefits to hospital systems:



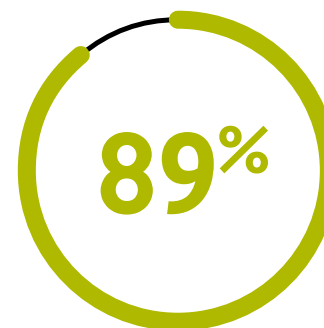
Almost **75% of patients** reported a reduction in the number of hospital visits they needed



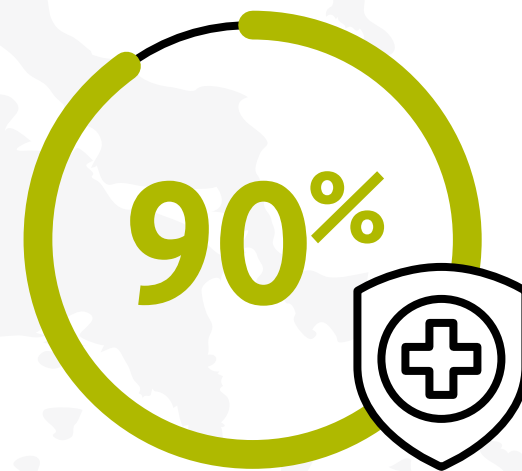
of patients indicated that primary care in their area had improved



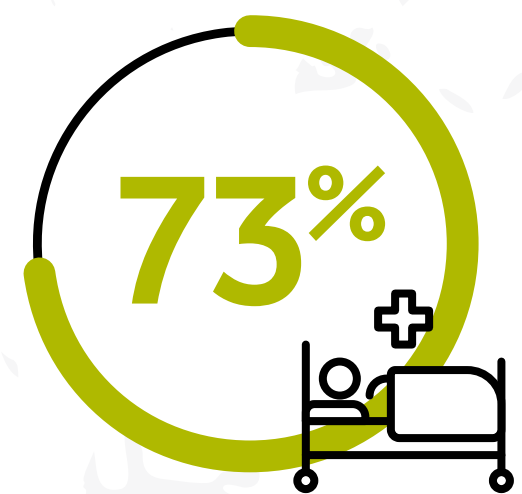
of patients indicated improvement in effectiveness of diagnoses



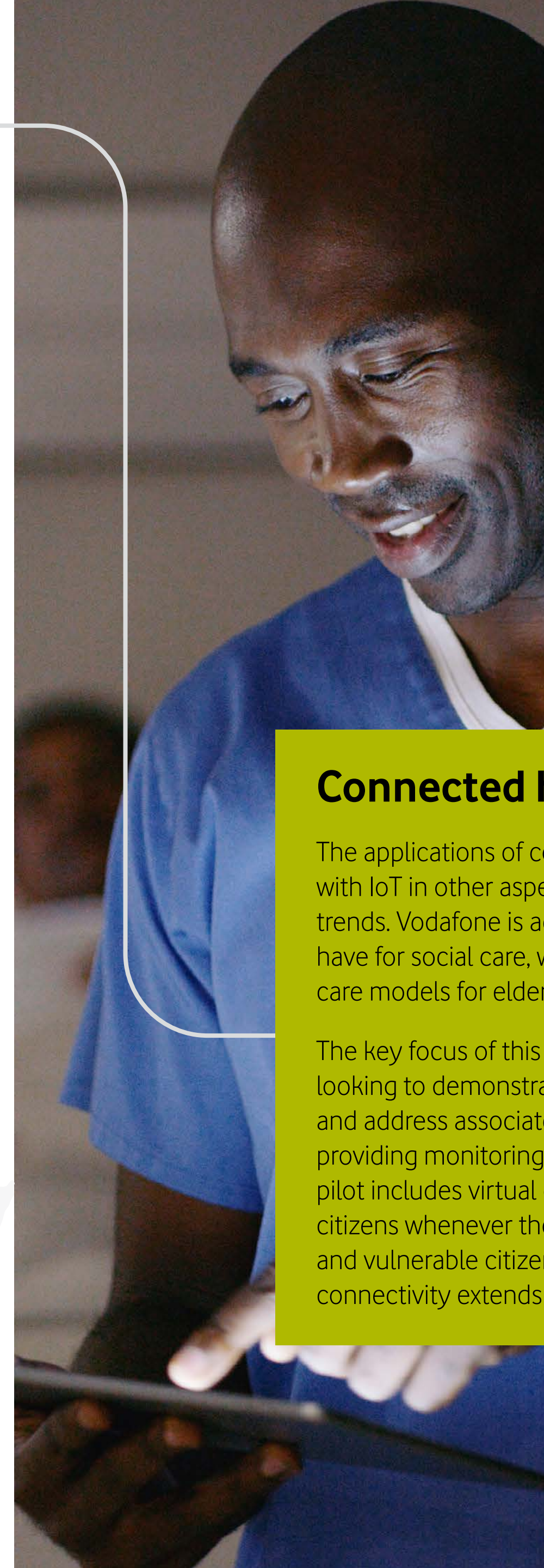
that it had improved their health in some way



of doctors thought that the greatest important benefit was the ability to deliver better-quality care to their patients



of doctors reported that the key benefits were more efficient primary care, while 68% thought that it helped to reduce congestion in regional hospitals



Investments in medical IoT can have implications for, and be extended to, other aspects of care as well, such as epidemiology and social care. For example:

- VTP has allowed patients to continue to receive routine treatment and care while keeping hospitals free for COVID-19 care
- VTP can even enable rollout of connected diagnostics for COVID-19 care specifically, to highlight most urgent cases

### Connected health in social care

The applications of connectivity for care extend beyond just telemedicine, with IoT in other aspects of care helping to address pressures from health trends. Vodafone is active in this area to demonstrate the benefits IoT can have for social care, with a pilot in the south of Spain providing alternative care models for elderly and vulnerable people.

The key focus of this beyond telemedicine is inclusion – the pilot is looking to demonstrate the potential for connectivity to reduce isolation and address associated mental health issues. Therefore, in addition to providing monitoring without the need for social or healthcare visits, the pilot includes virtual companions that can be accessed by up to 300,000 citizens whenever they are feeling lonely. The benefits of ensuring elderly and vulnerable citizens have access to low cost, easy to use devices and connectivity extends far beyond physical healthcare.



# potential impact on European Healthcare



eHealth has the potential to transform the way that care is delivered and drive improvements in the health of citizens. A recent [European Commission report on Telemedicine](#) found that even an increase in adoption of the technology of five percentage points across the EU could deliver a 3.7% reduction in the cost of patient care, a 1.7% increase in citizens' healthy life years and a 3.6% fall in mortality.

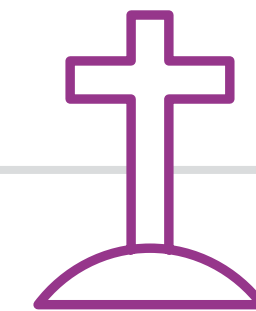
These benefits, identified by a review of Telemedicine cost effectiveness in medical trials undertaken for the EC report, are expected to be driven by the improved access to treatment and preventative care enabled by telemedicine, particularly with respect to chronic conditions such as cardiovascular diseases and diabetes. In addition, the report highlights how telemedicine allows medical personnel to focus more on care activities and improving speed of diagnosis and treatment by conducting some activities remotely. These factors combined lead to an overall increase in the quality of care provided. Scaling the impacts of a five percentage point increase in telemedicine adoption to the European population could mean that, compared to a base case scenario with no increase in adoption:<sup>i</sup>



**€48 billion of cost savings** could be made, which can be reinvested in better healthcare

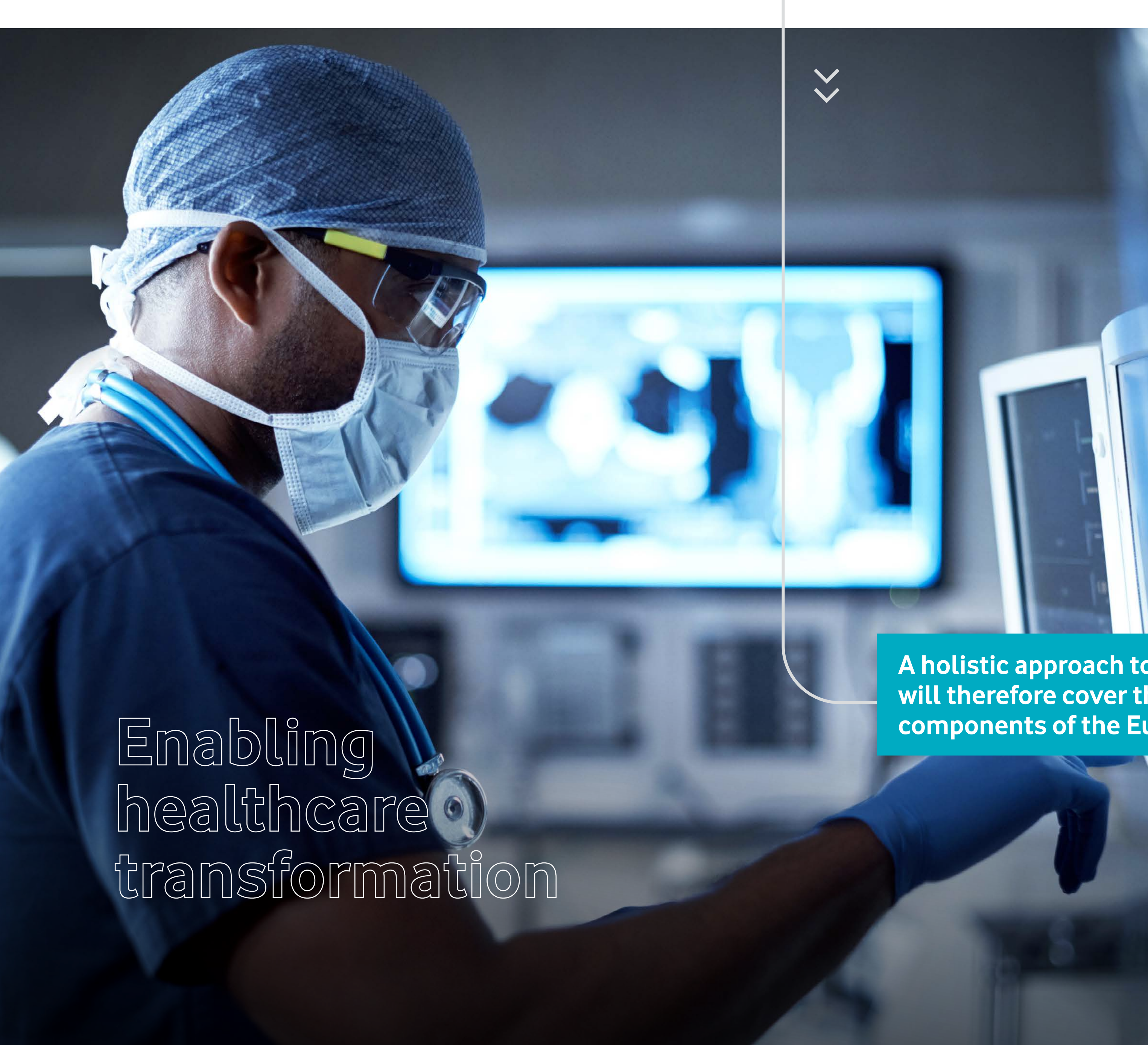


Expected **healthy life years could increase by about one year**, from 63.7 years to 64.8 years for men and 64.2 years to 65.3 years for women



As many as **165,000 deaths could be avoided** annually

<sup>i</sup> Based on Eurostat data for healthcare expenditure, average healthy life years for men and women and total deaths in the EU.



# Enabling healthcare transformation

**A holistic approach to delivering this transformation will therefore cover the digital, institutional and human components of the European healthcare system.**

**eHealth has the potential to deliver significant benefits to healthcare in Europe through the digitalisation of hospitals and other healthcare services, and more efficient out-of-hospital care. Digitalisation enables more efficient use of resources, better reach to patients and improved quality of care.**

However, delivering the transformation of healthcare services at scale requires significant behavioural change in both healthcare institutions and staff, to meet the new demands of citizens and patients. Doctors and nurses need training in how to use the digital tools they are provided with, and healthcare institutions need to integrate new processes and ways of working to realise the benefits of new technologies. European Governments have an active role to play in providing universal access to digital health solutions and ensuring everyone has the digital skills they need to use innovative health solutions.

This will require collaboration between policymakers, healthcare providers and technology companies, and prioritised investment across infrastructure, digitalisation of services, citizen and staff training, and digitally enabled services.