eHealth strategy and implementation activities in the Netherlands

Report in the framework of the eHealth ERA project

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eHealth ERA
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About *eHealth ERA* and this report

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The European Commission, Directorate General Information Society and Media, supports this project to contribute towards greater transparency across Member States and other participating countries on eHealth strategies as well as innovation-oriented research and technology development (RTD) initiatives, including the coordination of Member States' eHealth strategy formulation and implementation. Thereby the project aims at fostering the establishment of an effective European Research and innovation Area (ERA) in eHealth. All project results are available on the internet and can be accessed at the *eHealth ERA* website: www.ehealth-era.org.

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1 Executive summary

Strategic perspective

The primary aim of the Dutch government's IT policy for the health care sector is to improve affordability, access and quality by creating the preconditions for an optimum and safe usage of ICT. The introduction of the Electronic Health Record (EHR) with corresponding infrastructure will function as a lever for other ICT applications in health care (e.g. telemedicine).

Implementation perspective

The Dutch Ministry of Health, Welfare and Sport is working with the players in the health care sector to build a nationwide system for the safe and reliable electronic exchange of medical data. IT suppliers will be able to use Dutch designs for IT architecture in the health care sector and the accompanying specifications to build the necessary functions into the systems of the health care providers, thus enabling the electronic exchange of health care information on a national scale. An important element which should be built in in this system is the electronically access of the patient to his own data.

Future activities

An incremental strategy involves getting people onside. A managerial structure has been established to encourage and support the development and uptake of new EHR applications and other IT initiatives in the health care sector.

The IT & Innovation Steering Group, consisting of a selection of representatives of the umbrella organizations (Ministry of Health, Welfare and Sport, NICTIZ, health care providers, patients and insurers) meets once every six weeks under ministerial leadership to take decisions on and monitor the progress of such IT and innovation projects.

2 Healthcare system overview[1]

The healthcare system in the Netherlands consists of three compartments.

- The first covers long-term care and the so-called 'uninsurable' medical risks. The care in this compartment is largely provided and funded by the government via the Exceptional Medical Expenses Act (AWBZ).
- The second covers short-term medical care (cure) which should be universally accessible. The care in this compartment is provided/funded by the government and insurers.
- The third covers the care that is not included in the first or second compartment and for which everyone can voluntarily insure themselves; typical examples are dental treatment and alternative medicine.

The ageing population will intensify the pressure on the Dutch healthcare system. More and more people will develop chronic conditions such as diabetes, cardio-vascular disease and bronchial complaints. The accessibility, affordability and quality of the care must continue to be guaranteed. It is for this reason that a number of changes were introduced in 2006.

These changes, which are designed to prepare the system for the future and to make the healthcare more effective, efficient and customer-focused, necessitate a better distribution of responsibility among the key players. The patient/client occupies a central role in the current healthcare system in the Netherlands, with more opportunities but also more responsibility. It is up to the patient/client to bring about improvements to the quality. A well-informed patient can single out the provider that offers the best care for his condition. This will spur healthcare providers (doctors, hospital boards, etc.) to raise their performance. Medical insurers will bear more responsibility for matching the demands of the consumer with the offerings of the providers. It is the government's job to oversee quality, accessibility and affordability.

The Dutch healthcare system takes the form of an insurance system which is run by private providers with a public remit. This set-up also applies to the ICT policy and role allocation in the healthcare sector. The government, in this case the Ministry of Health, Welfare & Sport, wants to promote the use of ICT in healthcare with the ultimate aim of improving affordability, accessibility and quality. It will do so by creating a climate which is conducive to optimal and secure use of ICT. The healthcare providers bear primary responsibility for the quality of the care and the use of ICT systems.

[1] Source: ICT in Healthcare: An international Perspective; Ministry of Health, Welfare and Sport, May 2006.

3 Strategic eHealth plans and policy measures

3.1 National and regional eHealth policy

Main actors

Healthcare is provided by humans – and, as everybody knows, humans are not infallible and sometimes make mistakes. Technology has a lot to offer in support of human effort. One area where ICT can play a crucial role is the exchange of medical data. If healthcare providers were to have access to accurate and recent data, they would be in a far better position to provide the requisite care.

The Ministry of Health, Welfare and Sport is working with the National IT Institute for Healthcare (NICTIZ)[2] and the Central Information Point for Healthcare Professions (CIBG)[3] on the development of a nationwide system for the electronic exchange of medical data. This system is known as the Electronic Health Record (EHR). However, the promotion of ICT in healthcare (eHealth) does not stop at the geographical borders of the Netherlands. Many initiatives have also been launched in the international domain, aimed at improving the affordability, accessibility and quality of healthcare through the deployment of ICT (e.g. Large Scale Projects, SNOMED, Sustainable Telemedicine).

Another – related – trend is increasing mobility among patients and professionals. Further objectives are being pursued at political level to give shape and form to trans-border mobility and (preventive) medicine.

eHealth roadmap: background, targets, progress, prospects

The primary aim of the Dutch government's IT policy for the health care sector is to improve affordability, access and quality by creating a the preconditions for an optimum and safe usage of ICT. The introduction of the Electronic Health Record (EHR) with corresponding infrastructure will function as a lever for other ICT applications in health care (e.g. Telemedicine).

The Dutch Ministry of Health, Welfare and Sport is working with the players in the health care sector to build a nationwide system for the safe and reliable electronic exchange of medical data. IT suppliers will be able to use Dutch designs for IT architecture in the health care sector and the accompanying specifications to build the necessary functions into the systems of the health care providers, thus enabling the electronic exchange of health care information on a national scale. An important element which should be built in in this system is the electronically access of the patient to his own data.

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[2] The NICTIZ is a neutral and independent organization which was founded in 2002 by various players in the healthcare sector. It is responsible for the design and construction of the nationwide basic infrastructure and for the development of standards for an Electronic Health Record. For more information see www.nictiz.nl

[3] The CIBG (www.cibg.nl) consists of nine different units and is an executive arm of the Ministry of Health, Welfare & Sport. The registration of data and the provision of information are among its most important tasks. Each unit specializes in a specific segment of the care market.

An incremental strategy involves getting people onside. A managerial structure has been established to encourage and support the development and uptake of new EHR applications and other IT initiatives in the health care sector.

The IT & Innovation Steering Group, consisting of a selection of representatives of the umbrella organizations (Ministry of Health, Welfare and Sport, NICTIZ, health care providers, patients and insurers) meets once every six weeks under ministerial leadership to take decisions on and monitor the progress of such IT and innovation projects.

3.2 Investment and reimbursement framework

The national facilities for the infrastructure have been funded by the government. Further, the government will contribute financially to the implementation of the EMD/WDH in the pilot regions, whereby the IT suppliers who wish to participate in the pilot project will get the chance to test their adapted systems. The local users will pay for implementation at local level – connecting the system with the National Switch Point – and the data exchange.

A detailed cost-analysis has been drawn up for the implementation of the EMD and the WDH. It presents the incidental (one-off) and permanent costs of the EMD/WDH insofar as these are known at present. Talks are underway with the health care providers regarding financial incentives to promote the use of the EHR.

The national facilities for the infrastructure will be funded by the government – at least in the early years. This consists of the development and management of the National Switch Point and the registers of care providers and health insurers. The government will also fund the first issue of the UZI pass and the card-reader. Further, the government will contribute financially to the implementation of the EMD/WDH in the pilot regions, whereby the ICT suppliers who wish to participate in the frontrunner project will get the chance to adapt their systems. The local users will pay for implementation at local level – connecting the system with the National Switch Point – and the data exchange.

The annual budget for ICT – currently intended for all components of the basic infrastructure and the EMD/WDH implementation program – amounts to over € 35 million.

3.3 eHealth infrastructure

3.3.1 Physical networks for eHealth in the Netherlands

AORTA basic infrastructure

In recent years the Dutch government, the National ICT Institute for Healthcare (NICTIZ) and healthcare professionals have together laid the foundation for nationwide electronic communication in the healthcare sector. ICT suppliers can use Dutch designs for ICT architecture in the healthcare sector and the accompanying specifications as a basis for integrating the required functions in the systems of healthcare providers and insurers, thereby enabling electronic exchange of information on a national scale. The systems of the healthcare providers and insurers need to be modified so that they can be linked to the basic infrastructure and in order to realize the desired level of security and accessibility. The national basic infrastructure for healthcare consists of a number of components and is due for realization in 2006.

A) National registration systems for identification and authentication of patients, healthcare providers, insurers and other care agencies

National electronic information-exchange involves the linking of data. To ensure that data is registered consistently and that patients, healthcare providers and insurers communicating at a distance are properly identified, unique national identification numbers will be applied, namely:

1 The Citizen Service Number (BSN) for patient identification.

The introduction of this number at all government organizations will be regulated by law. Separate legislation will be drawn up for the use of this number in the care sector.

2 Unique Healthcare Professional Identification (UZI) for the identification of care providers.

A register of care providers has been set up, which also sees to the issuing of UZI passes and UZI certificates for identifying and authenticating care providers. The first passes were issued at the start of 2006.

3 Unique Health Insurer Identification (ZOVAR) for the identification of health insurers.

A register of health insurers will also be set up and certificates will be issued to confirm identities when data is exchanged electronically. The certificates will be issued from January 2007.

B) A National Switch Point (LSP) with a reference index for routing, identification, authentication, authorisation and logging

On 31 January 2006 the National Switch Point (LSP) for the healthcare sector was established. This is an important step, as the National Switch Point is the 'traffic control tower' behind the secure electronic exchange of up-to-date patient data throughout the Netherlands. In the summer of 2006 the National Switch Point will be tested with ICT suppliers in the healthcare sector. Afterwards the healthcare providers can be connected to it. This is explained further in section 3.3.

The construction of the National Switch Point was commissioned by NICTIZ. After a European tendering procedure the contract was awarded on 8 November 2005. Actual realization took less than three months.

With the National Switch Point as the traffic control tower, healthcare professionals all over the country can retrieve up-to-date patient information from the systems of hospitals, pharmacies and General Practitioners (GP's). The primary advantage of the National Switch Point is that care institutions and suppliers of ICT applications for the healthcare sector have one point of contact for specific services:

- The National Switch Point manages a 'national reference index' which can swiftly track patient data when a healthcare provider requests specific information. The patient data are not stored at a central point. The reference index keeps track of which patient data are stored in which information system in the country.

- At the same time the National Switch Point confirms that information is supplied only to healthcare providers with the requisite authorization. The switch point checks the provider against the national UZI register. The provider must prove his identity with an UZI pass.

- The National Switch Point also confirms with the aid of the Citizen Service Number that the correct patient data are being supplied. The government is responsible for issuing and controlling this national patient identification number.

- Finally, the National Switch Point ascertains which information the healthcare provider may access (authorization) and keeps a record of the provider and the consulted data (logging), so that the authorization regulations can be monitored.

C) Care Service Providers for communication and services between local environments and the central LSP environment.

So, to promote safe and fast communication between care organizations across the country a National Switch Point (LSP) has been established. Care organizations can connect with the LSP via the network connections of commercial providers of communication, application and content services. In the long run these 'Care Service Providers' will require certification.

In the interim, a system has been devised whereby market players can be audited on the basis of a qualification scheme. A successful audit combined with a successful LSP acceptance test leads to recognition as a Care Service Provider.

D) Information systems of care organizations

Care organizations need to ask their supplier to modify their information systems so that the data is available 24 hours a day 7 days a week, and can be accessed by authorized users. This means that the data must be stored and secured in a structured system and that the local systems can connect with the National Switch Point. Healthcare information systems need to satisfy the so-called GBZ standards for well-managed healthcare systems, whereby they also meet the international security guidelines. In addition, care organizations, healthcare providers, and local healthcare information systems must be identifiable with a unique nationally applicable number.

E) Security and Authorization

Players in the healthcare sector and patients must be confident that the data transport and storage and access to patient information is adequately secured. A whole array of instruments has been developed for this purpose. Access can be secured as follows: before access to certain information is granted, the identity of the applicant is ascertained (identification) and confirmed (authentication). The rights of the applicant to consult the information are then checked out (authorization). Messages are encrypted to ensure that the information cannot be intercepted during transport. To optimize security all organizational and technical aspects need to be properly regulated. The infrastructure is Public Key Infrastructure (PKI), a system of organizational and technical rules, including authentication (Is the applicant really who he claims to be?), data encryption and an electronic signature. PKI is the most commonly used security standard. One single agency confirms the access entitlement of the healthcare provider, institution or computer system and issues an electronic certificate. This certificate is then used to determine the access rights and register the identity of the sender.

F) Message standards

Information exchange between healthcare professionals requires message standards at various levels. Messages at application level are defined from one information model based on the international HL7 version 3 standard. The Dutch have decided to standardize on 'HL7 version 3' messages because this is an international standard with the potential to develop with one standard from a national e-medication record to a national Electronic Health Record. The specifications have been worked out in dialogue with the national HL7 organisation (HL7 Nederland) and are being incorporated in the international HL7 standard.

As healthcare information services cover a broad spectrum it has been decided to gear further development to the generic infrastructural facilities which will at the very least be needed to realize the e-medication record. It is within this context that the basic infrastructure specifications have been drawn up. These will then be extended and optimized.

3.3.2 Legal and regulatory framework

Legislative framework

The provision of responsible care and the use of modern tools in present-day healthcare falls under the Quality of Healthcare Institutions Act (Kwaliteitswet Zorginstellingen). The Medical Treatment Act (Wet Geneeskundige Behandelovereenkomst) requires healthcare providers to keep records and the Personal Data Protection Act (Wet Bescherming Persoonsgegevens) sets privacy criteria for the processing of personal data. The current legislation, which applies to 'paper' records, offers an adequate legislative framework for an EHR. The legislative framework will, however, have to be amended to cover information searches with the Citizen Service Number (BSN) and to encourage all healthcare providers to make use of Electronic Health Records:

A) Legislation on the use of the Citizen Service Number (BSN) in healthcare

This legislation regulates the use of a national identification number in the healthcare sector in a way that enables medical data to be uniquely linked to one patient across multiple information systems. The Bill is awaiting debate by the Dutch Parliament. Healthcare workers and organizations will be obliged to enter the BSN in their records, confirm that it belongs to the person in question, and to use it in the electronic exchange of data.

B) Legislation on the Electronic Health Record (EHR)

The aim of this legislation is to address issues, such as security, data quality, authorization and access (by the patient amongst others), standardization and the actual use of the EHR. Legislation for the nationwide Electronic Health Record should regulate at the very least:

- (mandatory) connection of healthcare providers with the National Switch Point;
- electronic availability of patient data via the National Switch Point;
- secure and reliable information exchange via the National Switch Point.

Initially, the legal obligation will apply only to healthcare providers who are required to allowed to use the EMD and the WDH. The legislation will be extended to other providers and other parts of the Electronic Health Record if these parts are operational. The Bill will be send to the Parliament by the end of this year.

3.3.3 Education and training on ICT

Education and training on ICT, more specific on EHR's is part of the implementation strategy together with the regions. This strategy is chosen because care professionals have shown interest in the impact of eHealth when it is about to change their personal environment.

More in general it has been noted that in education of health care there is little attention to the (future) impact of eHealth (esp. EHR's & Telecare) on the Healthcare sector in general and the personal working environment of each professional in particular.

NICTIZ and the Ministry of Health intend to set up an action plan to incorporate and strengthen the attention to eHealth in education and training programs.

3.4 eHealth applications and services

3.4.1 Electronic Health Records

Nationwide Electronic Health Record

One of the primary aims of the Dutch government's IT policy for the health care sector is to improve affordability, access and quality by creating a climate which is conducive to optimal and secure use of IT. The government intends to achieve this by the nationwide implementation of an Electronic Health Record (in Dutch: Elektronisch Patiënten Dossier-EPD) and the requisite IT infrastructure. The Dutch government is working with the players in the health care sector to build a nationwide system for the safe and reliable electronic exchange of medical data. IT suppliers will be able to use Dutch designs for IT architecture in the health care sector and the accompanying specifications to build the necessary functions into the systems of the health care providers, thus enabling the electronic exchange of health care information on a national scale.

The Electronic Health Record is a virtual record, comprising a set of applications which are connected to the national infrastructure, AORTA. Data from different health care information systems are linked in the EHR. Authorized care providers can consult these data to obtain a clear picture of a patient's medical history or medication use. The digital exchange between health care providers takes place via the AORTA model, an architecture consisting of different components, including the Citizen Service Number (BSN), the Unique Healthcare Provider Identification (UZI), the National Switch Point (LSP) and the information systems used by the health care providers. Together these components form the 'chain of trust' in which medical data can be safely shared.

The National Switch Point can be compared to a traffic-control tower which regulates the exchange of patient data between health care providers. It was built in January 2006 with a reference index for routing, identification, authentication, authorization and logging. Health care providers can use the National Switch Point to share up-to-date information quickly and safely. The information in local systems needs to be systematically stored and secured and must fit the criteria for a Well Managed Care System. For the purposes of identification and authentication we distinguish between the Citizen Service Number (BSN) for patients and the Unique Healthcare Provider Identification (UZI) for health care providers. The BSN makes patients uniquely identifiable in electronic transmission. The composition and amount of the numbers are the same as the current social security number (so-called sofi number). Health care providers can look up and check out the BSN via the care sector message service

(SBV-Z). Patients need to be assured that their records can only be accessed by the authorized health care provider. Patient privacy is guaranteed by, amongst others, the Unique Healthcare Provider Identification (UZI) card. A health care provider uses this card to report and confirm his identity in the electronic transmissions.

The nationwide EHR will be introduced in the Netherlands on the basis of the principle that the health care providers are primarily responsible for the quality of the health care and the role of IT systems in providing it. The government's role is largely facilitative, i.e. it will enact the required legislation, create the funding conditions and orchestrate the overall programme.

The EHR will consist of a set of applications linked to the national infrastructure. The government has opted to deploy the EHR gradually and start by the launch of an Electronic Medication Record (EMD) and a Patient Summary Record for the Locum GP (WDH – Waarneem Dossier Huisartsen – Record for the GP who is in service evenings and in the weekend). Many other applications, chapters of the EHR, are in the pipeline.

The Electronic Medication Record (EMD) enables authorized health care providers to use their own information system to access information on the medication taken by individual patients. This means, amongst other things, that patients can be prevented from taking counter-productive and incompatible medication.

Locum GP's can use the WDH to obtain a summarized version of the patient's medical history from the patient's own GP. This professional summary contains, amongst others, information on the main health problems and medication use. A return message informs the patient's own GP of the diagnosis and the action taken by the locum.

Detailed information about the programme can be found in the roadmap: ICT in Dutch Health care, an international perspective. *(Ministry of Health, Welfare and Sport (May 2006) and The Dutch Approach, Status quo on nationwide EHR (Ministry of Health, Welfare and Sport, April 2007)*

EMD/WDH implementation programme

The national infrastructure will usher in a new phase for IT in health care. It is for this purpose and in response to a motion in the Dutch House of Representatives that the Ministry of Health, Welfare and Sport has set up a separate implementation organization in the ministry. (Program implementation EMD/WDH and the national identification number BSN). Since 2006, this organization has been coordinating the deployment of the EMD/WDH in the 11 pilot regions and the implementation of the BSN on a national scale.

The deployment of the EMD/WDH began with a Proof of Concept (POC) phase in which the various components of the architecture and health care information systems were tested in 2006 in relation to each other. Various suppliers qualified for an approved health care information system.

The plan is then to perform a broader deployment of EMD/WDH in the pilot regions. The pilots will generate experience of working with EMD/WDH and the implementation of the two applications. They will also ensure that the players are ready and the facilities in place for the nationwide deployment. The region Twente will start the ball rolling for WDH and the regions Amsterdam-Noord and Rotterdam-Rijnmond for EMD. The rest are gearing up for EMD/WDH on the basis of the experience gleaned from the pilots.

An independent organization has been recruited to perform evaluations in the regions which pioneer EMD/WDH. These evaluations will be used to improve support elements, such as

manuals, information and instruction, the organization of the launch, and the operations of the services around the central functions.

IT & Innovation

An incremental strategy involves getting people onside. A managerial structure has been established to encourage and support the development and uptake of new EHR applications and other IT initiatives in the health care sector.

Also, a Platform meeting will be held several times a year with almost all of the umbrella and professional organizations in the health care sector to identify desired health IT developments and to submit practical proposals for the IT agenda. The Platform thus formulates the agenda for a Steering Group

The IT & Innovation Steering Group consisting of a selection of representatives of the umbrella organizations (Ministry of Health, Welfare and Sport, NICTIZ, health care providers, patients and insurers) meets once every six weeks under ministerial leadership to take decisions on and monitor the progress of such IT and innovation projects.

Proposals which are approved by the Steering Group are then incorporated in the NICTIZ programme. The following applications will become operational in the near future:

Access to patient record and Selfmanagement

The program 'Patient Access to the EHR' enables the patient in the near future will be able to view his own medical information electronically as well. EHR access empowers the patient. Through access to the EHR the patient also can verify where information about himself is stored, which care providers are allowed to view this information and who viewed what information, and when. (See also 3.4.3 and 3.4.4)

e-LAB

The e-Lab program focuses on the digitalization and optimization of the communication and information for the request for and receipt of lab- and diagnostic results, the access to historic results and the results of Point of Care tests and self tests for patients, care providers and national institutes.

EMD Plus

The EMD plus program aims to develop additional functionality for the Electronic Medication Record (EMD) and the provisioning of EMD to a wider range of care providers. The first release of EMD limits itself to viewing of the history of delivered medications to a patient. The EMD plus program aims to extend this function to further improve safety and effectiveness of prescription, delivery and usage of medication.

e-Emergency dataset

The purpose of the project e-Emergency dataset (in Dutch: 'elektronisch spoeddossier') is to develop an application for care professionals in ambulances and at the emergency care with which they quick and accurate can get a view on the relevant medical information on the patient. The 'professional summary' (locum) of the GP, which is used in the WDH project, forms the basis for the e-Emergency dataset.

e-Diabetes record

The e-diabetes record consists of a collection of information which has to be available for patient care for and between professionals, and, very important, the patient himself.

e-Pathology record

Dutch Pathology labs are connected to a national database which contains all pathology-results. Through a computer network the labs can exchange information. In 2006 the PALGA foundation and NICTIZ have started to work together to develop a design for exchange of information between pathologists through the national infrastructure. The first implementation is expected in 2008.

e-Radiology

The exchange of radiology images and reports between care professionals mostly is executed with CD-roms, which are manually burned in one hospital and read into the systems (PACS/RIS) of the receiving hospital. This approach is not only labor intensive, but also leads to mistakes. Information security is minimal and images can not always be exchanged between the systems in a region. An electronic radiology network could simplify and improve the processes.

EHR for Revalidation

Unanimously the 24 revalidation institutes in the Netherlands have agreed upon the joint development of an EHR for the revalidation sector. The objective is to let all institutes be in the possession of an EHR by the end of 2008.

Electronic Children's Record

The Electronic Child Record is like the EHR mentioned in the coalition agreement of the government ("Coalitieakkoord"). The Electronic Child Record is an automated system for healthcare for children (0-19 years) It is a medical file for doctors and nurses in consultation offices and GGD's[4]. The Electronic Child Record will be implemented in 2009.

Electronic Client Record

The Electronic Client Record objective is: The functional development and testing at pilot-sites of an electronic record for the nursing and long term care sector. The Electronic Client Record structures care and organisational information in an institute. The project 'eenheid van taal' (unity of language) aims at the standardization of interfaces for information exchange within and between organisations.

3.4.2 ePrescription

The Ministry of Health strives to a more flexible process and a more customer friendly design of the recipes traffic with less (administrative) burdens for those involved: prescribing physician, pharmacist and citizen. Digital recipes traffic - both for first recipes as for repeated recipes - has the future and has been implemented at several locations. The operational management of a prescribing physician and a pharmacist become much more efficient.

The citizen also profits: the prescribed medication most times is already available when he arrives at the pharmacy.

The further change to digital recipes traffic is helped by the introduction of a digital sign for physicians (through the new Medicine Act), the Citizen Service Number (BSN) and the Electronic Medication Record (EMD). There is also the question how to make the administrative processes for repeated recipes more efficient. This concerns the logistic

[4] Local public health institutes

process of request, prescription and delivery of a repeated recipe between physician, pharmacist and patient. Furthermore there is the question whether the volume of repeated recipes can be lowered through prescribing for a longer period of time.

3.4.3 Health cards

The Netherlands introduced on 1 January 2006 the Electronic Health Insurance Card. Insured people get automatically or if not can ask these card form the insurance companies. The Netherlands is playing an active role in the debate on the electronic insurance card which the EU plans to introduce in 2008. Nevertheless patients will not be able to use the European insurance card, to access their own records

In care the electronic access of citizens to their EHR-data, should be done through a safe and secure connection. On the issue of patient access to their own medical records the Dutch are focusing on the electronic national identity card which will be introduced in 2008/2009.

The ministry of the Interior and Kingdom Relations currently creates functionality on the Dutch Identity Card (eNIK) to enable electronic signing and identification for citizens, and enables them to protect messages.

Some more information on the 'Patient Access' program:

Why access for the patient to the EHR?

The program 'patient access to the EHR' in the near future will give the patient/citizen the possibility to view his own medical data. Through patient access the citizen gets more control over his own care and health.

Privacy is an important aspect and therefore high requirements are set on safe exchange of medical data. Through patient access the patient/citizen can control where medical data about his health is stored, which professionals can access which data, and who has viewed what data and when.

The patient/citizen can make an objection against viewing of specific data and can make it inaccessible for specific professionals. In the future, the patient/citizen will, if possible electronically control the access to his information himself. Professionals should inform their patients on the risks of making data inaccessible for certain professionals.

Furthermore the patient in the future can add, change or delete data in a personal health record. A personal health record ('self management record') can contain important information for professionals. A diabetes patient for example, can provide professionals with his glucoses values electronically. (see also 3.4.4).

3.4.4 Health portals

Kiesbeter.nl

In 2005 a portal was set up in the Netherlands offering comparative and health information to members of the public. This portal contains information on hospitals, health insurance, medication, patient interest and medical issues (www.kiesbeter.nl). In 2006 and 2007 the

portal was further extended with information on, amongst others, GPs, physiotherapists, residential care and nursing homes, homecare, mental health care and care for the handicapped. The comparative information will make use indicators of good health practice. These indicators are not only based on medical quality aspects but also on personal experiences of clients (Consumer Quality Index)

The portal has been harmonized with the EU portal site in 2006.

Healthportal for patients

The Dutch Patients and Consumers Federation initiated a plan for a Healthportal for patients. Each patient should have access to a portal with health information to manage their own health process. The national IT & Innovation Steering Group asked for a feasibility study by the end of this year.

3.4.5 Risk management and patient safety

Focus areas of the Minister of Health on quality is written in the policy document "Koers op Kwaliteit" (Course on Quality july 6th 2007).

The ambition is safe care at a high qualitative level, customer focused, with enough possibilities to choose and with clear rights and obligations for all involved. We focus on the following three aspects:

1. Visible quality – Insight in results of care providers and the judgment of clients on their services; control on fast availability and confidentiality of this information.

2. Natural customer focus – Strengthen the clients influence on care through the program 'strong client in care' of which a proposal act 'Client & Quality of Care' is an important part.

3. Self-evident safety – Direct serious effort in patient safety through a program 'safe care'. A plan for medicine safety and the introduction of the EHR are part of this program.

eHealth will form an important supporting and enabling role in these initiatives.

3.4.6 Patient identifiers

In order to provide safe and reliable electronic communications, it is necessary for patients and caregivers to be able to electronically identify themselves. For patient identification, everyone in the Netherlands will be issued a Citizen Service Number (BSN). This number is being developed by the Ministry of the Interior and Kingdom Relations and will replace the current social-fiscal number. A special act for use of this number in health care is currently in Parliament (see also paragraph 3.3.1. a)

Care providers will be given an identity pass known as the 'UZI'-pass (Unique Healthcare Provider Identification) for the use of reliable exchange of patient data (EHR). Both BSN and UZI will be mandatory when electronically exchanging patient data.

3.4.7 Personal wearable and portable communicable systems

Currently some first pilots are taking place, mainly from the medical technology industry instead of the ICT industry. Sometimes from the government; e.g. a study on the use of RFID in health care or a study by the Rathenau Institute on the impact on 'Ambient Intelligence'.[5]

Some first ethical discussions on the pro's and cons of integration of devices in clothing or the body itself have started as well.

A national strategic vision has not been formulated (see 3.4.9).

3.4.8 Other ICT tools assisting prevention, diagnosis, treatment, health monitoring, lifestyle management

Numerous initiatives on prevention, diagnosis, treatment, health monitoring and lifestyle management take place and ICT and internet play a crucial role.

An integrated vision on the impact and role of ICT in areas like prevention, disease (self)management, lifestyle management has not been formulated (see 3.4.9).

3.4.9 Telemedicine services

The introduction of the EHR will function as a lever for other ICT applications (e.g. telemedicine). There is no separated formulation of a national telemedicine strategy. There are a lot of services, pilots and programmes from which telemedicine is a part. In the coalition programme there is foreseen in a programme Innovation in the care.

Some actions:

- Stimulation programs like Social Sectors & ICT (2005 -2009) have subsidized and will subsidize further uptake of first best ICT-practices.
- Institutes like NPCF (Dutch Patients and Consumers Federation) and Actiz (Branch organisation for entrepreneurs in (home)care, living, wellness, prevention and related services) are setting up programs, especially for elderly, handicapped and chronic diseased persons with in some cases financial support of the Ministry of Health Welfare and Sport.
- A study of empirica & Flim P&C in the first half of 2007 indicate many drivers for a serious uptake in coming years, but also shows the barriers provided by the current organisation and financing of the healthcare sector which have to be broken down first.
- The Ministry of Health Welfare and Sport participate in the EU-programme Ambient Assisted Living (KP7).

Given the close relation with the EHR NICTIZ has set Telemedicine on their priority list for 2008 and further.

[5] Ambient Intelligence: The impact of smart healthcare technology on (personalized) healthcare

3.5 Interoperability and standards

International development of standards is of great importance to ICT in healthcare. NICTIZ uses international standards as much as possible, like ISO, CEN and HL7. The Netherlands are no island. In the AORTA infrastructure the standard HL7v3 was chosen for communication between healthcare providers. This year the first part of the EN 13606 standard has been published. This has no influence on the current implementation of the EHR, but NICTIZ will find out what this implies for the future. With EN 13606 it is not yet possible for the short term to define practical requirements for software packages of suppliers. It is quite possible that this standard or aspects of the standard will be added to the connection requirements for the LSP (GBZ requirements).

In essence EN 13606 and HL7v3 standards could be complementary. Also in an international setting (CEN, ISO, HL7) the connection between the two standards is developed.

In the Netherlands NEN[6] is the entrance gate to the international standardization organization. NEN also has a signaling function for international standards development.

SNOMED (CT – Clinical Terminology)

The Netherlands are one of the 'charter members' of the new international Health Terminology Development Organization (IHTSDO). This organization will be worldwide responsible for the maintenance and development of the medical code- and terminology system SNOMED. SNOMED becomes available in participating countries for usage in medical files. NICTIZ develops a project plan in preparation of implementation of SNOMED in the Netherlands.

[6] The Dutch network in the world of standards and regulations

4 eHealth research and technology development (RTD) status

This chapter provides an overview of the national financed funding mechanisms and initiatives in the Netherlands. There is no specification available dedicated to e-Health as a specific topic, but more often ICT is a part of broader investigation programmes. eHealth research is part of each programme for an unspecified part.

Eerste Geldstroom – 'First Money Stream'

Direct government contribution from the Ministry of Education, Culture and Science to universities. Apart from an amount for education a specific part is dedicated to scientific research.

Tweede Geldstroom – 'Second Money Stream'

Government contribution of Ministry of Education, Culture and Science which is assigned to universities and para-university institutes through NWO[7] (in this case ZONMW and STW[8]) and partly through KNAW[9]

There are new social innovation programmes mentioned in the new government coalition agreement which yet have to be specified in more detail. One of these programs will concern healthcare.

ZonMW

Works on improvement of prevention, care and wellness by stimulating and financing research, development and implementation of prevention, care and wellness. Co-financed by the Ministry of Health, Welfare and Sport.

- 5 generic programmes (eg. Innovation impuls)
- 50 specific programmes based on Ministries priorities

STW10

Finances and stimulates technical-scientific research and its usage. Is co-financed by the Ministry of Economic Affairs

- Generic programs, e.g. Open Technology Projects.
- Specific, e.g. Innovative Genomics.

Derde Geldstroom – 'Third Money Stream'

Mainly consists of means of non-profit institutes, national government, EU and industry contributions of Ministries to specific programs or initiatives.

[7] NWO: Netherlands Organization for Scientific Research

[8] STW: The Technology Foundation

[9] KNAW: Royal Netherlands Academy of Arts and Sciences

[10] STW: The Technology Foundation

- E.g. The ICES/KIS (FES-means): Projects to strengthen the knowledge infrastructure where ICT was a part of the research, funded by profits from the Dutch gas reserves.
- E.g. ZON/MW[11]included ICT as a part of the Disease management program.
- E.g. The Ambient Assisted Living program also has a research component.

[11] ZonMW: The Netherlands Organization for health research and development