



LATITUD:

Comparative analysis of non-face-to-face care models in the health field

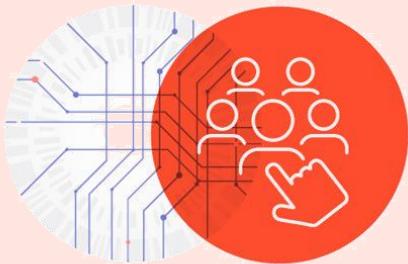
November 2019*

*Contains notes updated in June 2020, due to the
health emergency situation for COVID-19



Latitud

Model d'atenció no presencial per al futur



“Latitud enables us to position ourselves in a certain space. In order to meet current challenges within the new paradigm of health service provision, the care of the future will be approached in different spaces of interaction between patients and professionals, in a model that complements face-to-face and non-face-to-face care.”

The LATITUD project

European health systems face socio-demographic challenges, a shortage of professional staff and new demands from a more empowered and connected citizenry. Advances in Digital Health offer the potential to adapt strategies to improve access to, and the equity and sustainability of health systems. The Department of Health of the Generalitat de Catalunya is promoting a paradigm shift in health strategy, including non-face-to-face care in response to these challenges.

The **Fundació TIC Salut i Social** has been commissioned to facilitate the digital transformation of social and health care, through the inclusion of non-face-to-face tools to improve the accessibility, equity and sustainability of the services from the perspectives of the system and citizens.

This report is part of the work carried out within the LATITUD project, which evaluates non-face-to-face care in diverse health systems, identifying models and good practices that provide relevant information for defining the non-face-to-face care model in SISCAT.

Editorial information

June 2020

More information on: <https://ticsalutsocial.cat/actualitat/model-atencio-no-presencial-covid-19>



Executive summary

European health systems are currently facing challenges such as socio-demographic and epidemiological changes, the shortage of health professionals in certain areas of lower population density, new demands from citizens (who are more empowered and connected), and the technological advances becoming available. These challenges include the need to adapt strategies for planning, organizing, financing and evaluating health care, to ensure access, equity and sustainability of services. Technological advances in recent years, especially eSalut tools and solutions, have the potential to alleviate the pressure currently on healthcare systems.

In this context, the Department of Health of the Generalitat de Catalunya is promoting **LATITUD**, a project aimed at **defining the Strategic Plan to implement non-face-to-face care services in the Integral Health System of Public Use of Catalonia (Sistema Sanitari Integral d'Utilització Pública de Catalunya, SISCAT)**. This document evaluates non-face-to-face care in diverse health systems, identifying models and good practices that provide relevant information for defining the non-face-to-face care model in SISCAT. A set of case studies has been analysed (England, Scotland, Sweden, Denmark, the Netherlands, Canada, Kaiser Permanente, the Basque Country, Andalusia and Catalonia), and several areas of analysis (governance, leadership and strategy of the model, portfolio of non-face-to-face care services, and the finance and services contracting model, the technological and interoperability framework, organizational model, evaluation model and regulatory, ethical and legal framework).

The study's findings show that, during the first decades of the 21st century, advances in information technology have become more focused on eHealth, with more emphasis on developing information systems (EHR), and ensuring interoperability, security and data protection. In parallel, non-face-to-face care services have been included in national eHealth or digital health strategies, within the framework of several specific programmes. The different cases analysed show **the great diversity and complexity of health systems and their approach to digital health**. The study has identified good practices and strategies which, combined, could form an "ideal" model that is appropriate to the context of Catalonia.

One of the main aspects to be highlighted is the approach to non-face-to-face care in the broad sense of health and digital health, in which non-face-to-face care is considered as a complement to the provision of health services. We must consider the conditions of the person and the resources available to provide a service that guarantees the quality, access and sustainability of the services, both from an economic and a social perspective. In terms of leadership and governance, it is essential to define roles and competencies that should drive the digital health model. These competencies must address aspects such as identifying stakeholders (professionals, entities, citizens), as well as facilitating transformation processes and defining training strategies in digital skills.

Regarding the design and implementation of new healthcare routes that can be integrated into the healthcare system, their scalability will depend on their degree of success and the capabilities of integration and interoperability of these processes with the rest of the healthcare system. We must establish a common methodology to define new healthcare routes that include the use of technological tools, both those that already exist in certain parts of the territory and those that are under development. This design process must also be supported by a financing and service contracting model that encourages the deployment of care circuits that include technological tools for non-face-to-face care. Orientation towards health results and resource optimization are aspects that can promote the design and deployment of new non-face-to-face services, adapted to citizens' needs.

Finally, creating a service evaluation framework is essential to measure the results and impact of incorporating health care technologies, which provide a better response to the person's conditions and the available resources.



NOTE

On December 31, 2019, the Wuhan Municipal Health Commission (China) informed the World Health Organization (WHO) of a group of cases of pneumonia of unknown origin. On 5 January 2020, the WHO published the first news about a new virus. This was a technical publication containing risk assessment and advice, with information on the condition of patients and the response to the accumulation of pneumonia cases in Wuhan. One week later the first case outside of China was confirmed in Thailand. On 30 January, the Director-General of WHO declared the outbreak as a Public Health Emergency of International Concern, an outbreak that would become COVID-19, a new coronavirus disease. In Spain, on 14 March and with more than 5,000 confirmed cases and 136 deaths, the state of emergency was declared. As of 23 April 2020, the SARS-CoV-2 virus had already caused 175,000 deaths and there were 2.5 million confirmed cases worldwide.

As a result of COVID-19 emergency situation, health systems around the world have been put under unprecedented pressure and face enormous demand. In a very short period, processes have had to be redefined, resources reorganized and care areas and services strengthened to respond to this health crisis. This situation has highlighted the importance of having a quality, universal public-health system, which is possible thanks to the effort and dedication of its staff, and the resources and infrastructures necessary to provide services to the public. Moreover, this situation has highlighted the value of non-face-to-face care that can guarantee services when resources are saturated and the mobility of citizens is limited.

Much of the information contained in this report, which was completed in December 2019, has been altered as a result of this health situation. However, the data presented is still considered to be of high interest as it describes the approach of the various health systems to non-face-to-face care just before this critical situation. This will enable us to significantly assess the changes implemented as a result of this global pandemic and how countries have organized themselves to improve response capacity and ensure access to health services.

Barcelona, June 2020

Information sources

- World Health Organization. *WHO Timeline - COVID-19*
<https://www.who.int/news-room/detail/27-04-2020-who-timeline---covid-19>



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01

Context and objectives

European health systems face several challenges (socio-demographic and epidemiological changes, shortage of health professionals in certain areas of lower population density, new demands from the public, who are more empowered and connected, technological advances, etc.), all of which entail the need to adapt the strategies for planning, organizing, financing and evaluating, among others, of health care.^{1,2,3}

Technological advances in recent years, especially those related to mobile devices and health apps, make it possible to deploy non-face-to-face care solutions and services on a larger scale. The eHealth Action Plan⁴ of the European Union (EU) - EU eHealth Action Plan 2012-2020 points out that eHealth tools and solutions have the potential to alleviate the current pressure on health systems due, among other things, to tight public budgets, shortages of professionals, higher incidence of chronic diseases and citizens' growing demand and expectations for accessible and good quality care. Against this background, all countries with advanced economies are rapidly incorporating non-face-to-face care services into health care delivery models. In 2018, the market in telemedicine and eHealth was estimated at 38.3 thousand million dollars, with an estimated annual growth rate of 19.2%, which is why an overall volume of over 130 thousand million dollars is expected for 2025.⁵



Figure 1: Evolution of the annual global market volume in telemedicine and eHealth⁵

Leading countries with advanced economies are incorporating non-face-to-face care services with the support of technology, and very often with the help of the business innovators. In most cases, non-face-to-face care services begin with a development in the form of a pilot or ad hoc project, generally the result of the combination of initiatives among health sector professionals (healthcare and technology profiles) and companies, using specific sources of funding for this type of project.^{6,7}

In Europe, the deployment of non-face-to-face care services for the entire population attended by a health system depends on, among other things: (1) the digitalisation goals of the country and the health sector in particular; (2) health service organization and innovation management; (3) the availability of sufficient funding and contracting mechanisms; (4) citizens',

health professionals' and organizations' digital skills and maturity; (5) the evolution of the market and existing operators, and (6) the legislation governing the exchange and processing of health data.³

As a result of the high dependence on the various factors discussed, the deployment of non-face-to-face care solutions and services has been slow and uneven among the different EU member states.

Although non-face-to-face care has gained momentum in the first decade of the millennium, today, the literature available reveals that the strategies and recommendations that are generated by most government agencies or multilateral agencies (World Health Organization - WHO, European Commission - EC, etc.) focus on **eHealth** and are evolving into a broader concept of **digital health**.⁸

Non-face-to-face care initiatives continue to be included in eHealth-focused strategies, but with less weight compared to current challenges in terms of electronic health records (EHR), or interoperability. The transition from the concept of eHealth to digital health includes a new digitized user profile, the integration of smart devices in management systems, connected equipment and other innovative and growing concepts, such as the Internet of Things (IoT) and the more widespread use of artificial intelligence (AI), big data and analytical models. Digital health is changing the approach to how health systems and healthcare are managed.⁸



Figure 2: Evolution of the concepts on which the strategies and recommendations of the majority of national / regional governmental bodies or multilateral bodies focus, according to the WHO.⁸

Within the global context of digitalization of health care, and in order to address the socio-demographic, epidemiological and technological changes that are taking place in Catalonia, the Department of Health is promoting the **LATITUD project** with the aim of defining the Strategic Plan for implementing non-face-to-face care services in the Integral Health System for Public Use in Catalonia (hereinafter, SISCAT).

In the first phase of this project, the state of several health systems (including in Catalonia) has been assessed in relation to non-face-to-face care.

The objectives of this analysis were:



Identify and analyse non-face-to-face care models and services of other health systems which provide relevant information for **defining the non-face-to-face care model in SISCAT**.

- Identify non-face-to-face care models and services and digital health channels in other healthcare systems.
- Compile information on the strategies, services and technologies used in other health systems to promote non-face-to-face care.
- Identify models of interest from the point of view of care, technology, financing and contracting for non-face-to-face care.
- Identify the tools, guides and regulations that have been created to implement face-to-face care initiatives among providers.



02

Conceptual framework

With the aim of specifying in which services and processes the non-face-to-face care strategy is framed, it is important to define the following key concepts: digital health, eHealth, telehealth, telemedicine and telecare. These concepts are defined below in accordance with the approach proposed by the European Union (*Joint Action to Support the eHealth Network*, 2018):



Figure 3: Conceptual framework

Digital health: emphasizes digital consumers, with a wider range of smart devices and connected equipment used with innovative concepts based on cutting-edge technology, such as the Internet of Things, artificial intelligence (AI), big data and advanced analytics.⁸

eHealth and mHealth: refer to the combined use of electronic communications and information technologies in the health sector to share, store and retrieve electronic health data for prevention, diagnosis, treatment and monitoring, educational and administrative activities, both physically and remotely.^{9,10}

Telehealth: is a subset of eHealth and refers to the provision of remote health care. It includes the provision of remote professional health services, through the use of information and communication technologies (ICT) to provide both clinical and non-clinical services.^{11,12,13} It is a broader term referring to remote healthcare, as it includes services provided through telemedicine, as well as interaction with automated systems or information resources.

Telemedicine: is a subset of telehealth that refers to the consultation, diagnosis and application of remote treatments through the use of new technologies. Telemedicine not only encompasses these processes, but also those of collaboration, counselling, and health education.

Telecare: consists of the use of ICT to provide personalized remote care services (alerts and detection technologies by remote control, monitoring of care needs, emergencies and lifestyle changes of elderly or vulnerable citizens, or those with physical or mental disabilities). Since telecare is directly related to the preventive scope of health care and social services enabled by ICTs, it is included as a subset of telehealth.^{9,10,14}

The **LATITUD** project will determine the Strategic Plan for non-face-to-face care in SISCAT, including within the **non-face-to-face care framework all the services that make up telemedicine and telecare**. Therefore, the project focuses on **the use of information and communication technologies** to provide **care** outside the facilities of the health centres (remote).



03

Methodology

3.1. Methodological process:
axes and parameters of analysis

3.2. Case studies

To achieve the objectives of the analysis of non-face-to-face care models, a four-phase methodology that aims to simplify, order and objectify the study was established. The four phases followed are shown in the following graph:



Figure 4: Phases of the analysis of non-face-to-face care models

01 Definition of the analysis framework

The following steps were performed to define the analysis framework:

A) **Define the analysis axes:** define the common areas in which the cases under study are compared. The axes are defined in line with the elements to be determined for the non-face-to-face care strategy at SISCAT, which are described in the following pages:

1. Governance, leadership and strategy of the model
2. Non-face-to-face care portfolio
3. Service funding and contracting model
4. Technological and interoperability framework
5. Organizational model
6. Evaluation models
7. Ethical and legal regulatory framework

B) **Identify the parameters to be analysed within each axis:** to ensure an objective search, a series of parameters were determined (listed on page 11) for each defined analysis axis. The application of these parameters was conditioned by the availability of information in the search sources.

02 Selection of case studies

Once the scope and characteristics of the analysis framework were defined, the case studies were selected. In this sense, the selection of cases took into account the following parameters:

- Non-face-to-face care implementation strategy
- Degree of progress in implementing non-face-to-face care services and digital health services
- Similarity of certain characteristics of the cases in comparison with the health model in Catalonia

The methodology used to select case studies consisted of (1) a documentary review to identify those cases of most interest, (2) the application of selection criteria, and (3) case selection.

03 Information search and creation of the files

Information was compiled from secondary sources (bibliographic searches on the Internet), extracted from official sources, ensuring that they are as up-to-date as possible.

04 Drafting of the conclusions according to each analysis axis

From the analysis of the information compiled on the cases analysed, a series of conclusions has been drawn from each of the proposed axes.

The axes selected to guide the analysis of the cases are:

Analysis axes and parameters



Governance, leadership and strategy of the model

This axis identifies the governance and leadership bodies of non-face-to-face care strategies, what they are and how these strategies are defined and within which framework they fall. It is of interest to discern whether these bodies have taken isolated initiatives with a view to scaling up or whether strategies have been directly generated from a systemic point of view.



Non-face-to-face care service portfolio

Within the service portfolio axis, the analysed whether a specific portfolio of non-face-to-face care services had been defined, and, if so, from which axes or categories they were classified. If this specific portfolio was not available, the non-face-to-face care services that are offered more widely and those that have been incorporated from a system point of view were compiled and described. This section also examines any existing guides or recommendations for innovative suppliers and agents,* including the types of services with proven results.



Service funding and contracting model

On the one hand, the analysis of economic models sought to identify how the implementation of non-face-to-face care projects and initiatives are financed and promoted financially, and, on the other, how the health system contracts providers of the non-face-to-face care services offered to citizens. Specific strategies for defining a funding and contracting framework for these services were also identified and analysed. This section also identifies whether there are recommendations or guidelines for finding funding lines and sources non-face-to-face care initiatives aimed at providers or innovative agents in health ecosystems.



Technological and interoperability framework

In the technological and interoperability axis, the different models were compiled according to technological architecture and interoperability models (communication and coding standards) and specific strategies for implementing technology for non-face-to-face care (infrastructure, interoperability, mobile devices, etc.).



Organizational model

Regarding organizational models, the study analysed which governmental bodies and other entities in the territory were oriented towards promoting, governing and managing non-face-to-face care, identifying all public or private entities that play a significant role in implementing non-face-to-face care in the territory, and how they relate to each other. Also in this case, the existence of organizational guidelines, recommendations or rules for the providers of non-face-to-face care initiatives was identified (types of entities to be set up, care roles to be taken into account, etc.). Additionally, this axis analysed the strategies to provide digital skills to professionals in the use of technology applied to health care.



Evaluation models

This axis analysed the various methodologies proposed to evaluate the efficiency and impact of non-face-to-face care services. Specifically, the existence and application of specific evaluation systems were identified. On the other hand, the study determined whether there was evaluation of non-face-to-face care services, if it is mandatory, at what level it is executed and what guidelines are provided to do so.



Ethical and legal regulatory framework

The description of regulatory, ethical and legal frameworks identifies in which regulation status the analysed cases fall, especially regarding data protection and security, and which strategies are defined to promote new regulatory frameworks related to non-face-to-face care.

*"Innovative agents" means all those actors who are involved in the design, development and implementation of solutions (start-ups, large companies, innovation centres, research centres, etc.).



To analyse the case studies, the comparative elements of each of the axes were standardized. The elements considered in the comparative analysis are listed below:

Governance, leadership and strategy of the model

- Non-face-to-face care is included in the system's health strategy

Service portfolio

- There is a defined and published catalogue of non-face-to-face care benefits and services.
- The catalogue of benefits and services is focused on responding to the care needs identified in the reference population (patient centrality)
- The catalogue of benefits and services was agreed with the stakeholders (users, service providers, technology solution providers, scientific societies, etc.)

Service funding and contracting model

- There is a specific budget item / programme in the health budget aimed at the deployment and implementation of non-face-to-face care services
- There are defined contracting models of the typologies/modalities of non-face-to-face care services

Technological and interoperability model

- Existing technology is aligned with the population's care needs
- Recommendations are provided regarding the minimum requirements that must be guaranteed to ensure the security and interoperability of the solutions.
- The technology is interoperable among the providers

Organizational model

- There is a structure to ensure that the deployment, implementation and evaluation of the set of non-face-to-face care services are managed and coordinated.
- There is a defined coordination and execution operation
- Processes and procedures to ensure the implementation of non-face-to-face care services and their consistency have been clearly defined.
- The human resources needed to deploy, implement, monitor and evaluate non-face-to-face care services have been identified.

Evaluation models

- There is a defined continuous monitoring and evaluation model
- Deployment and implementation are continuously monitored and support is provided to prevent deviations and improve execution

Ethical and legal regulatory model

- A legal framework is in place to ensure data protection and security

- There is a non-face-to-face care/telemedicine/eHealth/digital health plan

- Guidelines/recommendations are provided for planning and implementing non-face-to-face care services

- The catalogue of services is based on a comprehensive care model

- The defined care routes include carrying out non-face-to-face care activities

- The portfolio of non-face-to-face care services includes all levels of care (specialized care, primary care, urgent care, mental health, social health)

- The non-face-to-face care model promotes coordination between levels of care and between specialities and different professional profiles.

- Contracting models encourage non-face-to-face care activity

- Resources are available to ensure effective coordination of non-face-to-face care

- The cost-effectiveness of face-to-face care services is measured

- There is cooperation between the main government agents and other relevant technological actors to develop services.

- The necessary procedures are in place to ensure user privacy and data protection and security

- The data obtained by performing non-face-to-face care services are connected to the central health information systems (for example, HC3).

- Leading health professionals and managers in the field of innovation have been identified to support the development of non-face-to-face care services.

- Sufficient administrative and technical support is available

- A change-management plan has been defined/implemented to support the implementation of non-face-to-face care services

- A specific training plan has been defined for the human resources involved in deploying and implementing non-face-to-face care services.

- The results obtained by non-face-to-face care services are periodically evaluated

- The necessary mechanisms to compile and analyse the data generated are in place (activity, resources used, results obtained, etc.).

- Guidelines and recommendations are provided regarding the evaluation of care processes carried out in non-face-to-face care

- There is a legal framework to ensure the data security when it is processed by entities providing privately managed health services.

- Specific regulations apply to the rules for identifying and authenticating healthcare professionals and users.

The case studies were selected using the methodology described above: (1) preliminary documentary review and (2) application of selection criteria. In European cases, the criteria applied for the selection were:

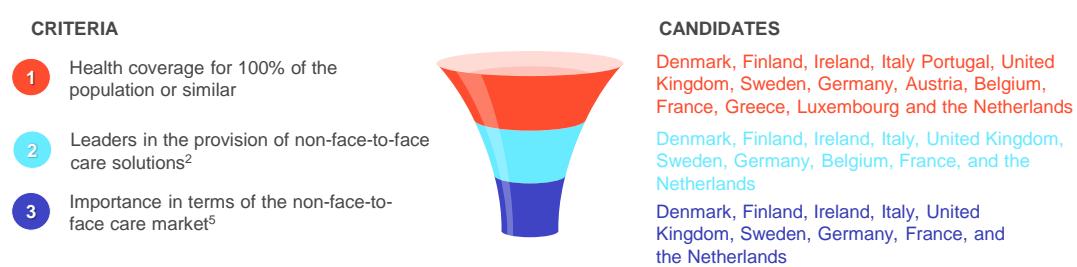


Figure 5: Criteria for identifying European candidate cases to be included in the analysis

In Europe, four European cases were selected from the final candidates: the **United Kingdom** (since their health system is decentralized in four demarcations, **England** was chosen because of its high population density, and **Scotland**, because it is the opposite case. Since it has a volume of population similar to that of Catalonia yet disperse, non-face-to-face care strategies may be more extensive and more consolidated), **Sweden**, **Denmark** and the **Netherlands**.

Outside Europe, the cases analysed were based on the preliminary search and the **Canada and Kaiser Permanente** were identified and selected (which operates in the United States) because they are international benchmarks.

As for Spain, the regions were selected according to two criteria: (1) high implementation of non-face-to-face care services and (2) high historical track record in the field of non-face-to-face care (> 10 years). The application of these criteria resulted in a sample of two regions: the **Basque Country**, which meets the first criterion, and **Andalusia**, which responds to the second.

Finally, **Catalonia** was selected, with the aim of analysing the non-face-to-face care model from the defined axes and in relation to the other reference models.

The main features of the sample of cases that were studied in the framework of the analysis are:



Figure 6: Brief characterization of the cases included in the analysis



04

Results

4.1. Characterization of case studies

4.1.1. England

4.1.2. Scotland

4.1.3. Sweden

4.1.4. Denmark

4.1.5. Netherlands

4.1.6. Canada

4.1.7. Kaiser Permanente

4.1.8. Basque Country

4.1.9. Andalusia

4.1.10. Catalonia

ENGLAND**Main results**

- The UK National Health Service (NHS) is operated separately in England, Northern Ireland, Scotland and Wales. Since 2006, in England, the health provision has been supervised by 10 strategic health authorities (SHA), and assistance in situ has been provided by 151 clinical commissioning groups (CCG). With their assigned budgets, the CCGs contract service providers to organize and fund care within their area.³²
- Non-face-to-face care initiatives are incorporated into strategic health plans: both in the 2014 strategy and in the current Long Term Plan³³ from January 2019.
- A specific tool is available for care services offered through technology (Technology Enabled Care Services - TECS), which gives guidelines and recommendations to the CCGs to help them select, tender, deploy, and measure the impact of the TECS.
- There is no institutional telematic service. Each CCG chooses its digital applications, which is why there are isolated projects, some of which are very active and successful.

**Results by analysis axes (1/2)****Governance, leadership and strategy of the model**

- The NHS Long Term Plan³³ (January 2019), understood as a health plan, incorporates non-face-to-face care in a transversal way, including some initiatives such as:
 - Digital channels for people to access advice and healthcare (for example, digital portal between users and professionals).
 - Digital primary care in the first instance for all users, by telephone or virtual consultation with the primary care health professional.
 - Redesign of outpatient services to avoid up to a third of face-to-face outpatient visits.
- A recommendations guide (2015) is available for CCGs,³⁵ covering the following areas: (1) definition of strategic plans (sharing of initiatives and good practices at different care levels, recommendations for selecting TECS and guidelines for defining business plans); (2) sharing guidelines and rules for tenders (process guide, contracts, databases with evidence of successful implementations and recommendations); (3) recommendations for implementation, with steps to follow; (4) models to assess the effect of TECS, with examples and recommendations, and (5) sharing of success stories and recommendations for continuous improvement.

**Non-face-to-face care service portfolio**

- Non-face-to-face care services are rarely offered in the NHS in England. There is no single, uniform (central) NHS digital service. Each CCG is free to determine which digital health applications they use, which is why there are isolated projects,³³ such as Florence, which is very active in the territory, and remote care for patients with depression.
- There is a database of evidence in telemedicine that contains the scientific publications of studies carried out³⁶.
- The NHS offers a range of certified and standardized technology products for a variety of services (mobile healthcare applications and healthcare devices). There are plans to establish networks to allow communication between patients and professionals through mobile devices.³²
- The action framework of *Personalized Health and Care 2020*³⁷ includes the initiative adopted residents of a social care home in West Yorkshire that enables them to contact local hospital professionals online via a video link. This reduces face-to-face visits by more than 45%.

**Financing and contracting model for services**

- In line with the Long Term Plan, the idea is to replace activity-based service procurement models with capitation ones, maintaining a model combined with new incentives for quality (patient experience).³³
- To fund initiatives in line with the Long Term Plan, specific multi-annual funding sources have been established. The funds are expected to be recovered thanks to the efficiency of the implementation of non-face-to-face care initiatives.³³

ENGLAND



Results by analysis axes (2/2)



Technological and interoperability framework

- The NHS has an information exchange platform called Spine, developed by NHS Digital, which connects much of the computer systems and enables secure data exchange.³⁸
- Since 2018, the various electronic outpatient care systems (dating back to the 1990s) are being updated and adapted to modern standards to ensure their interoperability. In general, the various NHS systems lack interoperability, which is attributed to the lack of commitment of the actors and the failure to establish a centralized approach.³² However, the NHS has been involved in projects for data exchange on a transnational scale.³²
- In the field of information sharing standards, the NHS has published in the *Clinical Information Standards* document³⁹ (1) the terminological standards to be used by medical and healthcare organizations, (2) the overview of information and communication standards in the NHS and (3) the strategies to be followed.
- The NHS has a library of approved apps (NHS APPs Library⁴⁰) and has released the beta version of a portal for evaluating providers' apps⁴¹.



Organizational model

- The NHS's own organizational model, based on decentralized care and the principle of subsidiarity, enables each CCG to determine the digital health solutions that best suit its needs.³²
- NHS Digital⁴² provides citizens with information on available services, planned projects and treatment options within the scope of the NHS Choices health portal. Additionally, NHS Digital analyses system performance data.
- The National Information Board⁴³ (NIB) is a body which, together with various public and independent bodies, determines the development of strategic data and technological priorities.
- The NHS Digital is responsible for directing and supervising investments in digital health, with the advice of the NIB and the NHS itself.³²
- The Data Coordination Board⁴⁴, part of the NHS Digital, is responsible for implementing and certifying information standards.



Evaluation models

- The TECS evaluation framework³⁵ is aimed at evaluating studies of CCGs and society in general at user level. The framework establishes 6 measurement axes: (1) patient-defined goals (for example, gaining independence, lowering blood pressure, amongst others); (2) key risk indicators (effectiveness in decreasing the progression of disease, fragility or loss of independence, or in accelerating patients' rehabilitation or self-management); (3) use made of the service; (4) patient experience; (5) socio-economic effect and (6) evaluation of professional involvement. For each of these measurement axes the framework provides a series of suggested metrics and technical specifications, case studies and possible risks. It also recommends direct and indirect cost and comparative evaluations with and without TECS.
- The NICE (National Institute for Health and Care Excellence) publishes the *Evidence Standards Framework for Digital Health Technologies*,⁴⁵ a framework for evaluating the evidence of digital solutions in health from the point of view of effectiveness and economic effect.



Ethical and legal regulatory framework

- The General Data Protection Regulation (GDPR), together with the *Data Protection Act 2018*, constitutes the regulatory framework for processing personal data in the United Kingdom. On the other hand, there is specific legislation for digital files.^{46,47}
- An information governance policy is in place⁴⁸ as a framework for managing personal information confidentially and securely.

SCOTLAND



Main results

- The National Health Service (NHS) was set up in 1948 and provides the vast majority of healthcare in Scotland. The operation of the system is managed by 14 territorial health boards.⁴⁹
- Scotland's population is widely dispersed and of low density, which is why ensuring that the whole population has access to care is a challenge. For this reason, non-face-to-face care began more than 15 years ago.
- The vision that has guided the telehealth strategy and that was established by the government in 2006⁵⁰ was to ensure that the entire population could live healthily at home by 2020. Since 2006, Scotland has had a vision of integrating the health and social fields that has led it to develop, in parallel, its telehealth and telecare plans. In 2012, a specific telehealth and telecare plan was created⁵¹ with specific initiatives, and non-face-to-face care initiatives are currently part of the digital health strategy.⁵²
- A specific portfolio of non-face-to-face care services was not identified.



Results by analysis axes (1/2)



Governance, leadership and strategy of the model

- The first strategy in relation to non-face-to-face care dates from 2006⁵⁰ and is accompanied by funding to redesign the current organizational model of healthcare provision to citizens.
- It is followed by the National Telehealth and Telecare Plan Scotland⁵¹, of 2012, which aimed to achieve the following objectives: (1) help with independent living at home; (2) redesign of care routes including non-face-to-face care; (3) a preventive approach to telehealth and telecare; (4) foster synergies for the technical architecture of digital health; (5) expand innovative services for the community and (6) develop effective measures and results on efficient work practices, productivity and resource use.
- From a strategic point of view, Scotland has evolved from the concept of eHealth (EHealth Strategy,⁵³ 2011-2017) towards digital health, which places more emphasis on digital citizenship and incorporates more innovative technology. Consequently, non-face-to-face care initiatives are included in the Digital 2017-2022 Health Strategy.⁵⁴
- The care programme offered through technology in 2014 (Technology Enabled Care Programme⁴⁵), driven by the Scottish Centre for TeleHealth and TeleCare (SCTT) received £30 million to support the integration of telehealth and telecare in 3 years.
- Scotland understands its telehealthcare as the convergence between telehealth and telecare.



Non-face-to-face care service portfolio

- A specific non-face-to-face care service portfolio was not identified. The main programmes managed by the Scottish Centre for TeleHealth and TeleCare that are expanding in Scotland are:^{45,46,47,48}
 - National home monitoring and mobile health programme (4,100 patients benefited from the programme as did more than 200 registered primary care professionals).
 - Telecare: telecare services for falls, night support, dementia, etc. (1 in 5 citizens over the age of 74 benefit).
 - Attend Anywhere and NHS Near Me: video consultation services (> 1,200 online visits in a year).
 - Digital services and mobile apps: computerized behavioural cognitive therapy service (cCBT, with a coverage of 99% of the population), triage and online consultation tool (eConsult) and a European project for creating services for the elderly with chronic ailments (mPower).
- Within the Digital Health Strategy⁵⁴ the key points for the digital transformation of healthcare services are described: remote control of chronic conditions and home care on a national scale, independent living and healthy ageing by using technology, incorporation of smart sensor technology, home consultations by video and mobile devices to allow wider access.



Financing and contracting model for services

- Funding for care services in the NHS uses a capitation weighting of 70% of the budget.⁴⁹
- No specific funding model for non-face-to-face care services was found. However, the health strategy envisages defining the financial framework for implementing digital health.⁵⁴
- Scotland studies the issues and opportunities of results-based payment and offers recommendations⁵⁶ to integrate it into public services: accept and incorporate complexity into models, value the perspective and contributions of the agents involved, and compile evidence to foster the improvement and transformation of services.

Results by analysis axes (2/2)



Technological and interoperability framework

- In 2017 an urgent need to upgrade the NHS infrastructure was identified. Some upgrade projects are in progress, such as: (1) Scottish Wide Area Network (SWAN), an initiative to establish a single shared network and common ICT infrastructure across the public sector, and (2) GP IT (General Practitioner Infrastructure); in 2018 they wanted to replace the computer systems of primary care centres with cloud-based software, but the need to increase the connectivity speed was also detected.⁵⁷
- The aim is to have a National Digital Platform to provide secure, real-time access to data, tools and services.
- The digital health strategy calls for interoperability standards between territorial health boards to be established.
- Scotland has a quality assurance framework for mobile healthcare applications, and apps are validated by an app validation panel created by the Scottish Government's eHealth Mobile App Working Group.⁵⁵
- NHS 24, a public entity that offers telehealth and telecare services, uses technologies such as the Internet, telephone, mobile devices, video, SMS, and digital television.⁵⁸
- The digital health strategy⁵⁴ adopts the Digital First Service Standard, which sets the minimum requirements to be met by public digital services in the user needs, technology and organizational capabilities areas.
- The digital health strategy⁵⁴ considers the scaling up and extension of existing, familiar and low-complexity technologies as critical to its success.



Organizational model

- The Scottish Centre for TeleHealth and TeleCare (SCTT) was established in 2006 to support and guide the nationwide development of telehealth.⁵⁹
- NHS 24 is the national provider of telehealth and telecare services to the entire population.⁵⁸
- The Digital Health & Care Institute connects industry players and gives them the means to identify, design, evaluate and invest in digital health.⁵⁹
- Other key players in digital health are the Digital Office, the NHS National Services Scotland, the NHS Education for Scotland, the Scottish Social Services Council and the Government Digital Directorate.³²
- The digital health strategy proposes a new organizational model (with citizen association) and establishes the National Decision-Making Council.⁵⁴
- The Digital Office and the Social Services Council are key to equipping professionals with digital skills.⁵⁴
- All the organizations involved have signed an agreement in which they undertake to work to train all stakeholders in digital skills.⁵⁴



Evaluation models

- The SCTT has developed a structured and pragmatic evaluation framework that includes the model "Measuring and Demonstrating the Impact of Telehealth and Telecare Services"⁶⁰ and a practical guide for monitoring the pre-implementation, implementation and outcome phases (Measuring the impact of telehealth and telecare: SCTT Toolkit⁶¹).
- The results evaluated by the tool are (1) the effect of telehealth and telecare on the use of resources and services at user level; (2) improving perceived quality of life; (3) level of integration into practice; (4) organizational sustainability of telehealth and telecare and (5) social sustainability.
- The Digital Health Strategy mentions, as tasks to be carried out by the National Decision-Making Council, the supervision of the development of an evaluation and support framework in the realization and evaluation of the benefits obtained by digital tools on health.



Ethical and legal regulatory framework

- A reference framework for Information Assurance and Security has been developed with the following objectives: (1) establish a national approach to the information required and the guarantees needed for uses of the information; (2) develop a national approach to security and cybersecurity; (3) continuously improve security in information management and (4) publish clear information on its use.^{54,62}
- The GDPR, together with the 2018 Data Protection Act⁶³, constitutes the regulatory framework for processing personal data in the United Kingdom.
- Compulsory data protection and computer security training has been established for healthcare professionals.
- Procedures and organizational policies are in place for securely managing health information and access controls and audits have been established.⁶⁴

NHS (ENGLAND AND SCOTLAND) - CASE / INITIATIVE: NON-FACE-TO-FACE CARE FOR PEOPLE WITH CHRONIC DISEASES - FLORENCE

Background

- The system was developed by an NHS team from the Stoke-on-Trent Clinical Commissioning Group to encourage patients to follow their treatment plans, especially for long-term illnesses such as diabetes or hypertension. The team worked closely with the Mediaburst telecommunications company to develop the system. Florence is owned and operated by Mediaburst and licensed for use by the Stoke-on-Trent Clinical Commissioning Group.^{65,66}

Description of the Florence solution

- The Florence system is a mobile phone application that sends text messages to patients based on a pre-setup by healthcare professionals with the aim of helping them manage their health. It also sends the information generated by patients to health professionals.
- The system has the following characteristics: (1) it enables secure communication between patients and professionals; (2) involves patients in the control and treatment of their health conditions; (3) provides automated advice based on disease-management protocols; (4) quickly contacts the patient if conditions deteriorate; (5) it provides professionals with insight into their patient group and (6) it allows data sharing across the entire care team.^{66,67}
- The system can be adapted to the centre's work processes without requiring a substantial redesign or for healthcare staff to develop new skills or very different working methods.⁶⁵
- The solution is integrated into NHS healthcare routes. It can be used for any condition in which patient, from their homes, can benefit from motivational messages and alerts, as well as for health education or information on symptoms and measures at home (blood pressure, weight, oxygen saturation, etc.). It can be applied to a wide range of diseases, such as asthma, diabetes and hypertension, and to stop smoking and manage weight.⁶⁸
- Patients use the system free of charge.⁶⁷



Florence expansion process

Programmes and efforts to expand the service⁶⁶

- In 2011, the Florence team received a £75,000 grant to develop and create the methodology and evaluate the system's capabilities. A study with 110 patients led to the publication of a document demonstrating its effectiveness. Following this study, the Clinical Telehealth Facilitator was created to support health care providers in adopting and testing the system and compiling the necessary data.
- At the same time, the local Strategic Health Authority (SHA) offered funding to adopt the system in several primary schools in the West Midlands, but only achieved questionable success.
- The Department of Health provided funding to extend Florence to CCGs across England through the 2013-2014 Advice and Interactive Messaging (AIM) programme. The programme was successful in compiling quality data and many patients registered, but was not effective because many patients also abandoned it.
- At the Stanford and Surrounds CCGs Florence was introduced to 14 primary schools. Florence offered a free two-year service. A team of practical leaders were in charge of facilitating its adoption in the region.
- Currently, the dissemination of the Florence system in other areas of the NHS is the responsibility of nhssimple, a social enterprise. nhssimple supports health professionals in the use of Florence and has helped build a community of people who work in health and social care and who share knowledge and learning about the many ways to use the system.

Strategies for service sustainability⁶⁶

- Capacity maturity model:** a model has been established (1) based on member subscriptions to avoid asking for costly investments in the centres (message packages are offered); (2) non-profit business, focused on improving patient results and effective use of resources; (3) in which Mediaburst makes an investment in care centres and supports system implementation, protocol creation, and structure and messaging adaptation and (4) where local teams receive training on customizing the system.

It has been used by over 50,000 people in over 70 UK health and social care organizations, including those in NHS England and NHS Scotland.⁶⁶

Results obtained

- NICE and the *British Medical Journal*, among others, have published their effectiveness.⁶⁵
- Florence helps to achieve faster health outcomes, better adherence to drug or other treatments, and higher productivity. The technology has increased the engagement between the healthcare professional and the patient and has achieved an increase in satisfaction with care, greater compliance with therapeutic guidelines, a reduction in the rate of non-attendance at appointments and improved physical health and mental well-being, among others.⁶⁸

SWEDEN



Main results

- The Swedish government is primarily responsible for health care policies and quality control, through the National Health and Welfare Board. Regional authorities are responsible for organizing health care, and local authorities for social care.
- Non-face-to-face care initiatives are incorporated into strategic health plans, in the 2010 strategy and in the current Long Term Plan³³ from January 2016^{69,70}
- There is no specific portfolio of non-face-to-face care services. There is a government tool for citizens called My Health Contacts that allows patients to make inquiries online.⁷¹ There has been a growth in the use of private health applications such as Kry or Min Doktor, which have facilitated familiarization with non-face-to-face care.
- Digital services are contracted in the same way as face-to-face services, including co-payment.⁷²
- Sweden has a specific regulatory framework that defines the requirements for implementing services in the country, and has facilitated the development of non-face-to-face care services.



Results by analysis axes (1/2)



Governance, leadership and strategy of the model

- The Swedish Digital Health Agency (Ehälso myndigheten) was established in 2014, and, together with the Swedish Association of Local Authorities (SALAR), it is responsible for pursuing the digital health strategy, investment and implementation of the programmes.
- There is a defined eHealth strategy (eHealth Vision for 2025), with specific action plans. This strategy focuses primarily on the interoperability and integration of existing systems and solutions and establishing mechanisms for cooperation and coordination between all key players.⁷⁰
- Other initiatives for digitization are identified, such as SALAR's action plans to drive joint opportunities in digital development and the National Board of Health and Welfare's efforts to establish a common information structure.
- The Research Institute of Industrial Economics marks, as key points for a better future in terms of non-face-to-face care, the following elements: (1) include incentives for professionals; (2) eliminate gratuitousness in the paediatric community, given the high use of non-face-to-face care services; (3) boost financial support to increase older people's access to these services and (4) develop digital care best practices.⁷²



Non-face-to-face care service portfolio

- Sweden does not have a specific non-face-to-face care portfolio.
- Non-face-to-face care is being used in approximately 75% of hospitals. In specialized care, in particular, interconsultation is used (radiology is the most common area).
- In primary care, patients have been able to contact their professionals by videoconference since 2016 and these represent 2% of all primary care visits in 2017.⁷²
- Barriers to accessing non-face-to-face care services are minimal.
- Non-face-to-face care services are mainly used by people living in metropolitan areas and by people using paediatric consultations, although it is expected that in the future, elderly, people with chronic illnesses or living in rural areas, will benefit much more.⁷²
- They have a citizen relationship channel (My Health Contacts) through which the citizen can consult their medical history and carry out administrative procedures and online consultations with professionals.
- In 2016, digital companies Kry and Min Doktor launched their respective non-face-to-face care applications. Since then, there has been a rapid increase in the number of digital consultations in Sweden.⁷²



Financing and contracting model for services

- The primary care payment is by capitation model. Most funds come from local taxes, a small portion comes from state allocations, and in some cases there is a patient co-payment system.
- The state funds the Digital Health Agency with a separate budget.
- In general, insurers pay for digital services with the same funding system as they do for face-to-face services. In 2017, the total remuneration for online consultations was set between SEK 0 and SEK 500 (€ 46), including the fee paid by patients. Patients pay the same fee for a non-face-to-face visit as for a face-to-face visit. For the other non-face-to-face care services, SALAR set a minimum recommended fee for citizens of SEK 100 (€ 10).⁷²
- Sweden has also defined the payment model to facilitate non-face-to-face assistance from one county to another.⁷²
- Sweden promotes the definition of innovative forms of contracting based on quality and health outcomes.

SWEDEN 
Results by analysis axes (2/2)

Technological and interoperability framework

- Each district has its own electronic health record system (EHR) and each one reflects the different requirements according to the different regional authorities.
- At the national level, there is a system for exchanging health data (medical history) called SJUNET, to which all providers are connected.⁷³ The system is used for video conferencing, teleradiology, remote access to applications, access to databases, as secure email and for eLearning.
- In 2016, a report was published with the Common Framework of International Standards for Interoperability and Change Management (StandIN)⁷⁴ in the context of a project carried out by companies in the sector in collaboration with SALAR and other governing bodies to set up the future database of the Swedish health information system. The report concludes that (1) the systematic use of standards is necessary, (2) national coordination is required to achieve cross-border communication, and (3) knowledge of international standards is insufficient. Interoperability standards have lagged behind high standards for data security.⁷⁴ The current strategy aims to involve stakeholders in defining the interoperability model.
- In Sweden, private apps(such as Kry and Min Doktor) are integrated as part of the public system. Apps are accessed by identifying with BankID (unique identifier for all public and banking services). There is no unified portal of certified apps for healthcare use.


Organizational model

- The Agency for Digital Government, created in 2018, manages the digitization of public sector services in Sweden.
- The central government and SALAR form an organization for the governance, cooperation, coordination and monitoring of the implementation of the eHealth strategy for 2025. The monitoring of the initiatives is carried out by the Digital Health Agency and SALAR.
- The National Board of Health and Welfare (Socialstyrelsen) is responsible for developing and implementing technical and semantic standards.
- The Inspectorate for Health and Social Care (Inspektionen för vård och omsorg) oversees digital health.
- Inera AB (company owned by SALAR) coordinates the health care digitization process.
- The eHealth Center in Sweden (CeHis), which is part of Inera, collaborates in numerous projects and publishes evaluation reports.
- The Swedish Data Protection Authority (Datainspektionen) is responsible for protecting general and patient data.
- The Swedish Medical Products Agency certifies apps and devices classified as healthcare products.⁷⁵


Evaluation models

- No nationally defined framework is identified for evaluating non-face-to-face care services, nor for digital health services in general.
- There is an Analysis for Evaluation of Telemedicine Projects model (PENG)⁷⁶; it is aimed at evaluating investments in information technology applied to health that have specific application for non-face-to-face care (PENG Analysis for Evaluation of Telemedicine Projects).⁷⁶


Ethical and legal regulatory framework

- The Patient Data Law (complementary to the GDPR) also regulates the framework for security and reliability, for transfer, protection and specific access to health data.⁷⁷
- The Freedom of Choice Act⁷⁸ (created in 2009) established the regulatory framework that allows healthcare providers and professionals to establish their services anywhere in Sweden as long as they meet the regulatory requirements.

DENMARK**Main results**

- Since the 1990s, Denmark has pursued a strategy to strengthen the role of primary care as a pillar of health services. This level acts as a distributing barrier for accessing the system and plays a key role in preventing disease and promoting citizens' health. Denmark has reorganized and streamlined healthcare resources (it has gone from 90 to 40 hospitals across the country) and implemented a nationwide Digital Health Strategy⁷⁹ (includes non-face-to-face care), coordinated between governing bodies at the national, regional and municipal levels, and with a specific budget item, which places the country among the top in the world in terms of digital health.
- There is no non-face-to-face care service portfolio. An action plan for disseminating telemedicine services was created in 2013⁸⁰. The current strategy is to successfully extend the projects throughout the territory⁷⁹.
- There are two relevant and consolidated non-face-to-face care programmes: one aimed at patients with chronic obstructive pulmonary disease (COPD) and an integrated care programme aimed at the elderly.

**Results by analysis axes (1/2)****Governance, leadership and strategy of the model**

- The Digital Health Strategy 2018-2022⁷⁹ is coordinated by the Ministry of Health and the regional (n = 5) and municipal (n = 98) governments, and it has a specific budget. This strategy sets out 5 lines of action for non-face-to-face care: (1) patient interaction with the healthcare system through telehealth tools; (2) process efficiency, based on timely knowledge of patient data; (3) telemonitoring focused on prevention; (4) data security and patient control and (5) extension of successful projects throughout the territory and long-term vision of the technological infrastructure.
- The Danish Ministry of Health points out that the main factors to be considered in leading non-face-to-face care services are: (1) existence of consensus among the main players, (2) public confidence in the service quality and (3) identification of priority services aligned with the objectives of the non-face-to-face care model. The Digital Health Strategy⁷⁹ is aligned with the 2013-2020 Assisted Living Strategy which, among other things, includes (1) the full implementation of the Smart Home programme, (2) Smart Home Technology for the Disabled and (3) digital rehabilitation.

**Non-face-to-face care service portfolio**

Denmark does not have a portfolio of non-face-to-face care services defined as such. Non-face-to-face care services are developed in the demarcations areas and, if they are successful, they are assessed for extension on a national scale. Currently, the services that are extended nationwide are derived from the following projects:⁸⁰

- TeleCare North: health-variable telemonitoring programme aimed at patients with COPD (see details on page 24).
- The Virtual Hospital: outpatient home-care programme for specialized nursing and complemented with virtual visits (wound care, home chemotherapy, pregnancy monitoring and support for families with premature babies).
- Telepsychiatry: psychiatric video-consultation programme.
- Programme aimed at the elderly: with a focus on prevention and non-face-to-face treatment and home monitoring.

Additionally, the Heart-Failure Patient Programme (in the northern region of Denmark) is currently being developed, which is inspired by and leverages lessons learned from the COPD patient programme.

**Financing and contracting model for services**

- Denmark's Digital Health Strategy⁷⁹ is funded by the public authorities involved. Each of the initiatives included in the strategy has its own funding.
- No information has been identified on the model for contracting non-face-to-face care services from providers.
- No co-payment by the public initiatives have been identified for non-face-to-face care services.

DENMARK



Results by analysis axes (2/2)

**Technological and interoperability framework**

- Denmark does not have a single EHR (Electronic Health Record) system shared nationally.
- The Danish health data network is based on international standards (HL7 and Personal Connected Health Alliance). Data can be shared between providers and municipalities and integrated nationally.
- The Danish government is involved in transnational data exchange projects at European level.
- Authorities responsible for implementing the digital health strategy (MedCom and Danish Health Data Authority) recommend implementing technical and semantic standards for data communication and exchange to ensure their quality.
- Since 2015, all data compiled from non-face-to-face care are available in the nationwide health database. However, there is still a need to create a shared framework and quality requirements to be able to use data from healthcare devices or apps securely and extensively. One of the planned initiatives is to define a long-term vision for developing of the common technological infrastructure of the sector.⁷⁹
- Denmark has an online public portal (sundhed.dk) which compiles and distributes information on health care among citizens and health professionals.

**Organizational model**

- In Denmark, the Agency for Digitization (which belongs to the Ministry of Finance) is responsible for all policies related to the digitization, application and use of digital technology in the public sector.⁶ The Ministry of Finance is also involved in the design of the Digital Health Strategy through this agency, together with the Ministry of Health and regional and municipal governments.⁷⁹
- In 1994, MedCom, a non-profit organization owned and funded by the Ministry of Health and regional and local governments was created; it is responsible for technological support in healthcare processes and facilitates cooperation between the actors in the health system.³²
- The deployment of the Digital Health Strategy is coordinated and integrated by:
 - The Ministry of Health, which leads the development, coordination and prioritization of initiatives.⁸¹
 - Regional and municipal governments, which manage investments and the implementation of technological solutions.⁸¹
 - The National Board of eHealth, which coordinates and follows the strategy and is in charge of the technology infrastructure.³²
 - The Danish Health Data Authority, which operates various technical services and controls the use of digitally stored data.³²

**Evaluation models**

- In Denmark, the MAST model has been adopted to evaluate face-to-face care projects.⁸² MAST is a non-face-to-face care services evaluation model developed by the European Commission that is based on the HTA (Health Technology Assessment) evaluation methodology. The model has three main areas: (1) assessment of preliminary considerations (such as existing health needs), (2) multidisciplinary assessment (from various perspectives, such as: patient, organizational, economic, points of view, etc.) and (3) assessment of transferability/project scalability.
- However, a checklist for non-face-to-face care solutions with six parameters was developed nationwide: (1) technology, (2) safety, (3) clinical efficacy, (4) citizen / patient point of view, (5) economics and organization, and (6) law and ethics, so that health care providers can use it to decide which technological solutions to introduce. The list is based on the Danish experience with mini-HTA and the European MAST model.^{83,84}
- Some non-face-to-face care programmes were identified that had been analysed from an economic and financial perspective to assess potential savings (*Telecare North*, p. 24).

**Ethical and legal regulatory framework**

- One of the initiatives of the Digital Health Strategy is to modernize IT security standards in the health system.⁷⁹ There are plans to develop a new security standard to replace the current one.
- The 2018 Data Protection Act is now in force, which complements the EU GDPR.

Background

- Initially, the TeleCare North project was the result of a collaboration between the government of the northern region of Denmark, the eleven municipal governments, the University of Aalborg, the Danish Lung Association and local health professionals with the goal of testing the use of non-face-to-face care services for patients with COPD.

Project description

- The participants in the project (1,252 people with COPD between 1/1/2012 and 30/6/2015) received a TeleKit that allowed them to measure data such as blood pressure, blood oxygen levels or pulse, among others. This information was added to patients' medical record by an app, along with other information reported by them on their health status. The medical staff of the municipality ensured a follow-up and a quick response if the patient's situation deteriorated. In this case, the patient was referred to face-to-face visits either home or in the hospital.

In the autumn of 2015, the Danish government and the regional and municipal governments reached an agreement to provide non-face-to-face care nationwide to all patients with COPD by the end of 2019.⁸⁵



Extension of TeleCare North throughout Denmark

Development of the COPD business case nationwide

- In early March 2017, the Danish Agency for Digitization published the results of a new business case for non-face-to-face care for patients with COPD reworked for the whole country and based on data from the TeleCare program North. The business case presented:
 - The results of the evaluation of the regional programme:** with positive data on indicators related to patient empowerment regarding the knowledge and management of their disease and to savings in hospitalizations and primary care visits (calculated with a potential of at least 7,000 DKK - € 937 - per patient / year).
 - Defined patient segments:** the profiles of patients who could benefit most from this programme were established (since the cost of the programme kit could not be assumed if the programme applied to all COPD patients). Thus, patients classified as GOLD 3 and GOLD 4 (severe COPD, estimated at approximately 150,000 people) were defined as meeting the programme inclusion criteria, according to the GOLD (Global Initiative for Chronic Obstructive Lung Disease) guidelines.
 - Economic-financial calculations:** these showed an estimated payback period of approximately 2 years for the investment and, when fully implemented (extended to 2021), current expenditure would account for approximately 33% of total annual profits.

The extension of face-to-face care for patients with COPD throughout Denmark

- This extension was developed as follows:
 - Development of five regional programmes:** one for each of the regions. Each regional programme is responsible for applying in its region and adapting the procedures to the regional circumstances according to the principle of subsidiarity.
 - Implementation of an intermunicipal / interregional project** for logistics services and functions.
 - Creation of public projects** that guarantee the preconditions and joint analytical projects regarding the technological infrastructure.
 - Creation of a nationwide Steering Committee**, which includes representatives of regional and municipal governments, the Ministry of Health and the Danish Agency for Digitization, and which is responsible for coordinating regional programmes and overseeing the activities.
- 47 million DKK (approximately €6 million) of national budget was earmarked for extending the programme.

THE NETHERLANDS**Main results**

- The competencies of the health system are decentralized to the country's 380 local authorities. Healthcare providers are mostly privately run, and there is a national public insurer as well as private insurers.
- The health digitization strategy is not created independently. It is seen as an integrated part in the health system and therefore initiatives in this regard are included in strategic health documents. No specific law regulates electronic health records.
- According to the European Commission's Digital Economy and Society Index, which includes the digitization of public services,⁸⁶ the Netherlands is a leader in digital connectivity. The implementation and use of digital health systems has expanded greatly in recent years. Non-face-to-face care services are strongly established in the providers' routines. Each health centre offers a portfolio of services and mobile applications to patients, but there is no common framework that unites them.³²
- The current priority is to ensure patient access to and control over their health information.³²
- Until 2002, the work on health technologies was uncoordinated until the creation of NICTIZ as a centralized body of expertise in eHealth.³²

**Results by analysis axes (1/2)****Governance, leadership and strategy of the model**

- In 2012, the Netherlands showed interest in including eHealth on its health policy agenda.⁴
- In 2019 it published *eHealth - Wat is dat ?*,⁸⁷ not as a strategic document, but as a conceptual framework that defined and classified eHealth concepts and services.
- The Dutch government encouraged the sector to expand telehealth services with the following objectives: (1) guarantee access to health data (90% chronic patients and 40% of the rest with access in 2019); (2) establish the monitoring of aspects of the health of chronic patients and allow data sharing (90% of chronic patients in 2019) and (3) enable the possibility of 24-hour digital communication between patients and professionals.
- The government supports entrepreneurs, companies, research centres, hospital services, and the like to develop and fund their ideas. It facilitates the exchange of digital data, creates networks for knowledge sharing, promotes awareness of eHealth and establishes collaborations so the population can acquire more control over their health.⁹⁵
- In part, the Dutch strategy is based on promoting the development of public-private partnerships to develop eHealth.⁹⁵

**Non-face-to-face care service portfolio**

- There is no specific portfolio of non-face-to-face care services. However, the use of digital health services is widespread throughout the territory for the following non-face-to-face care services: (1) care for the elderly, mental health, physiotherapy, and post-oncology care are mostly provided at home, often through digital tools; (2) the use of digital control systems for the elderly increased from 53% (2014) to 81% (2018); (3) the use of patient portals for nursing staff has increased by 38% between 2014 and 2018; (4) there are digital care initiatives in the treatment of conditions and illnesses related to mental health and addictions and (5) 9 million mobile devices are expected to be used by 2020 for remote monitoring of patients.⁹⁶
- The Netherlands promotes eHealth by encouraging private operators (healthcare, industry *medtech*, etc.), and these are the main promoters of developing non-face-to-face care.

**Financing and contracting model for services**

- The digital services funding system in the Netherlands is based on a public-private partnership model.
- The State, provider organizations, and patient organizations contribute to the funding and operation of existing and developing digital applications.
- The Ministry of Health funds initiatives to boost digital development. Providers receive funding for implementing digital health initiatives linked to achieving the planned objectives.

THE NETHERLANDS**Results by analysis axes (2/2)****Technological and interoperability framework**

- AORTA is the national infrastructure of the Dutch health information system, developed by NICTIZ under a public contract.³² The development of non-face-to-face care and the wider use of ICT in health is supported through AORTA and international projects.⁹¹
- The Ministry of Health has created a legal framework for the mandatory exchange of health data between all healthcare providers.
- A programme has been established to standardize providers' coding systems.^{32.89}
- The National Exchange Point is the infrastructure in which health care providers exchange health data.
- MedMij is a Health Information Council initiative that determines harmonized national standards for exchanging personal information between systems and promotes the development of a single personal patient registry.³²
- The Royal Dutch Medical Association (KNMG) provides the Medical App Checker to healthcare professionals and developers to determine whether the app is reliable, of suitable quality and secure.⁹²
- The government also provides guides to innovation agents with eHealth project ideas.³²

**Organizational model**

- The Ministry of Health, Welfare and Sport acts as a moderator and facilitator of the digitization of health. All agents involved in health care meet every two months in the ministry to coordinate the digital strategies to be implemented. The government provides the framework and leaves the implementation to the agents.^{32.90}
- NICTIZ is the government authority that develops information and data exchange standards in the health sector. Accordingly, it has defined interoperability provisions and plans mainly for exchanging regional data³² as well as for various applications.
- The Health Information Council is a group of actors in the health field who work to determine harmonized standards and agreements to improve information structure and ensure its sustainability.⁹³
- The Council for Public Health and Care (Raad voor Volksgezondheid en Samenleving, RVS) and the Rathenau Institute are involved in studies on the effects on digital health.³²

**Evaluation models**

- No tools are available at national level for evaluating non-face-to-face care services.
- The eHealth Monitor platform,⁹⁵ managed by NICTIZ, enables the government to monitor the progress of digital developments in the healthcare sector and the level of achievement of objectives. NICTIZ compiles data on the distribution of the exchange of digital health information and the level of satisfaction of health professionals³².

**Ethical and legal regulatory framework**

- The GDPR has replaced the Dutch Data Protection Act (*Wet bescherming persoonsgegevens, Wbp*).⁹⁴
- The Dutch government has given legal accreditation to a digital solution (*Mijn Zorg Log*) in the health sector that allows the use of blockchain for communications between the country's health institutions, including hospitals and government agencies.⁸⁹
- The *mHealth market* in the Netherlands is one of the best regulated in Europe (4th in the ranking according to a survey conducted by research2guidance in collaboration with HIMSS Europe).⁸⁹

KSYOS Telemedical Center

- The KSYOS company founded the TeleMedical Center in the Netherlands in 2005 and started the teledermatology consultation service, using a methodology for implementing telemedicine services called Health Management Practice (HMP) developed by KSYOS.⁹⁵ Since then, KSYOS has been active in telediagnostics (TeleFundusScreening, TeleSpirometry, TeleECG, TeleHolter), teleconsultation and telemonitoring in many fields, although the teledermatology programme is still the most widespread service. KSYOS has contracts with all health insurers in the Netherlands, and has also expanded to other European countries.⁹⁶

The services offered by the KSYOS solution are part of the **service provision by the Dutch healthcare system**; the TeleMedical Center was recognized **in 2005 as a health organization**.⁹⁷

Teledermatology

- The Teledermatology Consultation System (TDCS®) Teledermatology solution enables the primary care professional to send digital images of the patient's skin and medical record to the dermatologist, without the need to refer to him in person. The dermatology specialist responds with diagnostic options and therapeutic advice.⁹⁶ The system works securely as it uses the unique passport for identifying all healthcare professionals (UZI-pas), which guarantees that all patient data is kept confidential, complete and available. This digital passport is issued by the Dutch Ministry of Health.
- The TDCS® also includes hardware supply (digital camera, support station, UZI-step and card reader), quality monitoring, support service, on-the-spot supervision, billing, administration and education.⁹⁷

In 2015, the KSYOS telemedicine centre provided **14,900 teledermatology consultations** in which **3,421 primary care professionals** and **247 dermatology specialists took part**. Since the introduction of teledermatology in 2006 and until 2015, KSYOS carried out a total of **130,531 teledermatology consultations**.⁹⁸

Health Management Practice (HMP)⁹⁷

- KYSOS has implemented its services following the HMP methodology, in which public and private agents work together to develop non-face-to-face care tools, study their effect on increasing process efficiency and manage their modular introduction and scaling in ordinary practice. The methodology follows four phases: (1) development; (2) usability research; (3) research on efficiency in satisfaction, effectiveness, and quality parameters; and (4) implementation studies.

Barriers the project encountered:

- Lack of budget for eHealth services.
- Contracts with short-term oriented insurers.
- Lack of initiative and direction of the government and insurers.

Project Success factors:

- Existence of grants and sources of research funding.
- Easier implementation use case (first national project).
- Changes in budgets.
- Demand from patients and users.

Financing model⁹⁷

- KSYOS is contracted by health insurance companies that pay for each teleconsultation performed. In return, KSYOS, pays for the general and dermatology professionals, manages security, software, hardware (digital camera, support station, UZI-step and card reader), all logistics and the infrastructure.

Evaluation models⁹⁷

- Insurance companies and policy makers agreed on the teledermatology indicators that condition the payment of services to providers: (1) the use of the UZI-pass; (2) tracking the number of face-to-face consultations saved to the dermatologist and (3) tracking the dermatologist's response time.

Results obtained (2015)⁹⁵

- 73% of referrals were avoided in the teledermatology programme.
- 70% of face-to-face referrals can be avoided (in general).
- Significant reduction of waiting time.
- 40% cost reduction.
- Average response time of 4.6 h.
- Increased quality of service and learning by professionals.



CANADA

**Main results**

- The organization of Canada's health care system is largely determined by the Canadian Constitution, which divides roles and responsibilities between federal governments and provincial and territorial governments. Provincial and territorial governments have most of the responsibility for providing health and social services.⁹⁹
- Canada centralizes everything related to digital health through Health Infoway¹⁰⁰ (Infoway), which handles the strategic definition, planning, service offering, evaluation, etc. Infoway is an independent, non-profit organization that was established by the federal government in 2001 and is funded by the ministries of health of the 10 provinces and 3 territories.
- Since 2013, non-face-to-face care initiatives have been included in digital health strategies.

**Results by analysis axes (1/2)****Governance, leadership and strategy of the model**

- Canada has a governance and operational model with a global and joint strategy that adapts to each province or territory, according to its characteristics and priorities.
- In 2001, Infoway was created. This is an institution that works to accelerate the development, adoption and effective use of digital health solutions across Canada.^{100,101}
- The current strategy in digital health, 2017-2020 Strategic Plan,¹⁰² marks three strategic priorities: (1) connect digital health actors (digital health providers, patients, professionals); (2) incubate knowledge and (3) support professionals and the business fabric. A key goal is to ensure public access to health data.
- The country's first eHealth strategy dates back to 2009. Subsequently, non-face-to-face care initiatives are addressed in the digital health strategy (Pan-Canadian Digital Health Strategic Plan of 2013), which defines opportunities for action such as: (1) bring care closer to the patient's home (includes remote patient monitoring); (2) provide easier access (eConsultations, eProgramming, etc.) and (3) support new care models (telepathology, chronic patient management, etc.).

**Non-face-to-face care service portfolio**

- Canada has a list of non-face-to-face care services through Infoway. Each territory must decide what, when, where and how to implement them.
- Currently the services that are available nationwide are: (1) prior appointment; (2) referral to the specialist: visualization and notification of referrals to specialists; (3) access to online medical record (ACCESS project), in which the results of laboratory tests are the most common type of health information accessed; (4) ePrescription (ongoing project); (5) virtual consultations (digital communication between healthcare professionals and patients, which may include emails, text messaging, and video conferencing) and (6) telehomecare (monitoring of conditions such as congestive heart failure –CHF– or COPD from home).^{102,103,104}
- Telehealth is available in all territories, especially clinical sessions, monitoring and home care, and video conferencing.

**Financing and contracting model for services**

- Health care in Canada is funded by federal and provincial taxes.¹⁰⁵
- The ministries of health of the 10 provinces and 3 territories and the federal government finance Infoway. The federal government invests in strategic directions and the provinces and territories fund the actions at initiative, project or solution level.¹⁰⁶
- Patients do not face additional costs when using digital services.
- Each province or territory decides how to give providers the implementation and use of non-face-to-face care solutions.
- Infoway plans to spend between C\$100 million and C\$125 million to meet its 2019-2020 goals, and has designed new business and financing models for greater long-term financial sustainability.¹⁰⁶
- Canada saved C\$125 million in 2010 with non-face-to-face care services (calculated in terms of costs to patients and the health care system), and in 2019 it estimated it had saved \$30 trillion since 2007 thanks to investments derived from connecting information in health, telehealth and home telecare, pharmacy information systems, diagnostic imaging and electronic medical records of clinic outpatients.^{107,108}

CANADA**Results by analysis axes (2/2)****Technological and interoperability framework**

- Each province/territory has its own health infrastructure (it is decentralized).
- Infoway provides a shared technology framework and quality requirements to facilitate interoperability.¹⁰⁹
- The commitment to interoperability through the use of international standards such as HL7, ISO/TC215 and SNOMED CT has been and is a constant feature of Infoway, which has reached levels that ensure scalability and portability. Pan-Canadian standards provide technical language and clinical terminology that enable thousands of healthcare providers across the country to communicate and share health information consistently, securely, and reliably.¹¹⁰
- Recommendations are provided regarding the minimum requirements that must be guaranteed to ensure the solution's security and interoperability. Infoway executes digital health product certifications.
- As part of the Medicines and Devices Regulatory Review Initiative, Canada's healthcare system is establishing a new division within the Healthcare Products Directorate of the Therapeutic Products Directorate to allow for a more specific pre-market review of digital health technologies to adapt to rapidly changing technologies in digital health and to respond to rapid innovation cycles. The key areas it focuses on are wireless healthcare devices, mobile healthcare apps, healthcare software, artificial intelligence, cybersecurity and interoperability between healthcare devices.¹¹¹

**Organizational model**

- The governance and management model is shared between the central government and the provinces and territories, with a consensual global and joint strategy but adaptable to the reality of each of the 13 territories.
- Infoway¹⁰⁰, with 18 years of experience as an independent, non-profit organization funded by the 13 ministries of health in the 13 provinces and territories, works with the Government of Canada, and the provincial and territorial governments, to advance shared health priorities providing governance, leadership, accountability and effective representation to all stakeholders: (1) it provides tools and solutions that are contrasted and consistent with the national strategy; (2) it provides deployment support with a pragmatic implementation plan tailored to each province or territory; (3) it collaborates in evaluating results in the health system at provincial or territorial and at national level, (4) it establishes the procedures and regulations relating to interoperability for the deployment and scalability of the face-to-face care solutions.
- Digital Health Canada¹¹² is a non-profit professional association that connects, inspires and trains professionals in the digital health area.

**Evaluation models**

- A list of tools for evaluating the benefits of digital solutions is available to help organizations implement, adopt, and promote them. These tools consist of the following sections: (1) framework for evaluating benefits; (2) basis for profit assessment planning; (3) evaluation methods and tools; (4) indicators for evaluating benefits; (5) methodology for administering the system; (6) economic benefit modelling; (7) benefit evaluation network; (8) electronic benefit compilation and (9) electronic health assessment manual.¹¹³
- Every year since 2006, Infoway has prepared the technical report on the evaluation of benefits with the indicators and the orientations to support sanitary-solution evaluation projects.

**Ethical and legal regulatory framework**

- The requirements of the respective regulatory frameworks and specific regulations that ensure the protection and security of data are established at state, provincial or territorial and local levels.¹¹⁴
- Infoway establishes the privacy and security assessment policy, which includes relevant assessments to identify privacy and information security risks associated with new systems and services, ensure appropriate controls, and address the identified risks and recommendations.¹¹⁵

KAISER PERMANENTE**Main results**

- Kaiser Permanente (KP) is the largest private healthcare provider in the U.S. integrating insurance and provision through a stable agreement with a corporation of healthcare professionals. It has 12 million policyholders in 9 U.S. states, 39 hospitals, 680 health centres, 211,000 self-employed workers, more than 22,000 self-employed professionals, a \$ 48 billion budget and \$ 2 billion in profits.¹¹⁵
- Its mission is to provide affordable, high-quality care services to improve the health of the communities and members they care for.
- KP makes a strategic commitment to the use of technology and innovation for providing its services.¹¹⁶
- It offers the HealthConnect platform,¹¹⁷ which incorporates non-face-to-face care services (video-consultation, telephone call for programming and nursing advice, biometric monitoring and inter-consultation).
- Medicare and Medicaid have historically limited payment to providers of many face-to-face care services, a fact that the KP institution itself has identified as a barrier to the expansion of these services.
- In the service payment model, KP takes into account not only the activity but also the service results and quality.

**Results by analysis axes (1/2)****Governance, leadership and strategy of the model**

- The governance model responds to a private enterprise model, with a board of directors and a management board in a non-profit regulatory context, in which the mission is clearly defined and agreed upon.
- The main factor of KP's success is undoubtedly clinical leadership under a premise of decision-making based on scientific evidence derived from the measuring the results obtained. Its mission is to "enable people to live healthier lives."¹¹⁸
- The result is a determined and continuous commitment since 2004 to use of information technologies in an integrated way, to implement the information system as a support and guarantor of all activity and results, through a culture of 'learning, continuous improvement and recognition (aligned incentives).¹¹⁹

**Non-face-to-face care service portfolio**

- The conceptual framework of non-face-to-face care services at KP focuses on obtaining integrated care, personalized according to the patient's characteristics and with proactive communication between professional and patient.
- The non-face-to-face services offered by KP include: video-consultations, biometric monitoring, 24/7 telephone nursing advice, professional consultations, e-mail between patient and healthcare professional and the kp.org portal, on which patients can see their health data.
- Currently, 70% of policyholders over the age of 13 are registered on the portal, and 61% of the transactions are made using mobile devices.^{119,120}
- The introduction of non-face-to-face care services has led to the redesign of care routes and an open range of services. That is, depending on patients' specific circumstances, they can opt for face-to-face or non-face-to-face services.
- The services accessible online allow KP policyholders to better manage their health and collaborate with healthcare professionals.

**Financing and contracting model for services**

- KP establishes contracts with healthcare professionals who provide care. Compensation for clinicians includes a base salary along with supplements for (1) patient care (in terms of health, clinical outcomes, patient satisfaction, etc.), activity (face-to-face and non-face-to-face care), and the use of the platform for accountability (transparently measuring performance, results, and satisfaction), as well as (2) research or teaching activities, (3) overtime, and (4) taking on additional responsibilities.^{121,122}
- According to KP, the adoption and expansion of face-to-face care services is limited given Medicare's (paid) policy. In 2015, Medicare published a report identifying potential new users, services, and telehealth funding models within Medicare policies, using evidence-based studies. However, it has not yet generated a new, broader public procurement framework for these services.^{120,123,124}

KAISER PERMANENTE



Results by analysis axes (2/2)



Technological and interoperability framework

- The current strategy for IT organization includes: (1) modernize the IT infrastructure's scalability and flexibility, properly leverage the cloud, and shift the architecture toward microservices and APIs to access data on older systems; (2) accelerate development, increase access partners' speed and capabilities using DevOps, provide more functionality and increased productivity, and (3) ensure the reliability and security of the technology platform (improve technology to make it reliable, resilient and robust and secure the infrastructure in order to protect it from constant security threats).¹²⁵
- In 2015 in the US, the National Health Information Technology Coordination Office worked with states, users and the private sector to develop an interoperability agenda and action plan ending in 2024 and which is expected to achieve interoperability at national level.¹²⁶
- The Food and Drug Administration (FDA) regulates the marketing of sanitary devices and monitors the safety of all regulated products in the U.S.¹²⁷
- KP has its own, unique and integrated platform for all centres and professionals that host insured parties' computerized medical records (Health Connect) and includes non-face-to-face care services. This platform has its own infrastructure, which is in the process of migrating to the cloud and with subcontracting to third parties of infrastructure, development, maintenance and administration services.¹¹⁷



Organizational model

- The leading U.S. health care and nonprofit health plan provider (with over 22,000 doctors and 211,000 employees) is organized into:
 - Kaiser Foundation Health Plan: 12 million insured.
 - Permanent Medical Groups: 680 medical offices.
 - Kaiser Foundation Hospitals: 39 hospitals.¹¹⁸
- The management has a strong clinical leadership and pursues a global and single consensual strategy, characterized by continued commitment to integration, innovation and the transformation of healthcare. The Management has been changing the mindsets and reality of the organization itself and has focused on preventing disease and promoting health, with a patient-centered approach.¹¹⁸ Particular noteworthy is the technological management (CIO) to promote the use of *clinical information technology* as a springboard for improving the care and health of its members.¹²⁸



Evaluation models

- One of KP's values is transparency based on accountability to policyholders. KP carries out and publishes analyses, studies and research work on the quality of care. It currently has over 4,000 research studies underway.
- KP has not developed a specific evaluation framework for non-face-to-face care services or to use any known framework. However, KP has conducted studies done that measure the results obtained with non-face-to-face care services and their economic impact.^{129,130}



Ethical and legal regulatory framework

- There is no major data protection law in the United States, but there is a regulatory framework with a large number of federal and state laws (about a hundred) that serve to protect residents' personal data. Although there is no general state legislation, there are sector-specific data protection laws. In health, the Health Information Portability and Accountability Act (HIPAA) protects health status information that an entity holds.¹³¹

BASQUE COUNTRY 

Main results

- The Basque Country carries out separate actions in the social field (Department of Employment and Social Policies) and health (Osakidetza), but aimed at a common care model.
- The Basque Country's health service provision model is implemented through integrated local health systems (or microsystems); these are health and social organizations delimited within a geographical region that provide health care to their reference population.¹³²
- Non-face-to-face care initiatives have been incorporated into health strategies since 2009. Initiatives are currently included in health plans (*Basque Country Health Policies 2013-2020*)¹³³ and in the last decade there has been a commitment to the deployment of OSAREAN (Ozakidetza Sarean, 'online', 'non-face-to-face' in Basque), a multichannel centre for non-face-to-face care services.^{134,135,136}
- Non-face-to-face health and social care services are widely available to certain groups, with a comprehensive vision of levels of care, specialities and patient profiles.
- The Basque Country has redefined the system of contracting health care services and has incorporated a capitation model adapted to health risks and results.¹³⁷



Results by analysis axes (1/2)



Governance, leadership and strategy of the model

- The Basque Country has incorporated non-face-to-face care into the strategic plan *Basque Country: transforming the Health System* for the years 2009-2012.¹³⁷
- Non-face-to-face care strategies are currently included in the health plan (*Basque Country Health Policies 2013-2020*)¹³³ and in the strategic lines for 2017-2020.¹³⁸ The strategy facilitates the extension of projects throughout the territory with a long-term vision of the health technology infrastructure.
- The OSAREAN project, promoted by Osakidetza in 2011, establishes the multichannel service centre with the aim of developing a relationship and distance service model (non-face-to-face) focused on the needs of patients, citizens and professionals that enables patients access to Ozakidetza services from different channels.^{134,135,136}
- Decisions to incorporate initiatives (monitoring, home care, etc.) that affect the organization of processes and resources must be defined and implemented by the microsystems (local system of the Basque model), with the support of the central bodies, which create the favourable conditions to facilitate the change in the care model.¹³²



Non-face-to-face care service portfolio

- The Basque Country does not have a defined portfolio of non-face-to-face care services beyond that defined within the framework of the OSAREAN project, which includes: (1) new appointment model and call centre; (2) health advice; (3) health folder; (4) portal and active patient; (5) campaigns and (6) chronic patient management model.¹³⁶
- The services, which are spread throughout the territory, are accessed from the Osakidetza website: (1) non-face-to-face consultations, telephone consultations, e-mail consultations and telemonitoring consultations for home care and mobile patients; (2) health advice: non-face-to-face care service provided by nursing professionals 24 hours a day, 365 days a year; (3) digital appointment services and health folder as an instrument of information, training and communication channel and (4) interconsultations.¹³⁹
- The Basque Government's Ministry of Employment and Social Policies has deployed the Basque public telecare service, BetiOn.¹⁴⁰



Financing and contracting model for services

- The mechanisms for contracting health care in the Basque Country have changed in recent years. They have gone from an activity-based scheme to a capitation model adapted to health risks and outcomes that links all agents within the same microsystem.
- It is characterized by the following aspects: (1) part of the payment is linked to the joint achievement of results (which has driven joint decision-making models between suppliers); (2) each microsystem has a Population Intervention Plan (PIP), which defines common objectives, the target population and its evaluation framework; (3) a contracting space is reserved for innovation, funding is dedicated to projects in the field of supplier or integrated local system; (4) non-face-to-face care is financed from an initiative point of view, through its own funding from the providers/actors that promote it; (5) patients do not face additional costs for digital services; (6) microsystems do not have a specific budget line for deploying and implementing face-to-face care services but can do so through contracting by results and (7) contracting models encourage non-face-to-face care.¹³⁷

BASQUE COUNTRY **Results by analysis axes (2/2)****Technological and interoperability framework**

- Osakidetza's technological infrastructure is common throughout the system and is managed centrally. Therefore, a unique technological framework is available that facilitates interoperability. All data, including non-face-to-face care, are compiled in the Basque Health Database (OSABIDE).¹⁴¹
- Guidelines are provided regarding the minimum requirements that must be guaranteed to ensure the security and interoperability of the solutions..
- The necessary procedures are in place to ensure patients' privacy and data protection and security.
- Some experiences already incorporate data integration of equipment, health devices or apps. There is a need to create a shared framework and quality requirements to be able to use data from healthcare devices or apps securely and extensively.
- The BetiOn telecare service is a technical support and social action service offered by the Department of Employment and Social Policies of the Basque Government that enables users, through the telephone line and with specific communications and computer equipment, to have of a 24/7 care service, attended by people prepared to respond appropriately to health or social emergencies.¹⁴⁰

**Organizational model**

- Two separate government structures have been created to ensure the management and coordination in its field of deployment: the Department of Health (Osakidetza), in the health-care field, and the Department of Employment and Social Policies, in social care.
- Each integrated local health system or microsystem is responsible for implementing services in its territory.¹³²
- Osatek, a public entity under the Department of Health, specializes in diagnostic imaging and deploying technological solutions aimed at facilitating non-face-to-face care, such as telecare, telemonitoring, health advice or appointments.
- Osatek is the promoter of the OSAREAN project.^{134,135,136}
- There is no global, single, clear and defined strategy for coordinating, executing, implementing and evaluating the set of non-face-to-face care services. Neither have processes and procedures nor the human resources needed for this purpose been defined.
- There is a Health Technology Assessment Service (OSTEBA) that provides information to generate the appropriate use of health technologies in terms of safety, effectiveness, accessibility and equity, and examines the effects they may have on health and on health systems.¹⁴²

**Evaluation models**

- The Basque Country has its own evaluation agency (OSTEBA). However, no specific model for evaluating non-face-to-face care services has been adopted.¹⁴²
- Studies have been carried out to evaluate specific non-face-to-face care initiatives, such as the teleophthalmology or teledermatology programme, which have been extended to the entire health system.
- There is a continuous monitoring and periodic analysis of the deployment and implementation of initiatives and services. It includes the evaluation of user satisfaction with non-face-to-face care services (both health and social).

**Ethical and legal regulatory framework**

- There is a specific legal framework to ensure the protection and security of data and specific regulations regarding the rules for identifying and authenticating health professionals and identifying patients, aligned with the regulatory framework of RGPD and according to Directive 95/46 / EC.¹⁴³

ANDALUSIA**Main results**

- In the year 2000¹⁴⁴ a telemedicine evaluation report was prepared as a reference framework for implementing these services in Andalusia. Currently, non-face-to-face care strategies are included in the IV Andalusian Health Plan (2013-2020) and in the Andalusian Plan for Integrated Care for Patients with Chronic Diseases¹⁴⁵ (2012-2016).
- The Andalusian Health Service (SAS) has participated in several non-face-to-face care projects, most of which have been carried out by the provider, although some have been extended to the entire health system and managed by the SAS. The two most relevant and widespread projects throughout the region are Salud Responde and TeleDerma.
- The SAS incorporates non-face-to-face care into its portfolio of services that have been implemented in the territory (teledermatology, telephone consultation, etc.).⁶ However, a specific non-face-to-face care portfolio has not been defined.

Results by analysis axes (1/2)**Governance, leadership and strategy of the model**

- The SAS does not have a specific plan for non-face-to-face care, but approaches it from its health plans. Since the 2012 Health Plan, several digital health goals have been incorporated.¹⁴⁶ Among the objectives set out in the IV Andalusian Health Plan (2013-2020) is ensuring the accessibility of all citizens to health services through telematic processes.
- The Andalusian Plan for Integrated Care for Patients with Chronic Diseases¹⁴⁵ (2012) define specific strategies for non-face-to-face care for chronically ill people, including the following: (1) maintain the development of telecontinuity services (24-hour care) with the care of leading professionals and (2) choose the non-face-to-face care initiatives to be implemented based on the results of clinical trials and ecological studies obtained by similar initiatives.
- In 2000, the Andalusian Agency for Health Technology Assessment carried out an evaluation of the conceptual framework of non-face-to-face care and its application to ensure that appropriate technological solutions are introduced according to the needs of the population.¹⁴⁴

**Non-face-to-face care service portfolio**

- There is no specific portfolio of non-face-to-face care services. However, the SAS includes in its portfolio some services such as teledermatology, telestroke, pacemaker review, telephone consultation, inter-consultation, etc.¹⁴⁷
- Telederma and Salud Responde programmes cover the entire community. Beyond these, there are no projects with supraprovincial extension, except isolated cases by agreements between suppliers (TeleIctus (TeleStroke)).
- Other reference practices are: SaludMásMóvil Diabetes and Cardio, BIRDI (pelvic floor rehabilitation), Digital Telepathology, CRONOS (mobile ICU), Teledigestivo, ASMATIC, AtlanTIC, prison care services, etc.
- Service categories are defined in the 2000 report¹⁴⁴ : (1) treatment (telesurgery, etc.); (2) management or diagnosis (teleconsultation, telediagnosis, etc.) and (3) information or education. The report also classifies the services according to the different objectives: (1) patient care; (2) education for professionals; (3) patient education; (4) research; (5) public health and (6) health administration.

**Financing and contracting model for services**

- There is a capital model adjusted to each centre according to the type of population and the services provided, and taking into account the characteristics of each centre, linked to its historical expenditure and the allocation of population according to the activity carried out.¹⁴⁸ There is no specific contracting model for non-face-to-face care services; the entities that provide the public health system are those that reach agreements on these activities.
- The projects are mainly financed with innovation funds (national or European) and are promoted and executed by the supplier entities.
- The Junta de Andalucía (2018) fosters reflection on funding models for results (challenge of the National Health System).¹⁴⁹

ANDALUSIA



Results by analysis axes (2/2)

**Technological and interoperability framework**

- There is no platform that integrates non-face-to-face care services. All SAS care providers have access to a single medical record.
- Vendors exchange data through interoperability standards (HL7) and coding standards (CIE). The SAS interoperability strategy seeks to migrate to the FHIR standard. Most projects developed individually are not integrated into the medical record.^{150,151}
- The Catalogue of Interoperability Services^{150,151} guides and supervises vendors in implementing solutions. The Technical Interoperability Department of the SAS has guides and standards for solution providers in the technological field.^{150,151} There are no known guides on strategic or organizational scale.
- The quality and security strategy for mobile health applications¹⁵² contains: a series of recommendations for app development, the AppSaludable seal with the catalogue of accredited health apps and the mSSPA project, which seeks to create a unique (technological) ecosystem of mobile health services with an corporate and categorized app catalogue.
- *ClickSalud+* is a SAS application with links to apps recommended for professionals and patients.¹⁵³

**Organizational model**

- The Subdirectorate of Information and Communication Technologies (STIC)¹⁵⁴ within SAS is dedicated to managing and implementing ICT in SAS information systems.
- The Technical Interoperability Department is part of the Subdirectorate of Information and Communication Technologies and its main objective is to facilitate and implement a common model of interoperability in SAS.
- The Andalusia Health Quality Agency¹⁵² leads the quality and security strategy in mobile applications.
- The mSSPA project sets the parameters for creating a corporate ecosystem of mobile health solutions led by the Ministry of Equality, Health and Social Policies.

**Evaluation models**

- There is no specific framework for evaluating non-face-to-face care services.
- The Andalusia Health Quality Agency publishes a guide of recommendations for the design, use and evaluation of mobile health applications.
- The Technology Assessment Agency published a guide (*Telemedicine: evaluation report and applications in Andalusia*)¹⁴⁴ which determines how to assess the telecommunications and telematics requirements of the technologies applied to non-face-to-face care at the fields of: (1) security and efficacy, (2) clinical utility of the system, and (3) cost-effectiveness. It does not validate or accredit any non-face-to-face care initiative. The evaluation model also includes an evaluation template.

**Ethical and legal regulatory framework**

- The UNIFICA portal,¹⁵⁵ which depends on the Subdirectorate of Information Technologies and Communications (STIC) of SAS, contains all the regulations regarding rules and procedures to ensure the quality of services provided to citizens, to which all health professionals are subject.
- Data protection complies with the Spanish Organic Law 3/2018, of 5 December, on the protection of personal data and the guarantee of digital rights (BOE-294, 6/12/2018).¹⁵⁶
- The GDPR applies, in accordance with Directive 95/46 / EC.
- The evaluation agency's report drafted in 2000¹⁴⁴ also addresses issues which arise with telehealth that are related to privacy, accountability, consent and data protection.
- No more specific regulations have been found for non-face-to-face care.

CATALONIA



Main results



- The first model of non-face-to-face care in Catalonia is from the 2013-2016 period.¹⁵⁷ Since then, non-face-to-face care initiatives have been included in health and systems plans.^{158,159} One of the lines of work of the 2016-2020 Health Plan,¹⁵⁸ it focuses on incorporating digital health into care processes and structures and on the patient experience.
- There are non-face-to-face services accessible to the population, such as CatSalut Respon, eConsulta and Teleictus.
- The Department of Health (hereinafter, the Department) entrusts the Fundación TIC Salut Social (hereinafter, the Foundation) with the function of facilitating the transformation of the health and social care model through ICT.¹⁶⁰
- Specifically, the Foundation is developing the SISCAT non-face-to-face care model within the LATITUD project.

Results by analysis axes (1/2)



Governance, leadership and strategy of the model

- Non-face-to-face care is currently dealt with in the area of strategic lines and axes of work in the 2016-2020 Health Plan.¹⁵⁸ One of the lines of work of the plan pursues the incorporation of digital health into the processes and structures of care and the patient experience. Additionally, the SISCAT Information Systems Master Plan (2017)¹⁵⁹ dedicates a section to telehealth and mobility.
- The Department has promoted the LATITUD project to define the Strategic Plan and the roadmap for non-face-to-face care at SISCAT 2020-2025, in which this document is framed.
- There is a Mobility Master Plan (mHealth.Cat)¹⁶¹ of 2015, with a roadmap to 2018.
- The Department publishes a first *non-face-to-face care model in the health system of Catalonia 2013-2016*¹⁵⁷ to: (1) guarantee, improve and facilitate access to the Catalan healthcare system; (2) offer non-face-to-face care options as part of face-to-face processes, seeking efficiency in patient care and convenience; (3) modulate the demand for care more efficiently and (4) seek complementarity between the services offered and avoid duplication.



Non-face-to-face care service portfolio

- In the model developed for the 2013-2016¹⁵⁷ period, the groups of non-face-to-face care services and the respective tools and channels were specified.
- The non-face-to-face care services that are made available by the Department and CatSalut are: 061 CatSalut Respon (for emergency care for citizens), La Meva Salut (with functionalities such as eConsulta, which in this moment is carried out with primary care professionals and is extended to most providers) and projects related to specific specialities (such as Teleictus (TeleStroke)).
- 3 out of 4 centres surveyed in the 2018 Trend Map¹⁶² state that they use telemedicine services; telediagnosis-interconsultation is the most widely used. The most common pathologies for the disciplines of telediagnosis, telemonitoring and teleconsultation are rehabilitation and dermatology.
- In the context of the LATITUD project, the survey was relaunched with the aim of discovering the state of development of non-face-to-face care services at SISCAT. Once the analysis has been completed, the result will be published.



Service financing and contracting model

- The contracting of services in primary care combines a system based on the assigned population, on the type of activity (consultations, referrals to specialists) and on results (territorial, centre and team objectives). In specialized care, the contracting model combines activity (discharges, emergencies, etc.) with results (territorial objectives and care line/provider unit).¹⁶³ However, the agreements include incentives for non-face-to-face care, although not systematically.
- There are many kinds of non-face-to-face care projects that are promoted and executed by the providers thanks to funding coming mainly from sources of innovation at different levels (European, state or regional).

CATALUNYA**Results by analysis axes (2/2)****Technological and interoperability framework**

- All providers are integrated into the Digital Health Platform (PDS),¹⁶⁴ which includes: (1) the Shared Clinical Record of Catalonia (HC3), which is the common repository of clinical records; (2) La Meva Salut, as a digital space for the relationship of citizens with the health system; (3) the iS3 Interoperability Platform; (4) analytical tools and (5) the Digital Medical Imaging System of Catalonia SIMDCAT.
- The vast majority of SISCAT primary care centres use the same information system (eCAP). Hospitals do not have the same system, but there is a great diversity of products and solutions. All SISCAT centers are integrated into the Shared Clinical Record of Catalonia (HC3).
- Providers exchange data through interoperability standards (HL7) and coding standards (CIE). From an interoperability point of view, Catalonia has the iS3 platform, which channels the information needed to manage and monitor the workflows of health providers (referrals, appointments, data queries, laboratory processes, healthcare processes notifications).¹⁶⁴
- The AppSalut portal¹⁶⁵ accredits suitable health and social apps. The portal is currently evolving towards the mConnecta mobility platform, which will allow all types of healthcare platforms and devices to be accredited and integrated.
- The Information Systems Master Plan¹⁵⁹ proposes to develop the Electronic Health Record and SISCAT analytical repository, improve and renew clinical and care work environments, and the digitally transform care processes and models.
- The LATITUD project includes, among other things, the definition of the technological and interoperability framework for non-face-to-face care at SISCAT.

**Organizational model**

- The Department promotes the Master Plan for information systems by SISCAT, aimed at defining a digital health strategy in Catalonia.
- The Foundation¹⁶⁰ is a part of the Department that is responsible for promoting ICT innovation in the system. Among other things, it generates the annual Trend Map, which compiles the state of the art of technologies in SISCAT or develops digital health innovation projects.
- The Foundation is leading the LATITUD project to define the Non-Face-to-Face Care Model at SISCAT.
- The eSalut Office¹⁶⁶, which depends on the Department's ICT General Coordination is the structure that handles technological governance of the Digital Health Platform projects.
- The Catalan Agency for Health Quality and Evaluation (AQuAS)¹⁶⁷ is an entity attached to the Department which, given its role as evaluator of technologies and quality, in relation to the LATITUD project is responsible for defining the evaluation framework and the evaluation of non-face-to-face care services.

**Evaluation models**

- In the non-face-to-face care model of 2013-2016,¹⁵⁷ recommendations were presented regarding the service evaluation indicators, separated by service types: (1) telephone services and (2) technology platforms. The evaluation model includes activity indicators, assignment of professionals and citizens, uses, satisfaction or results (use of unplanned activity and health outcomes).
- The LATITUD project, promoted by the Department, includes among its objectives the definition of a framework for evaluating non-face-to-face care services at SISCAT.

**Ethical and legal regulatory framework**

- The GDPR applies in Catalonia, in accordance with Directive 95/46/EC. Additionally, the Catalan Data Protection Authority, in collaboration with the Spanish Data Protection Agency and the Basque Agency for Data Protection, has produced several documents which develop in more detail some sections of the directive.¹⁶⁸
- The Foundation acts as Delegate for Data Protection of Catalonia for the Department, CatSalut and the AQuAS (as well as other entities in its public sector that request it). It supports and monitors compliance with data protection regulations.¹⁶⁰



05

Conclusions

5.1. Conclusions of the analysis

5.2. Good practices identified

This section identifies the **major conclusions** of the analysis, considering a set of case studies (England, Scotland, Sweden, Denmark, the Netherlands, Canada, Kaiser Permanente, the Basque Country, Andalusia and Catalonia), and several areas of analysis (governance, leadership and strategy of the model, portfolio of non-face-to-face care services, and the finance and services contracting model, the technological and interoperability framework, organizational model, evaluation model and regulatory, ethical and legal framework).

The progress observed in technologies show that during the first decades of the 21st century most systems analysed advances in information technology became more focused on eHealth, with more emphasis on developing information systems (EHR), and ensuring interoperability, security and data protection. In parallel, non-face-to-face care services were included in national eHealth or digital health strategies, within the framework of several specific programmes.

Regarding the model's **governance, leadership and strategy**, face-to-face care is conceived as a complement to a broader digital health paradigm. No specific strategies have been identified in non-face-to-face care, but this is part of broader eHealth or digital health strategies. Regarding provider-driven success stories, there are examples of their extension throughout the health system. As for the main motivations for the promotion of non-face-to-face care models, these are aimed at accessibility, quality of care, proximity to care and/or integrated care between levels of care, with a specific focus on home care. In no case is it proposed as an alternative model for exclusively economic sustainability reasons.

The **digitization of information and health care support systems is the most mature area**, while experiences in remote patient monitoring are more at a level of specific projects and pilots, driven by providers.

Regarding the good practices identified, **addressing comprehensive digital health models based on patient empowerment with centralized coordination** is noteworthy. This is the case in Denmark, with a person-centred model and the promotion of their autonomy at home, a focus on prevention and a methodology for scaling successful local projects. In Scotland, a redesign of the healthcare delivery model in co-design with the public has been proposed. Finally, in Canada, health care is being considered closer to the home of patients.

Regarding the **non-face-to-face care services portfolio**, **no specific portfolio was identified** in the cases analysed. Most of the cases analysed have been building a portfolio of non-face-to-face care services based on the development of specific programmes. Regarding the coordination to scale providers' non-face-to-face care initiatives in the health system, all the case studies analysed have defined **coordination and collaboration instruments to facilitate the extrapolation of identified initiatives** in the territory with successful results, to make them extensible and include them in the portfolio of services at health system level.

Of the cases analysed, as good practices the following stand out **redefinition of care routes aimed at including non-face-to-face care according to users' needs**. In Scotland, a redesign of healthcare routes has been considered, including non-face-to-face care, and the consideration of new user profiles in the context of a digital society. In the United States (Kaiser Permanente), an integrated model has been proposed with active patient management that promotes self-care, as well as the redesign of care routes with the provision of non-face-to-face care services that takes into account patient preferences.

In the **financing and service contracting model**, sources of funding for complementary non-face-to-face care initiatives were identified. Specifically, **three funding strategies** for non-face-to-face care initiatives were identified: (1) **centralized**, through budget allocated to digital health plans; (2) **decentralized**, with sums from the providers themselves and (3) **funds from European and multilateral bodies, clinical trials or scientific studies**. It is also worth noting the evolution of the **contracting models towards a contracting paradigm based on health outcomes**. In this sense, recruitment models have been identified based on healthcare results, which incorporate innovation in the provision of the service and which encourage non-face-to-face care.

Recruitment models are evolving more and more towards one **procurement framework based on health outcomes**, which incorporates innovation in service delivery and the incentive to use non-face-to-face tools.

As for good practices, **funding and incentive for non-face-to-face care initiatives stand out**. In the Basque Country, common objectives have been defined between levels of care that encourage non-face-to-face care, and contracting models by results have been incorporated. In Sweden, a Digital Health Agency has been created with a specific budget, and a model for contracting services has been defined to facilitate non-face-to-face care throughout the territory. Finally, public-private partnership models for non-face-to-face care have been established in the Netherlands.

Regarding the **technological and interoperability framework**, initiatives for the building common technological infrastructures were identified. The widespread use of interoperability standards and models, both coding (SNOMED CT, CIE, etc.) and interoperability (HL7, FHIR), are also being considered. Regarding the definition of health technology validation procedures aimed at reliability and security, **trends in defining strategies are identified to ensure the reliability and security of the data** registered through health technology (apps or medical devices), through certification protocols and establishment of specific requirements.

The importance of a **model of guarantees in the recording health technology data in the clinical record** was noted. In the cases under study most oriented towards a digital health model, the data recorded using healthcare technology are integrated into the patient's medical record, regardless of the way in which care is provided (face-to-face or non-face-to-face) and who records it.

Regarding the technological and interoperability framework, the most of the cases studied have a **decentralized technological model with non-face-to-face care solutions specific to each provider**.

As for good practices, an approach to **decentralized models oriented towards a common long-term infrastructure** was identified. In the United States (Kaiser Permanente), the integration of all healthcare (both face-to-face and non-face-to-face) on the same platform and a focus on cybersecurity were proposed.

On the **organizational model axis**, the most mature case studies in digital health are those with public entities that drive non-face-to-face care. In these cases, an organizational model is identified with specific transversal structures from which the strategic design, implementation and evaluation of non-face-to-face care models are led. In addition, the development of the **digital skills of the main actors** is considered a key factor, in addition to training strategies in digital skills to all stakeholders involved in health, including the public. Public-private partnerships are also identified as an opportunity to facilitate and address non-face-to-face care services to ensure their quality and sustainability.

As good practices the **governance of non-face-to-face care by certain public entities stands out**. In Scotland, the Scottish Centre for TeleHealth and TeleCare (STTC) was set up to support the development of telehealth, and digital literacy training is offered to all stakeholders. Canada created the Infoway entity, aimed at providing non-face-to-face care tools and solutions to all provinces and territories and providing support in their implementation.

The **evaluation model was** is identified as **the area with most things pending**. Only the most digital health-oriented case studies have one **specific assessment framework for non-face-to-face care** that incorporates parameters for evaluating health outcomes or patient experience.

In terms of good practice, the following cases regarding **evaluation of the results of non-face-to-face care and its impact** are noteworthy. In Scotland, the impact of telehealth and tele-assistance initiatives is assessed. It also includes the evaluation of the patient experience, as well as guidelines for comprehensive evaluation of all phases of the initiatives: design, implementation and execution. In Canada, digital telehealth solutions are being evaluated from an integrated perspective. And finally, in England, Technology Enabled Care Services (TECS) are specifically evaluated, with an orientation towards facilitating their selection, tendering, deployment and evaluation to the providers. Both health and economic sustainability outcomes are also assessed.

Finally, on the axis of the **regulatory, ethical and legal framework**, **the focus is on the overall compliance with the GDPR**. European cases are governed by the regulatory framework of the GDPR. However, in some cases they have also developed **specific patient data protection and security laws** to regulate the way in which data are transferred, protected and accessed.

Regarding good practices, the **regulation and the establishment of the regulatory framework aimed at facilitating the incorporation of cutting-edge technologies** can be highlighted. In the Netherlands, a regulatory framework for mHealth has been defined, a benchmark in Europe, and digital solutions are being accredited in the health sector that allow the use of blockchain.

The following is a brief summary of the good practices identified in each of the axes of analysis:

Governance, leadership and model strategy: approach to comprehensive digital health models based on patient empowerment with centralized coordination:



Denmark

- Model focused on the person and the promotion of their autonomy at home.
- Focus on prevention.
- Methodology for scaling up successful local projects.



Scotland

- Redesign of the healthcare delivery model co-designed with the public.



Canada

- Health care closer to the patients' homes.

Non-face-to-face care service portfolio: redefinition of care routes aimed at including non-face-to-face care according to users' needs:



Scotland

- Redesign of care routes including non-face-to-face care.
- Consideration of new user profiles in a digital society context.



United States (Kaiser Permanente)

- Integrated model, with active patient management and that promotes self-care.
- Redesign of care routes with the provision of non-face-to-face care services that takes into account patient preferences.

Financing and contracting model for services: funding and incentive for non-face-to-face care initiatives:



Basque Country

- Definition of common goals between levels of care to encourage non-face-to-face care.
- Incorporation of contracting models for results.



Sweden

- Creation of a Digital Health Agency to fund a specific budget.
- Definition of a service contracting model to facilitate non-face-to-face care throughout the territory.



Netherlands

- Public-private collaboration models for non-face-to-face care.

Technological and interoperability model: decentralized models oriented towards a common long-term infrastructure:



United States (Kaiser Permanente)

- Integration into a single platform of all care (both face-to-face and non-face-to-face).
- Focus on cybersecurity.



Canada

- Creation of the Scottish Centre for TeleHealth and TeleCare (STTC), aimed at supporting the development of telehealth.
- Training in digital competence for all stakeholders.



Canada

- Creation of Infoway, aimed at providing non-face-to-face care tools and solutions to all provinces and territories and providing support in their implementation.



Scotland

Evaluation model: evaluation of non-face-to-face care in results and its impact:



Scotland

- Evaluation of the effect of telehealth and tele-assistance initiatives.
- Inclusion of the evaluation of the patient experience.
- Comprehensive evaluation guides for all phases of the initiatives: design, implementation and execution.



Canada

- Digital telehealth solutions are evaluated from an integrated perspective.



England

- Specific evaluation of the Technology Enabled Care Services (TECS), aimed at facilitating the selection, tendering, deployment and evaluation of the providers.
- Both health and economic sustainability outcomes are assessed.

Regulation and the establishment of the regulatory framework aimed at facilitating the incorporation of cutting-edge technologies:



Netherlands

- Regulatory framework of the benchmark mSalut in Europe.
- Accreditation of digital solutions in the health sector that allow the use of blockchain.



06

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