Digitalisation in Danish Healthcare

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Foreword

Denmark has one of the world's most digital health systems. The comprehensive digitalisation of the system has helped improve patient care across the primary and secondary sectors and is the result of many years of sustained efforts and ambitious digitalisation strategies developed for the entire public sector. The purpose and driving force behind Denmark's extensive digitalisation have been to provide Danes with better and more effective treatment options.

Denmark's first formal digitalisation strategy from 1995 paved the way for the first electronic health records in hospitals, marking a transition away from paper-based patient records. In the years that followed, Denmark significantly improved citizen interactions with the public sector, giving citizens access to their own health records through the national eHealth platform, Sundhed.dk.

Over the years, Denmark has fostered a strong tradition for joint government collaboration between municipalities, regions, and central government, which has helped create a robust digital infrastructure and resulted in numerous digital self-service solutions. The many data sharing options between actors in the health system have benefited Danish citizens positively, saving time and enhancing the overall patient experience, all while maintaining high standards of information security. In this context, trust is a key prerequisite for data collection, and it is imperative that this trust is maintained.

Denmark's extensive digitalisation of the health sector provides a solid foundation in order to tackle the demographic challenges facing our country in relation to a growing elderly population, the increase in chronic diseases and staff shortages. Looking ahead, Denmark is set to increase its digital ambitions even further and strengthen the delivery of health services at a local level, leveraging new digital solutions and the effective utilisation of health data.

Here, digital solutions will play an increasingly important role in enhancing efficiency and resource allocation in the health system, making more treatment-at-home options available to citizens, which will help promote equity in health offering world-class treatment to all Danes from the comfort of their own home.

By examining the key milestones of the digitalisation journey within the Danish health sector, we are optimistic that this publication will offer valuable insights and a forward-thinking perspective on the potential of digital solutions in addressing the major health challenges of tomorrow.

Sophie Løhde, Minister for the Interior and Health & **Marie Bjerre**, Minister for Digital Government and Gender Equality

Denmark's digital healthcare journey

The extensive digitalisation of the Danish healthcare system did not happen overnight and has been propelled by a strong political desire to improve the healthcare system and deliver the most effective and high-quality treatments possible to all Danish citizens. That is why, over several decades, changing Danish governments have supported the digitalisation of the public healthcare sector, introducing a range of home treatment options, which actively help to promote equality in health by breaking down distances and ensuring that all citizens can be treated in a safe and familiar environment.

Through a series of digitalisation strategies, Denmark has developed its digital public sector, adding new digital solutions aimed at improving the experience of patients in their contact with the healthcare system and strengthening the level of care. **Consequently, today's Danish healthcare sector boasts comprehensive solutions developed for the entire public sector, which encourage citizens to take an active part in their personal health, offering multiple digital solutions where citizens can access their personal healthcare data and interact with the healthcare system.**

In the mid-90s, the first digitalisation strategies in the health sector were drafted to make available electronic health records in the hospitals in an effort to replace paper-based patient records.

Over the past 20 years, municipalities, regions, and changing Danish governments have agreed to work closely together to build a strong digital infrastructure, which today serves as the foundation for all public services delivered to citizens and private businesses in Denmark. To create lasting and durable solutions to the benefit of all citizens, these agreements are based on joint public digitalisation strategies, which are cohesive multi-annual agreements involving not just the central government, but also regions and municipalities.

In the 2000s, Denmark set its sights on enhancing and streamlining citizens' interactions with the public sector, while introducing a number of large-scale digital infrastructure solutions. Moreover, Denmark gradually transitioned to a mandatory digital self-service at the beginning of the 2010s to strengthen citizen engagement and improve communication between patients and the healthcare system. At the same time, a series of digital solutions were introduced to optimise the sharing of health data between the primary and secondary sectors in the healthcare system, which have created smoother treatment flows for citizens, while the digitalisation strategy of 2016-2020 actively sought to strengthen information security, which is key to safeguarding the high level of confidence and trust in the healthcare sector.

The "Coherent Health Network For All" strategy was launched in 2018 and is focused specifically on digitalisation in healthcare. The strategy consists of 27 initiatives supporting citizen-centric care and patient engagement at both national and local level.

1990s

First digitalisation strategies in Denmark

2000s

Mandatory use of digital self-service

2016

Strategy

"A Stronger and Safer Digital Society"

2018

Strategy

"Coherent Health Network for All"

Going forward, Denmark is set to increase its ambitions significantly regarding the use of digital solutions to confront both national and global healthcare challenges. In 2023, the recommendations of the "Danish Resilience Commission", consisting of 16 healthcare experts and high-level representatives, were officially published. Regarding digitalisation, the commission recommended that Denmark follows a principal of being **"Digital and technological first"** as a mean to free up time and resources in the healthcare system by creating better framework conditions for implementing labour-saving digital solutions, as well as strengthening digital competences in basic healthcare education.

Denmark believes that digital solutions and AI hold the key to tackling future challenges in healthcare, including some of the most pressing issues related to an ageing population, the increase in chronic diseases and the shortage of healthcare professionals.

Here, Denmark has high ambitions to bring treatment closer to the patient's home and is looking at a series of telemedicine and AI solutions that can help alleviate the pressure on the healthcare system, while at the same time minimising distances in healthcare and offering patients high-quality treatment from the comfort of their own home, which, in turn, helps promote equality in health, particularly important for the most vulnerable citizens.

2023

Commission

Resilience commission

Resilience commission 2023

The resilience commission's recommendations spanned 20 recommendations across three themes: Stronger prioritising and wiser task solution, Attractive workplaces and time for the core task, and Right competences and professional flexibility.

Infrastructure

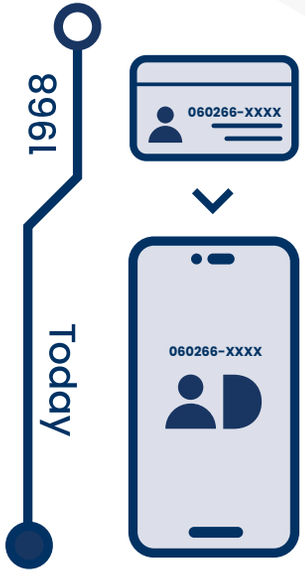
The Danish healthcare sector has a vast and well-developed digital infrastructure, covering the entire healthcare system, both at a primary and secondary level. With the increasing challenges concerning staff shortages and the growing number of elderly people with chronic diseases, the demand for digital solutions and the effective utilisation of health data are set to increase substantially.

For decades, Denmark has paved the way for the implementation of digital solutions across the Danish healthcare sector. In 1968, Denmark implemented a unique Civil Registration Number, which is issued to all Danes at birth, making data linkable across data sources. More recently, Denmark has implemented a number of cross-sectoral security solutions and a single sign-in solution named MitID, a digital ID solution which gives citizens access to almost all public self-service solutions using just one login.

Specifically for healthcare, this has given Danes the opportunity to access logs in the healthcare system, restrict the access to their data and grant relatives access to the same information, among other things. The extensive collection of data across the public sector, and specifically in the healthcare system, is founded on a high level of trust from the population.

The Danes' trust and confidence in the safety and secure handling of their health data is a prerequisite for the success of the data collection and strong safety measures are taken on an ongoing basis to maintain this trust.

Throughout this era of digital progress, Danes have experienced the benefits of digitalisation and seen how digital solutions can make their healthcare journeys and everyday life easier. As a result, there is a growing expectation among the population for the healthcare sector to offer adequate self-service solutions.



Current digital infrastructure

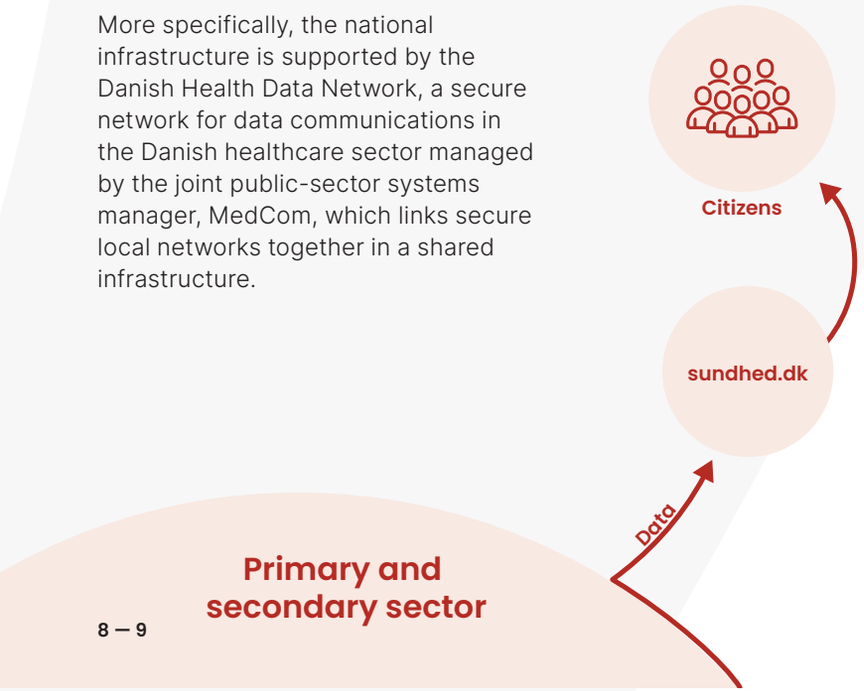
Today, all workflows are digital in the Danish healthcare sector, including at the GPs, hospitals, and municipalities. Each part of the healthcare sector has its own system but all of them are connected through a common infrastructure.

The fact that data are collected across both the primary and secondary sectors and sent to one national e-health portal, Sundhed.dk, means that citizens can access a complete overview of their healthcare data and prescription medications as well as see all touchpoints and communications that they have had with different parts of the healthcare system.

More specifically, the national infrastructure is supported by the Danish Health Data Network, a secure network for data communications in the Danish healthcare sector managed by the joint public-sector systems manager, MedCom, which links secure local networks together in a shared infrastructure.

Denmark has some of the most comprehensive health registers in the world, enabled by the National Service Platform, which makes it possible to use the national registers and services directly in the care of patients.

Through the National Service Platform, healthcare professionals across the primary and secondary healthcare sectors can access national registers such as the Danish Civil Registration System and the Authorization Register as well as national services such as the Shared Medication Record, a national IT solution providing a complete electronic record of the citizen's prescription medications and vaccinations.



National Board for Digitalisation and Data

In continuation, the Danish Government, Local Government Denmark (KL), and Danish Regions have decided to establish a National Board for Digitalisation and Data that will look specifically at the area of health and elderly care as part of the Economic Agreement for 2024.

Through joint decisions and initiatives, the National Board must ensure strong joint governance across municipalities, regions, and the state in the area of health, enhancing coordination and prioritisation of the development, implementation and use of digital solutions and data within the field of health and elderly care.

In the coming years, Denmark aims to enhance its digital infrastructure by integrating new technologies and implementing comprehensive digital solutions across the healthcare sector that will enhance patient care and the quality of treatment that citizens receive.

Similarly, it is expected that new digital solutions will help alleviate the pressure on resources in the healthcare system and have a significant labour-saving effect, which again will benefit the care offered to citizens in all parts of Denmark.

Health appointment overview

More recently, efforts have been dedicated to the programme **"A Shared Patient Overview"**, encompassing various digital solutions and concepts. The initiative aims to enhance coordination and collaboration among hospitals, GPs, and municipal care to give citizens with multiple touchpoints in the healthcare system a comprehensive overview of their appointments via Sundhed.dk or the app MinSundhed.

Similarly, the programme seeks to give healthcare professionals a complete view of patients' appointments with other healthcare entities to facilitate the scheduling of appointments. The programme is a collaboration between the Danish Ministry of the Interior and Health, Local Government Denmark (KL), Danish Regions, the Danish Organization of General Practitioners (PLO), the Danish Health Data Authority, the Danish Agency for Digital Government, and MedCom, with the Danish Health Data Authority leading the project.

Multi-public ownership

Since 2001, digitalisation of the public sector has been propelled by close and dedicated cooperation between the state, municipalities, and regions. This applies particularly to areas demanding transversal solutions such as digital communication. Here, shared public strategies have laid the foundation for digitalisation in Denmark, resulting in numerous solutions and joint transversal platforms that have become integral parts of Danes' daily lives, including **borger.dk, Virk, and Sundhed.dk.**

Joint ownership also means that there is a joint risk among the involved stakeholders, which, in turn, contributes to everyone having a stake in making the solutions a success. In addition, most of Denmark's joint public solutions within healthcare are owned based on the principle that the stakeholders that benefit the most from the solutions also contribute the most.

MedCom

MedCom develops, tests, and certifies (and help implement) digital standards that enable systems in the healthcare sector to exchange relevant data in a secure way. These efforts are performed in close cooperation with all parts of the healthcare sector, incl. the IT vendors. This could, for instance, be the development and subsequent implementation of a new or updated technical communication standard, e.g. a discharge summary that is shared by the hospital with the patient's GP, or a rehabilitation plan from the hospital to the municipality when a patient transitions from specialised hospital rehabilitation to municipal rehabilitation services. Additionally, MedCom supports local implementation and activities through coordination of national initiatives and projects towards joint cross-sectoral goals.

Sundhed.dk

Denmark's national e-health portal, Sundhed.dk, is a perfect example of a successful multi-public solution, enabling citizens to access a wide range of personal health data, including their personal health record, information on prescription medications and vaccinations, lab and test results, among others. **It is estimated that 96% of the Danish population are familiar with the portal, with 2,3 million unique visitors entering the portal each month.**

The Shared Medication Record

This pioneering system allows for real-time updates, communication and information sharing between hospitals, GPs, municipalities, and pharmacies by ensuring that information about the citizen's current medication is always available to the citizen and the healthcare staff treating the patient.

This innovative system supports patient safety by using the cross sectoral overview of the citizen's medication to notify healthcare professionals before prescribing medication that could lead to adverse drug interactions. Finally, it is important to note that doctors and other healthcare professionals may only look up the citizen's medication record when they have the citizen in treatment.

Collection and sharing of healthcare data

Since implementation of its unique Civil Registration Number for all citizens in 1968, Denmark has worked to create an entire ecosystem for health data, known worldwide for its high data quality. The ecosystem is supported by strong national standards and reporting guidelines, which ensures an unambiguous use and interpretation of healthcare data. Moreover, the reporting requirements apply to all healthcare professionals, which means that clinically valid and high quality of data is ensured.

Coupled with a high degree of transparency regarding algorithms and calculations, this enhances trust in the healthcare data and the system collecting and presenting it.

Denmark's strong digital traditions, innovative healthcare data ecosystem, and high level of trust among its citizens allow for an efficient utilisation of technological advancements to create solutions supporting healthcare areas such as cross sector collaboration, clinical research, and citizens' interactions with the healthcare system.

Nationwide health data initiative enhances patient care across regions

The Danish Clinical Quality Program (RKKP) is a joint initiative across the country's five regions, ensuring high-quality care using nationwide health data. RKKP oversees 85 national clinical registries across various disease areas and is developed and maintained in collaboration with clinicians who form part of steering committees.

These registries offer detailed insights into treatment efficacy, complications, treatment according to guidelines or best practice, and mortality rates. Finally, clinicians are able to access daily updates and annual reports from these registries.

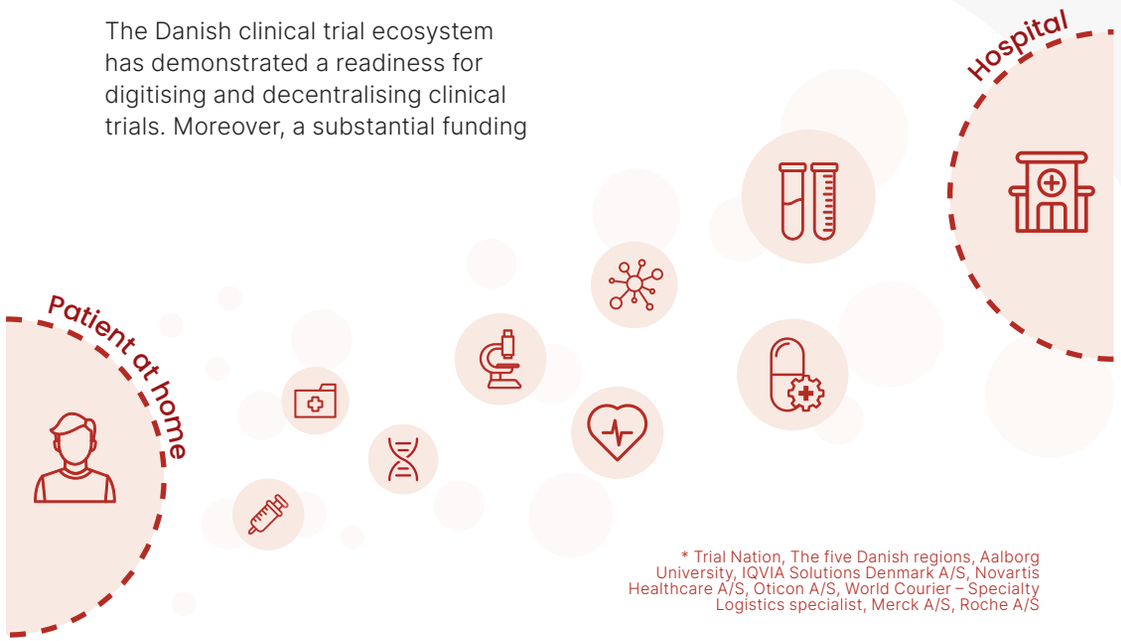
CASE *Bringing clinical trials closer to the citizen*

The ever-evolving technological landscape provides new opportunities to bridge the gap between traditional research sites and participants in clinical trials, ensuring a more personalised experience. **Furthermore, incorporating digital technology, processes and services supports remote interaction with patients and enables them to engage in trials from the comfort of their own home or in the local community.**

The objective is to increase equity in healthcare, as patients regardless of mobility and physical distance to the hospital are able to participate in trials.

The Danish clinical trial ecosystem has demonstrated a readiness for digitising and decentralising clinical trials. Moreover, a substantial funding decision by Innovation Fund Denmark has enabled a powerful consortium of Danish life science stakeholders* to innovate and develop Denmark as the leading nation for decentralised clinical trials (DCTs).

The €5M PACT project (patient-centred decentralised clinical trials) – which runs from 2022-2026 - creates a public-private framework that supports implementation of patient-centred decentralised clinical trials in Denmark, by creating and implementing operational setups and logistics for general use of digital and decentralised elements in clinical trials.



* Trial Nation, The five Danish regions, Aalborg University, IQVIA Solutions Denmark A/S, Novartis Healthcare A/S, Oticon A/S, World Courier – Specialty Logistics specialist, Merck A/S, Roche A/S

CASE *Reduced calls secure more focus and a stronger cross-sector collaboration*

Today, healthcare systems face increased pressure due to the growing number of elderly citizens and a general shortage of healthcare professionals. **To tackle this challenge, it is crucial to focus on building a more comprehensive and coordinated healthcare service.** This requires better interaction and cooperation between the healthcare sectors, which can only be achieved with easy access to complete and real-time health data.

To address this issue, Systematic has developed Columna Axon: An innovative solution that empowers healthcare professionals with easy access and insights into patients' data before their hospital discharge through seamless data retrieval from the healthcare record system.

With Columna Axon, healthcare professionals in the municipality can now access citizens' medical records from the hospital with just one tap, eliminating the need to call the hospital.

Professional-focused information = 50% fewer calls

In a pilot project, Columna Axon has been tested by Herning Municipality and The Regional Hospital in Gødstrup. The aim was to provide municipal healthcare professionals with better insights into citizens' medical record data from the hospital, enabling them to offer more effective care to citizens.

The pilot project showed that healthcare professionals in the municipality could reduce the number of calls made to the hospital between 25-50% by accessing relevant information. The remaining phone calls were still necessary but became more focused and efficient as both parties had access to the same information.

Sharing information across sectors is pivotal in fostering a truly collaborative healthcare system. The outcome of using Columna Axon serves as a testament to the transformative impact of data sharing among healthcare professionals, emphasising the importance of seamlessly integrating sectors in the patient's best interest.

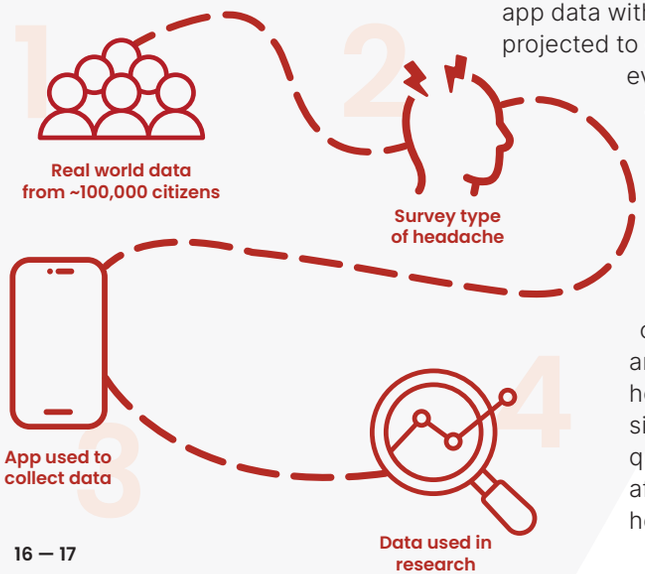
I have saved 1 out of 3 calls, and the other calls I made were of higher quality. It is a time-saving solution because I do not need to call the hospital, and if it turns out that I need to call, I also know exactly who to contact at the hospital

Healthcare professional, Herning Municipality

CASE *App-based study to improve migraine and headache treatment*

In Denmark, migraines and frequent headaches afflict nearly 18% of adults, significantly impacting their daily lives. To address this, the National Headache Knowledge Center and Lundbeck have launched the public-private research project, HEAD-WINd which aims to explore the daily challenges encountered by individuals suffering from these conditions where the symptoms are not often visible to others, and thereby risking isolating people with migraine due to lack of understanding and acceptance from others.

100,000 randomly selected citizens have been invited to participate in a survey about their symptoms of migraines and headaches.



Upon completing the survey, all participants are invited to use a tailored app - a product of collaboration between Lundbeck, the National Headache Knowledge Center, Monsenso, and patient associations – to record their migraine and headache symptoms in real-world scenarios over a three-month period. To ensure continuous active participant engagement, patient associations have created informational content and videos for the app which is expected to enhance data collection and elevate the quality of results.

This initiative is a testimony of how the National Headache Knowledge Center and Lundbeck in partnership drive science through innovative digital solutions. The incorporation of the app data with existing register data is projected to generate new insights and evidence on the societal and personal costs of living with migraines and headaches.

This knowledge could pave the way for improved treatment options and strategies, and ultimately, this research holds the potential to significantly improve the quality of life for those affected by migraines and headaches.

CASE *A communication platform to empower autonomy and community in assisted living facilities*

IBG - Interactive Citizen Guide assists individuals with disabilities in gaining greater autonomy and improving their daily structure.

The system is used in settings such as residential care homes, protected workshops, and nursing homes, replacing daily notice boards and staff-assisted decision-making with a comprehensive communication tool that also connects the individual with their relatives.

With the relatives' app, parents and other family members can stay informed about the individual's life as they can see the same user interface that the individual sees. **Thus, the technology provides full transparency into life at the residential care home or nursing home.**

IBG is used in Denmark, Norway, Germany, and is expanding to the rest of the world market as the system has proven to be usable without any adaptation other than language versioning.

Patient-oriented digital technologies

The Danish approach to healthcare emphasises the evolving role of citizens in their own treatment, highlighting the need for them to become active partners. With an ageing population and the prevalence of chronic illnesses, there is a push towards empowering patients and their families to manage their health more proactively. This includes facilitating their engagement with digital health tools to ensure they have comprehensive access to their health data across various health services. The digitisation of healthcare aims to streamline patient pathways and provide more personalised care through tools such as telemedicine and patient-reported outcomes.

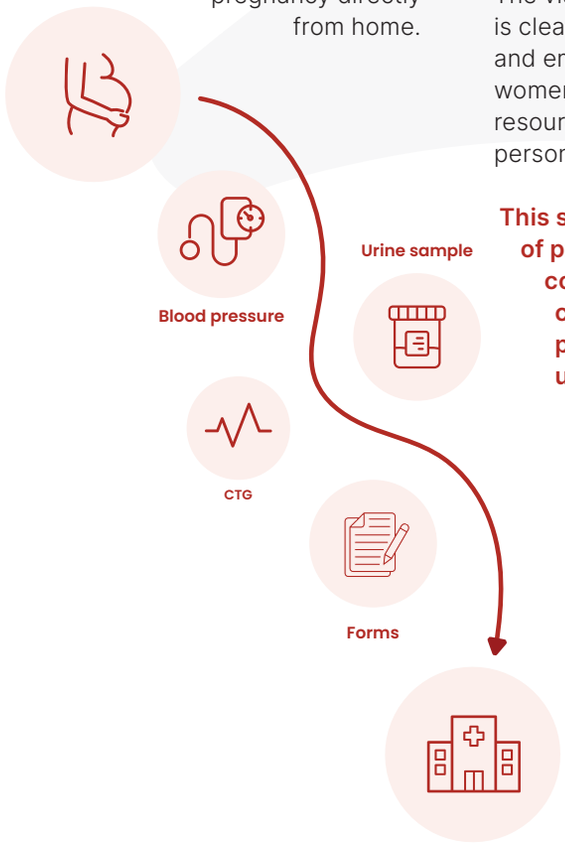
These innovations are intended to reduce unnecessary hospital visits and enable more targeted, and effective healthcare delivery. By enhancing independence and enabling more treatment at home, digital technologies pave the way for more comfortable interactions benefiting both citizens and healthcare personnel.

CASE *Remote monitoring for pregnant women with complications*

With The Health Innovation Centre of Southern Denmark as the project leader, the five Danish Regions have completed a cross regional tender which have secured a telemedicine solution for pregnant women with complications. This innovative approach ensures not only increased security and flexibility but also better management of the pregnancy directly from home.

By introducing remote monitoring, pregnant women can now monitor both their own condition and the condition of their fetus and send measurements directly to the hospital, reducing the need for repeated visits to the midwife. This arrangement has already shown positive results at Aarhus University Hospital.

The vision with the remote monitoring is clear: to promote independence and empowerment among pregnant women, and to optimise staff resources so they can focus more on personal care and support.



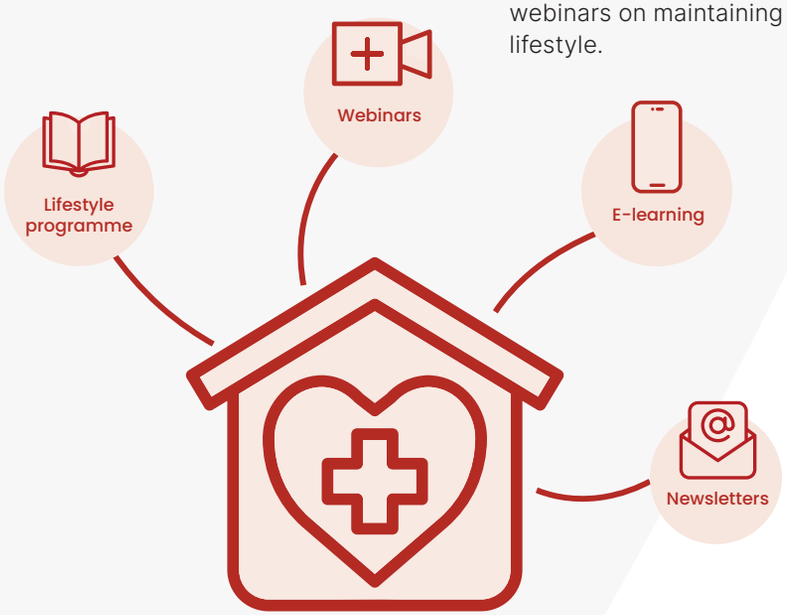
This solution represents the future of prenatal care, where quality, comfort, and cost-effectiveness come together to support pregnant women through their unique health journeys.

CASE *Healthcare together at home*

Introducing the "Health together at home" initiative by the Digital Health Centre — a new approach to chronic disease management accessible right from the comfort of the citizen's own home. This innovative programme is designed for individuals living with or at risk of chronic conditions who find it challenging to attend in-person sessions due to busy schedules, health limitations, or psychological barriers. The programme offers a range of services including newsletters, e-learning, and webinars led by health professionals, enabling participants to tailor their health journey according to their specific needs, motivation, and daily routines.

"Health together at home" is a robust partnership involving 25 municipalities, five patient associations, and the Region of Southern Denmark, all committed to developing a digital health centre that provides self-help resources and education for individuals with chronic illnesses. The centre offers specialised education for people with type 2 diabetes, heart diseases, COPD, and chronic pain. It is also expanding to include more conditions such as various heart and lung diseases, as well as cancer.

The initiative also focuses on prevention, offering a lifestyle programme that includes digital smoking cessation, online fitness, healthy weight management, and webinars on maintaining a healthy lifestyle.



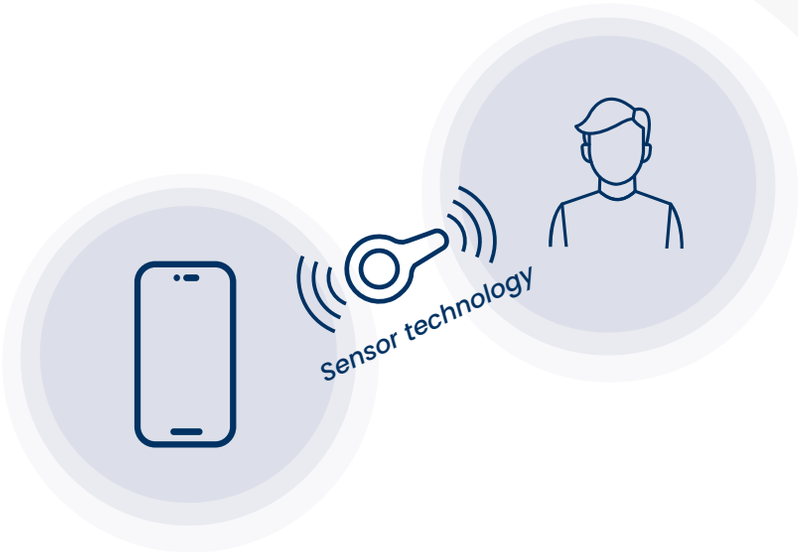
CASE *Enhancing patient confidence through technology*

Having a stoma created can come with a high mental burden: in the first year following stoma surgery, mental health diagnoses and sleep disorders increase among people with a stoma by 15% and 48%, respectively[1]. These emotional challenges are not exclusive to new patients; 36% of people who have had a stoma for five or more years report that they are neutral towards or dissatisfied with their quality of life post stoma surgery[2].

One of the primary factors contributing to these emotional challenges for patients is the fear of leakage from the stoma.

Overall, 92% of people with a stoma say they worry to some degree about leakage, while 39% worry to a high or very high degree[3]. Meanwhile, 76%[4] of people with a stoma experience leakage under the baseplate at least once a month and 26%[5] have experienced leakage onto their clothes during the last month.

To counter the challenge, Coloplast has created Heylo™, which uses cutting-edge sensor technology to detect leaks under the baseplate. Through a user-friendly app, patients receive prompt warnings about imminent leaks, enhancing their confidence and security.



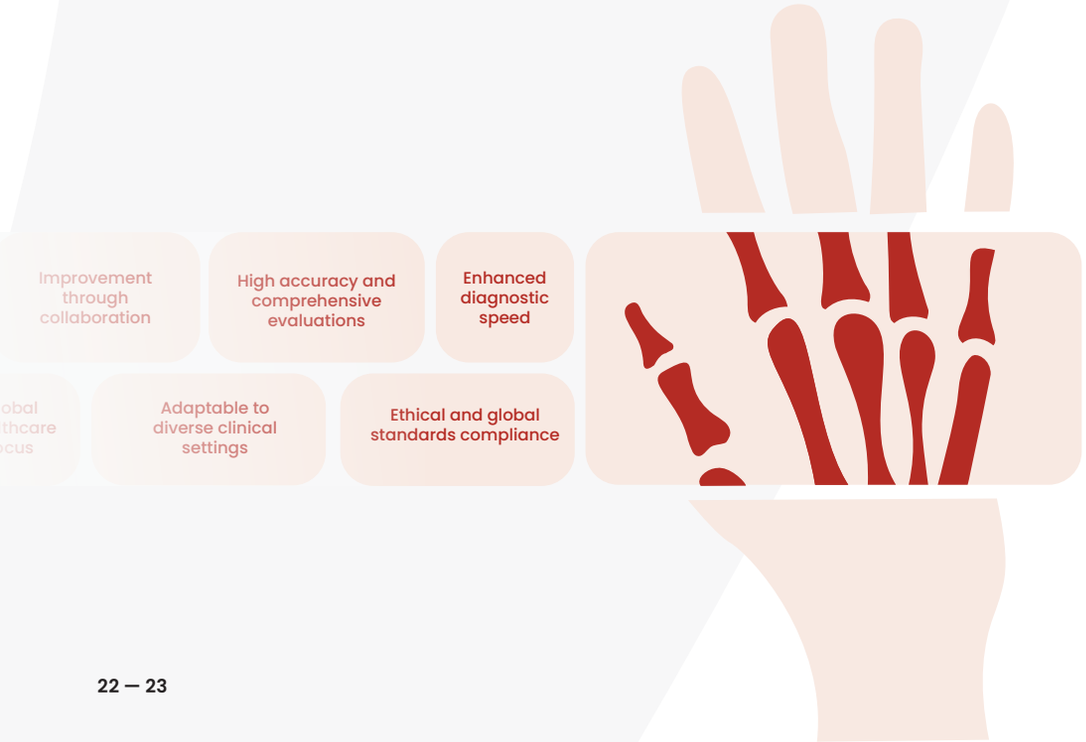
CASE *AI-driven solutions to improve radiological analysis*

Radiobotics' flagship product, RBfracture, detects fractures, effusions, and lipohemarthrosis with unparalleled accuracy, trained on a dataset of over 300,000 images from the US and Europe. **This technology expedites diagnosis, ensures comprehensive evaluations, and adapts to diverse clinical settings.**

RBfracture addresses traditional radiology challenges by providing clinicians a sophisticated tool for precise radiographic interpretation.

Powered by advanced algorithms, the project accelerates the diagnostic process and enhances treatment outcomes. Its cross-cultural training dataset reflects a global healthcare commitment.

By fostering collaboration, constantly refining technology based on clinician feedback, Radiobotics aims to revolutionise radiological diagnostics, ushering in a new era of precision medicine.



CASE *Home based digital rehabilitation to enhance patient empowerment*

Five Danish municipalities and a hospital in Region Zealand have partnered with the company Icura in a project aimed at enhancing cancer rehabilitation through technology and early patient engagement.

Utilising an app and motion sensor, Icura provides highly motivational digital exercise technology that monitors home exercises and daily activity. The app reduces travel time and the need for physiotherapy sessions to be conducted in person, while still offering therapists insights into the patient's actual capabilities and progress at any given time, thereby freeing up time to accommodate more patients.

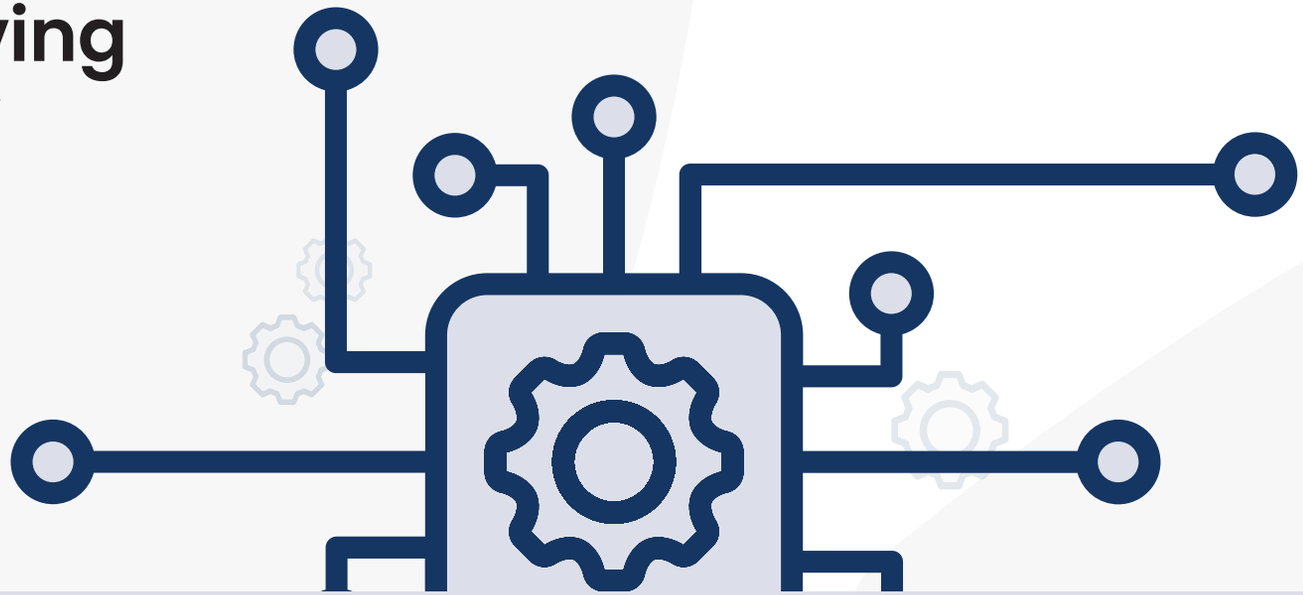
The project engages patients in their rehabilitation by introducing the solution in the early stages of cancer treatment. The objective is to mitigate side effects and functional loss and to increase participation in rehabilitation programmes as part of addressing disparities in cancer care.

Icura accompanies the patient throughout, aiding in the patient's retention of new exercise and activity habits. The project is co-funded by the European Union and the Danish Board of Business Development

With successful implementation in 30 Danish municipalities and hospital-based clinical projects, Icura is at the forefront of transforming healthcare delivery.

LABOUR-SAVING TECHNOLOGY

Labour-saving technology



Throughout the healthcare system, there is widespread acknowledgment that healthcare technology and digital solutions are essential prerequisites for addressing the challenges confronting the healthcare system. According to analyses conducted by the Danish IT industry, the implementation of mature and user-friendly technologies within the healthcare system could potentially free up to 3,000 healthcare workers, enhance patient processes, and improve decision-making and workflows.

Following a political agreement concerning the Danish Health Reform, the Danish government set up a Resilience Commission on 20 May 2022, tasked with examining the challenges and shortcomings facing the Danish healthcare system in the coming years regarding the shortage of qualified staff and resources in the system. The commission submitted its recommendations on 11 September 2023, envisioning a future where patients are increasingly diagnosed, treated, and rehabilitated within their own homes, using technologies such as telemedicine, sensor technology, and data sharing.

Research shows significant potential in transitioning physical healthcare interactions and treatments to digital formats, conducted remotely from patients' homes. Odense University Hospital boasts the world's largest database of evidence-based telemedicine across 24 medical specialties. Of the 500-plus studies in this database, an impressive 98% demonstrate that telemedicine either improves patient conditions or maintains them unchanged.

Consequently, the Commission expects that more healthcare consultations and decisions will be automated in the future, with employees receiving increased support from digital assistants. Furthermore, technology enables a reduction in outpatient visits through self-monitoring and digital access to medical consultations.

Both regions and municipalities have conducted analyses highlighting mature technologies that can be rapidly implemented and utilised across the healthcare system to great advantage. Municipalities, for instance, have compiled a catalogue of case studies featuring time-saving technologies with proven efficacy.

Additionally, they have developed a tool that evaluates the maturity of various technologies currently available in municipalities. Similarly, regions have created case catalogues highlighting mature technologies aimed at streamlining labour processes.

CASE *Use of AI on bedside units leads to notable reduction in patient falls*

Teton.ai has created a sensor and AI-powered system that gives nurses more time to care for patients by removing unnecessary routine tasks. The solution consists of an AI-driven nurse companion that revolutionises patient safety and staff efficiency through the use of advanced AI and camera technology.

More specifically, the solution monitors patient movements, analysing patterns to pre-emptively alert staff to potential falls and urgent care needs, reducing fall incidents by 83%.

The system not only facilitates quicker staff intervention, enhancing patient safety, but also serves as a preventive tool by measuring patient activity and sleep rhythms. These insights enable targeted care strategies, preventing incidents before they occur. Moreover, the system automates routine checks and documentation, cutting workload by 25% during evening and night time. This significantly eases staff burden, minimises burnout, and frees up more time for direct patient care.

The solution is already in use at North Denmark Regional Hospital, where it not only enhances patient and resident safety but also incorporates privacy into its design.

CASE *AI helps reduce waiting time in emergency departments*

In emergency departments across the North Denmark Region, an AI solution has been implemented to automatically read X-rays and identify fractures, aiming to reduce waiting times for patients with orthopedic injuries.

AI is used for a faster "clearance" of injuries that are not fractures and do not require hospital treatment. The "cleared" patients experience less unnecessary waiting time. The project has focused on implementation and ensuring that the solution meets the diagnostic quality currently provided by clinical staff.

The solution benefits patients and staff in all emergency departments in the North Denmark Region where trauma X-rays are taken and need to be diagnosed for fractures. Approximately 52,000 patients are seen annually in the region's emergency rooms, the majority of whom are orthopedic injury patients**. Since the implementation of the AI solution, nearly 30,000 examinations have been analysed.**

The solution has been in use since June 2023. During this period, no significant fractures have been overlooked, and the region has not received complaints about overlooked fractures. Further data on the effects is pending.

Approximately 52,000 patients are seen annually in the region's emergency rooms, the majority of whom are orthopedic injury patients.

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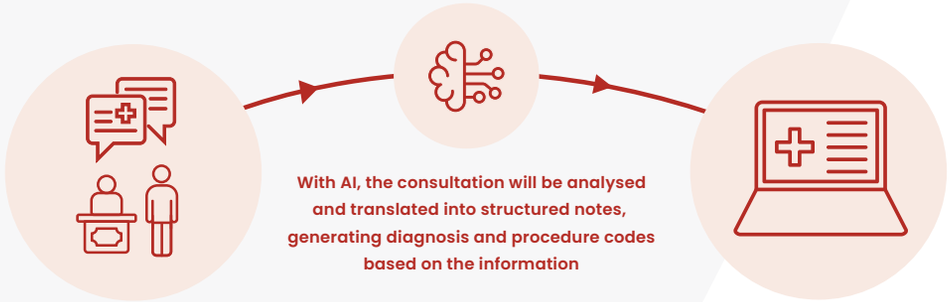
CASE *Private hospital revolutionises patient consultations and documentation with cutting-edge AI technology*

Denmark's second largest private hospital, Capio Private Hospital, was faced with challenges related to increasing costs and decreasing revenue, which made them look at innovative solutions that could help solve this challenge.

Partnering with private company Corti, the hospital aimed to improve patient consultations and documentation both of which are crucial for compliance and billing. Traditionally, medical secretaries have handled documentation, often struggling with deciphering rushed or unclear notes.

This led to slow progress, inaccuracies, and incomplete invoicing. Corti's AI solution changed this process profoundly by automatically translating consultations into structured notes, analysing them for relevant text, and generating diagnosis and procedure codes based on this information.

Moreover, the new system's accuracy and flexibility have enabled faster processing, greater accuracy, and enhanced control for doctors over patient treatment journeys at Capio's hospitals.



CASE *Optimising workflows and efficiency through digital roster planning solutions*

PDC specialises in roster planning solutions that optimise workflows and increase efficiency in the healthcare system. The PDC Plan system is based on an expertise in workforce management, union agreements, work rules, and payroll administration, and provides the healthcare system with solutions that optimise the use of its most valuable assets: its employees.

The system is an all-in-one solution used across all staff groups and in all phases from planning and distribution of shift plans to daily operational management and salary calculation.

The purpose of the system is to ensure fair, uniform, compliant, and transparent shift planning. **At the same time, the system helps lower labour costs and increases productivity while also minimising administration costs and strengthening talent attraction and employee retention.**

PDC Plan is already in use at all the hospitals in the Central Denmark Region, handling the complexity of satisfying the need for staff with various skills, while also complying with work regulations. A more personal involvement of employees in shift planning provides greater accountability, commitment, and loyalty among staff members, which in turn often results in reduced sick leave.

+200,000
Employee schedules are created using PDC Plan

Available in 8 languages

+50,000
Users of the employee app

2000 planners and 30,000 employees in largest installation

CASE *Choosing Denmark - an exemplary hub for public-private partnerships*

Every year, the Danish life science sector welcomes foreign companies that decide to settle in Denmark due to its robust ecosystem, characterised by innovative and research-heavy companies, a knowledge-intensive workforce, and strong cooperation between the public and private sector. Other factors include Denmark's extensive research and science community and a strong tradition for public-private partnerships.

In 2023, the New York-based patient safety company, Surgical Safety Technologies, formed a strategic alliance with Copenhagen University Hospital, Rigshospitalet.

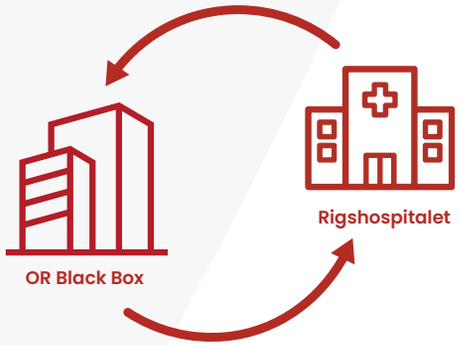
The alliance aims to enhance surgical safety and patient outcomes through the deployment of four OR Black Box systems that record operating room activities to minimise risks and improve patient outcomes.

Denmark was chosen for this partnership due to the collaborative nature of its healthcare system and Rigshospitalet's reputation for world-class health research.

In addition, Denmark's public-private partnership model facilitates innovation and the partnership with Surgical Safety Technologies helps Rigshospitalet gain fresh perspectives.

Invest in Denmark

Invest in Denmark, a division of the Danish Ministry of Foreign Affairs, provided tailored support to the company throughout the process, facilitating introductions, network, benchmark analysis and fact-based country and sector insights.

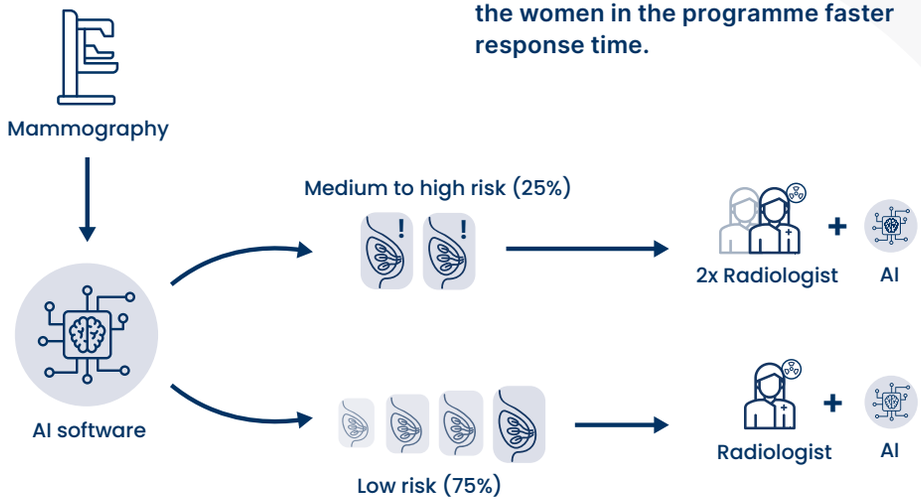


CASE *AI in breast cancer screening can handle the work of one in three specialists*

Women between the ages of 50 and 69 in Denmark are offered an X-ray examination of the breast every two years to detect breast cancer in the early stages. In the Danish Capital Region alone, an estimated 75,000 women are screened for breast cancer every year. In each session, four X-rays are taken, each of which are assessed by two independent specialists in radiology - the so-called "double review".

In recent years, the Capital Region have looked at several AI solutions that can help optimise treatment processes and assist with staff shortages. As an example, the Region signed an agreement in November 2021 with the Danish company Human Bytes on the tool Transpara AI, an algorithm based on pattern recognition.

The AI tool has now been used to screen thousands of women in the Region and the preliminary results are incredibly promising, as it **is estimated that the solution can save 30% of the radiologists' screen time and give the women in the programme faster response time.**



FUTURE PERSPECTIVES

Future perspectives

We are living in a revolutionary age where technology is evolving rapidly. Denmark stands on a robust digital foundation and it is important that we leverage this strong digital starting point to ensure a resilient healthcare sector to the benefit of citizens.
The challenges that we face in the healthcare system also call for an elevated level of ambition to address labour shortages and enhance welfare by strengthening the primary sector and offering citizens more home-based treatment options.

In 2023, the Resilience Commission laid out its 20 recommendations, among other things advocating for a “digital and technological first” approach, while emphasising rapid implementation of proven labour-saving technologies and enhanced digital competencies in health education programmes.

The recommendations form the basis for a Structural Commission tasked with determining the most effective initiatives and structures for promoting technology utilisation across the healthcare system.

Simultaneously, the Danish government launched a new digitalisation strategy at the end of 2023, featuring significant investments in digitalisation across the public and private sectors.
The strategy comprises 25 initiatives to be implemented from 2024 to 2027, focusing on enhancing digitalisation in the public sector, fostering digital inclusion, and supporting welfare as a pillar for an effective green transition and economic growth and exports through digitalisation.

Digital development inherently transcends national borders, which has prompted Denmark to strengthen its international commitment, particularly within the EU, to establish sound and responsible frameworks for digital development that benefit Danish citizens and businesses.

As a result, Denmark closely monitors the European Commission’s work on the proposed regulation for a European Health Data Space (EHDS), which aims to establish an IT infrastructure for sharing health data across Europe.

References & credits

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We look forward to hearing from you.

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