

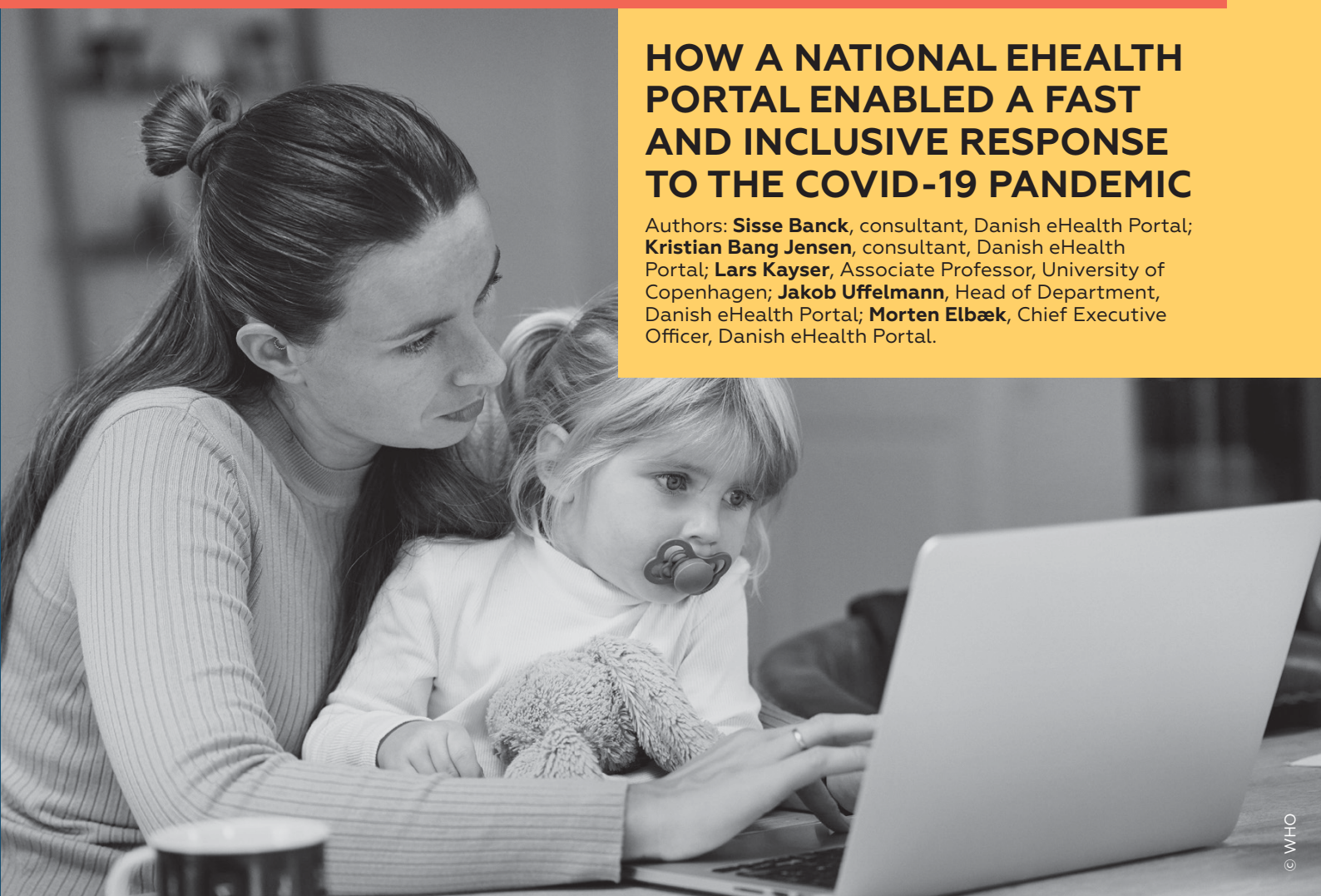


# DENMARK

Using an eHealth portal  
to transform PHC during  
the pandemic

## HOW A NATIONAL EHEALTH PORTAL ENABLED A FAST AND INCLUSIVE RESPONSE TO THE COVID-19 PANDEMIC

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## MOTIVATION

In Denmark, as in other countries, the COVID-19 pandemic has caused overload of the capacities of health systems and an increase in deaths.

The trusted Danish eHealth Portal has been instrumental in facilitating delivery of, and accessibility to, health services, including fast access to test results and documentation of vaccinations. It has also served as an information resource enabling decision-making for citizens and health care professionals. The Portal has acted as a gatekeeper for access to Danish primary health care (PHC) services before and during the pandemic. Ultimately, it has become instrumental in moving toward digital health literacy in the population at large.

The Portal and its support organization expanded swiftly during the pandemic to reinforce new digital solutions to ease access to services. Access to health data via the Portal has been expanded for PHC professionals to cover municipalities, allowing these to be part of the emergency response and to provide health care locally.

## Danish PHC transformed by a citizen-based approach

### POLICY AND INSTRUMENTS OF TRANSFORMATION

The way health services are delivered has been transformed over the last 50 years. A key contributor has been the active involvement of people, engaging and empowering them through the redesign of the health system into a personalized health-centred organization of health services. PHC providers have played a decisive role and influenced health care services in Denmark, which has a decentralized health system that encourages citizen involvement and participation.

A new series of initiatives was launched in 2018 to strengthen coordination of care at all levels. These included efforts to address the shortage of general practitioners (GPs) in underserved areas and, more broadly, to better meet the needs of patients with chronic conditions (1). As a result of structural reforms in 2007, 14 counties were merged into five administrative regions that consolidated the role of municipalities and PHC.

Denmark has a tradition of community-based services. Residents generally are required to register with a GP who provides primary care as well as playing a gatekeeping role for access to hospital and specialist care. GPs predominantly are self-employed in private solo or group practices and contract with regional health authorities. The regions own, manage and finance hospitals and finance most services delivered by private GPs, office-based specialists, physiotherapists, dentists and pharmacists, as well as rehabilitation services. Municipalities organize a range of services to support older people at home. They are responsible for financing and delivering nursing-home care, home nurses, health visitors, some dental services, school health services, home help, substance-use treatment, public health, health promotion and general rehabilitation, all of which are core elements of PHC.

PHC in Denmark is inspired by the people-centred integrated care approach, which is based on a societal structure in which people in older generations live on their own or in their communities and children are involved in extracurricular activities (2). This social structure and the way PHC is organized have facilitated expansion of the use of digital health tools among the generations and has proved to be robust in limiting the dissemination of COVID-19 infection. Most municipalities, with many competencies in PHC, have acute nursing teams and are able to limit hospitalization either by treating older people in their homes or through referral to local community beds.

In 2018, the Danish government, administrative regions and municipalities started collaborating on a strategy for digital health. The strategy aimed to provide opportunities for patients to participate in their own care, gain greater insight into their own medical information and promote more flexible contacts with the health care system (3). The Danish eHealth Portal – sundhed.dk – is embedded as one of the key enablers in empowering citizens and contributes to reducing the digital divide (Box 1).

#### Box 1. Danish eHealth Portal

**The mission** of sundhed.dk is that *citizens and health care professionals have access to a unified digital universe about health and illness.*

**The vision** of sundhed.dk is to be a *user-centred health universe that creates value and coherence for both citizens and health care professionals and supports the empowerment of citizens.*

The strategy of sundhed.dk is clearly influenced by the strategy for digital health, with four benchmarks:

**the citizen as an active player and participant**

**seamless health services with cross-sectoral coherence**

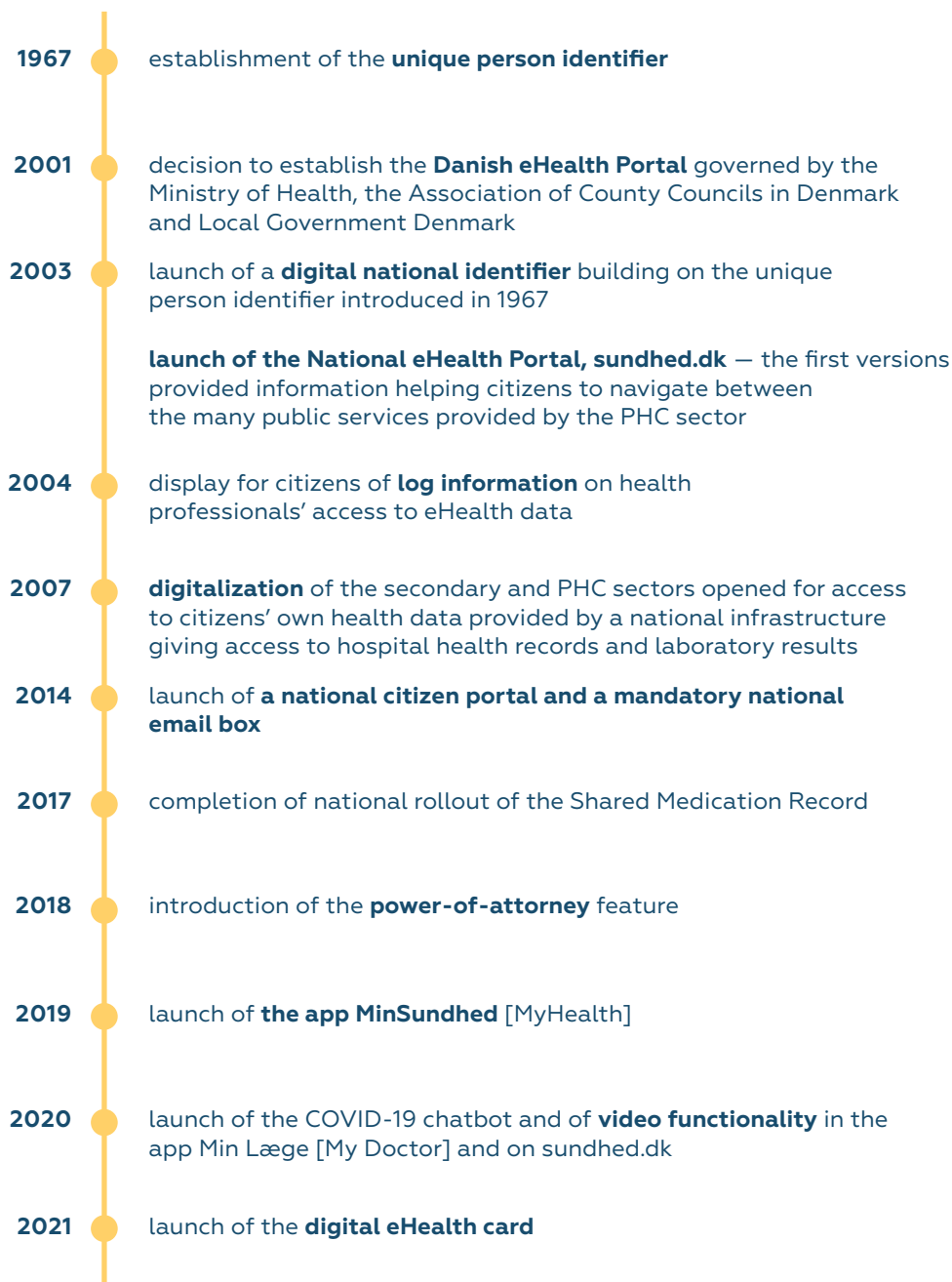
**health and disease prevention**

**security and trust about personal health data**

## From digital health policies to the Danish eHealth Portal

Sundhed.dk is the official portal for the Danish public health care services and enables citizens and health care professionals to find information, access health data and communicate with each other. It facilitates patient-centred digital services that provide access to, and information about, Danish health care services.

### Timeline: Danish eHealth Portal



The outcomes of these efforts are tangible in 2021, with more than 92% of the population over the age of 15 being familiar with digital communication with public services, including self-services (4). Municipal offices, including libraries, support those not able to use digital services. They may share their health data with their family, trusted friends, relatives or health professionals to get assistance to manage their health.

## The Danish eHealth Portal as a hub

Sundhed.dk acts as a hub, providing easy access to relevant and personal data. The objective is to create an environment that fosters knowledge-sharing and collaboration among health professionals and serves as a resource for citizens to manage their own conditions by enabling them to navigate and empowering them to a higher degree to take an active role in the management of their chronic conditions.

The Portal currently offers specific tools not only for patients but also for professionals. Patients can access a wide range of topic sections, including health and disease prevention tools, illness and medicines information, treatment and rights and a specific section on COVID-19 that includes the EU Digital COVID Certificate and video consultation. From the perspective of PHC professionals, the Portal provides a quick way to access guidance when a patient needs to be referred for treatment to a hospital or a narrow specialist and acts as a support tool for shared decision-making.

Sundhed.dk also offers more interactive solutions to support these activities and supports communication between health care professionals and citizens. An example of this is guided self-determination (5) (Box 2). Sundhed.dk provides access for health professionals to these data, creating a bridge through which primary and secondary health care professionals can see data if a patient enters a hospital or visits a GP in a region where he/she previously has not received treatment.

### Box 2. Guided self-determination

Guided self-determination builds on Zoffmann's model for empowering people with chronic conditions (6). The method, which is based on reflection, collaboration and change, holds tools developed to give a patient with insight into their behaviour and make it easier for them to articulate the everyday challenges of living with chronic disease. Sundhed.dk digitalized the method with the aim of making the use of the tools smoother for patients: they are able to fill out the reflection sheets in their own home and from that engage in dialogue with their health care professional, caregiver or municipality.

#### From a conversation with a health worker:

**"I frequently use sundhed.dk for looking up diseases and often refer my patients to the portal for them to gain insight into their own condition and medication, and ultimately it does bring value in the shared decision-making between me and patients."**

#### From a conversation with a patient:

**"For someone with multiple conditions like me, it is a great help that sundhed.dk allows me to consult my health record and to interact with and have access to health care professionals."**

**"THE PORTAL HAS HAD A KEY ROLE IN THE IMPLEMENTATION OF THE GOVERNMENT RESPONSE TO THE PANDEMIC AND IN PHC DELIVERY."**

## EARLY ACHIEVEMENTS

The Portal has had a key role in implementation of the government response to the pandemic and in PHC delivery.

- During the pandemic, citizens came to play an important role in viewing and acting on their COVID-19 test results.
- One of the government responses to the pandemic was the intensive testing of citizens.
- Testing became an enabler in reopening society. With a negative test result, vaccination or immunity, citizens can obtain the EU Digital COVID Certificate at sundhed.dk.
- The existing digital infrastructure has made this possible and the Danish eHealth Portal has played a part.
- Although COVID-19 test results were being displayed at sundhed.dk, it quickly became clear that a simpler version of the displayed test result was needed.
- Initially, citizens expressed difficulty finding and interpreting their test results, the display of which originally was developed for health care professionals.
- Simultaneously, an urgently adopted law made it legitimate for parents and guardians to view their children's COVID-19 test results instead of calling the GP, which accelerated an unresolved long-term political discussion. The rapid development of a simpler version of the displayed COVID-19 test result contributed to citizens being able to find the result easily and take necessary actions that allowed them to return to normal life more quickly.

### Tackling digital literacy: citizens who are less digital-literate

During the pandemic, it became necessary to access the health service via digital solutions, including the eHealth Portal, creating a potential digital divide. Consequently, it became all the more important to focus on supporting people who were less digital-literate, including older people and those with vulnerabilities.

The power-of-attorney feature was implemented for the COVID-19 test result and EU Digital COVID Certificate solutions to cater for the needs of citizens who were less digital-literate. The feature allows citizens to delegate access to their health data to, for example, relatives, or for relatives to apply for access with the goal of "giving a helping hand". Citizens can also call the sundhed.dk support service and get a paper EU Digital COVID Certificate sent to their home.

### The role of municipalities

In recent years, sundhed.dk has worked towards providing access to more data. This includes transferring municipal data to sundhed.dk, and health care professionals in the municipalities can access data uploaded to the Portal. One challenge of municipal access is managing the access to information of various professions. The success of Sundhed.dk is partly rooted in a culture of trust, which sundhed.dk safeguards carefully, with a main goal being to protect and secure citizens' data.

With the COVID-19 pandemic spreading to Denmark, hospitals began to take measures to prevent overload due to the high number of infected patients. It became necessary to accelerate access to data for municipal health care professionals, which was possible thanks to the existing digital infrastructure at sundhed.dk.

The municipalities and administrative regions agreed to provide access to sundhed.dk to selected home-care nurses in all 98 municipalities. The purpose was solely to provide relevant health care data to a defined group of nurses who would provide care and treatment in collaboration with GPs, emergency doctors and hospitals in temporary places available across all the municipalities.

### Acceleration of a digital health infrastructure during the pandemic

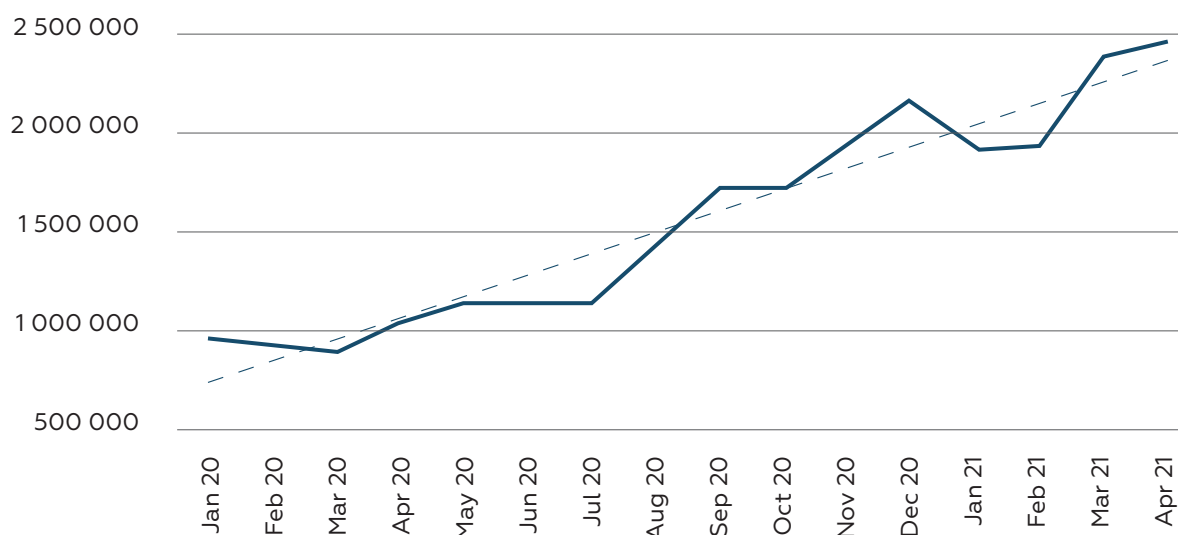
As outlined above, the Danish eHealth Portal was offering a range of services at the onset of the pandemic. To a certain extent, these remained largely unaffected until the summer of 2020, when the country was under lockdown.

The number of users visiting sundhed.dk increased significantly in late summer 2020 and in April 2021 reached twice the level of January 2020 (not taking into account the fact that users may have more than one device) (Fig. 1).

These figures indicate that the services offered by the Portal during the first months of the pandemic were enabling citizens access to some level of PHC, including handling prescription renewals and laboratory test results and arranging (often virtual) visits to the doctor, since these services were already largely digital.



**Fig. 1. Unique citizens' logins on sundhed.dk**

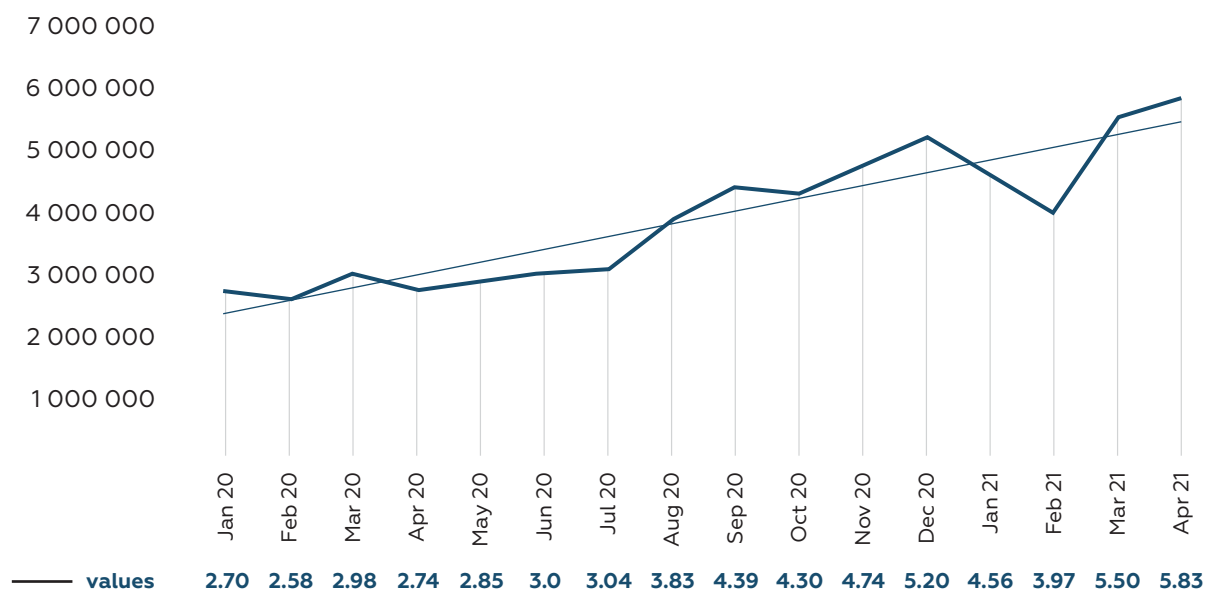


Source: sundhed dk. Reproduced by permission of sundhed dk.

The marked increase of visitors to sundhed.dk from July 2020 onwards directly reflects a shift towards intensive testing in Danish health policy in which the Portal served as a tool of communication and implementation, with the development of the EU Digital COVID Certificate system.

Fig. 2 illustrates the shift in policy, showing a quadrupling of the number of unique logins by citizens on sundhed.dk.

**Fig. 2. Unique visitors on sundhed.dk**



*One unique visitor: if a user visits a web solution at least once during a given time interval, the user appears as a unique visitor. The interval is one month.*

Source: sundhed dk. Reproduced by permission of sundhed dk.

The figures for health professional logins have been stable during the pandemic, illustrating that sundhed.dk already was established as a part of the digital infrastructure at the beginning of the pandemic.

## INCREASING DEMAND FOR A ROBUST SUPPORT ORGANIZATION

As part of its services, the Portal runs a support organization that responds to citizens' enquiries, thereby contributing to the gatekeeping function of PHC. The service assists citizens who are less digitally literate, addresses handling errors and acts as a human link in an increasingly digital PHC.

### Prospects for sustainability: more data to more actors of the health system

The Portal, which is trusted by most citizens and which acts as a hub, provides access to a variety of registries and health data repositories for citizens and health and care professionals. This is crucial for an effective response to health-related crises. The Portal should always have sufficient capacity to scale up and swiftly prioritize new services and interfaces using an agile response. This is possible, as the Portal is not only trusted by society, but also by national administrations and politicians, as it is governed by the Ministry of Health in collaboration with the regions and municipalities.

It became even clearer during COVID-19 that health care professionals' access to health data across sectors is important to achieving a more coherent health care system and an easier navigated course for citizens. Feedback on access to sundhed.dk from municipal nurses was that it improves workflow and the treatment of citizens (7).

In June 2021, the administrative regions decided to prolong access for municipal registered nurses to health data at sundhed.dk until January 2022. Meanwhile, work on creating a more sustainable solution – one that is permanent and allows complete access to health records from the eHealth Portal – continues.

## LESSONS LEARNED

1. The years of **digital health transformation** have proved beneficial for both health care professionals and the public.
2. Digitalization of PHC, **built on trust** and centred on informed and self-managed citizens, provides the basis for better outcomes in which the PHC system remains close to the citizen and provides a digital backbone that is ready to scale up in response to acute challenges.
3. Health care professionals, including those in PHC, can **access health data across care levels**, which is crucial in terms of improving workflow and care pathways.
4. **Mandatory digital registration** and a centralized digital system of **person identification**, and a common data security model and standardization of health data, are crucial. **A single point of entry** to citizens' health data and to information about health care services is key to keeping PHC close to citizens, for citizens and professionals alike.
5. **Keeping close contact with citizens** has the added benefit of supporting the Portal and involved service providers in developing user-friendly solutions.
6. Digitalized PHC must go hand in hand with a **strong support organization** to mitigate the challenges encountered by citizens who are less digitally literate to ensure egalitarian access to health care.
7. Informal and formal caregivers should be given **training** and access to the health data of citizens who are less digital-literate to help them to better manage their conditions.
8. The Danish experience is that **digitalization can enable citizens to become agents in the PHC system** to their own benefit and that of the community. It takes continued effort to break down organizational and data barriers between sectors and to trust citizens with critical health information.
9. For digital tools and services to catalyse high-quality, far reaching, egalitarian and efficient health services, there needs to be investment in **digital health literacy**. Wider access to health data for municipal health care workers and continued efforts to empower relatives to help via delegated access rights to health data are ways to support people who are less digitally literate to benefit from the advances of digitalized health care systems.



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