



Benchmarking ICT use among General Practitioners in Europe 2007

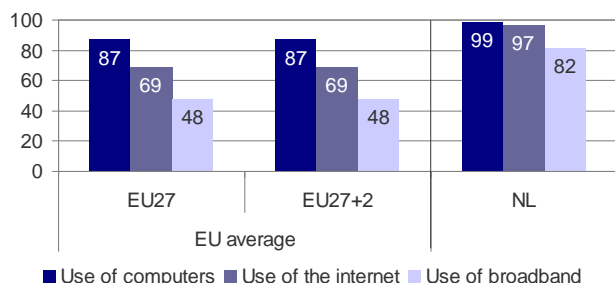
Country Profile: Netherlands

Key findings: eHealth among GPs in the Netherlands¹

The Netherlands are one of the frontrunners of ICT use among General Practitioners in the European Union. This concerns both the availability of ICT infrastructure (computer, Internet) and the use of ICT for different eHealth-related purposes. When comparing the overall use of eHealth solutions in the EU27, the Netherlands come in second, being outnumbered only by the absolute frontrunner Denmark.

In terms of infrastructure, 99% of the Dutch GP practices use a computer. Almost the same share, that is 97% of the practices, disposes of an Internet connection. In the Netherlands, broadband represents the most common form of access to the Internet with 82% of GP practices resorting to broadband connections.

ICT Infrastructure in Dutch GP practices



Base: All GPs. **Indicators:** R4, C1, C2 (cf. annex for more information), % values. **Source:** empirica, Pilot on eHealth Indicators, 2007.

In contrast to most other European countries, the Netherlands score well above average with regard to all aspects of eHealth use covered by the survey. This relates to the local use of a computer for consultations and data storage as well as to the networked transmission of patient data. With regard

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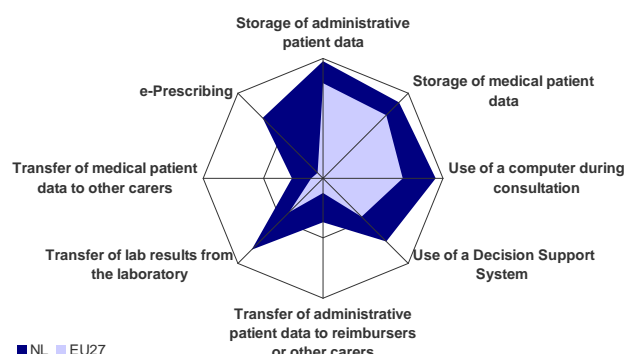
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to the availability of a computer in the consultation room as compared to the actual use of the PC in consultations with the patients, there is nearly no gap as both availability and use are nearly universal (99% of practices and 94% of practices respectively).

The storage of electronic patient data is common practice in the Netherlands. All types of medical patient data are stored in digital form in more than 90% of GP practices. This means that the Netherlands shows results that are well above the EU27 averages.

In the Netherlands the use of electronic networks for the transmission of medical patient data is well established and widespread. 84% of GP practices receive analytic results from labs and still 26% exchange data with other health care providers. In both cases the Netherlands hold one of the top positions vastly above the EU27 average exchange rates for medical data. The Netherlands show exceptionally high usage rates when it comes to the transfer of any kind of medical patient data, as well as with regard to the transfer of administrative patient data. Especially remarkable in the Netherlands is the high occurrence of ePrescribing which is used by 71% of the practices. The Netherlands are one of only three EU member states where ePrescribing is extensively used.

eHealth Use by GPs in the Netherlands



Indicators: Compound indicators of eHealth use (cf. annex for more information), % values. **Source:** empirica, Pilot on eHealth Indicators, 2007.

The Netherlands do not have an explicit national eHealth strategy. However, legislation with regard to the establishment of a national Electronic Health Record (EHR) is under way. The first pilot phases for the establishment of an an Electronic Medication Record (EMD) and an Electronic General Practitioner's Record (WDH) that will be included in the larger framework of the national EHR, are already being run.

ICT Infrastructure in GP Practices

An appropriate ICT infrastructure in the GP practice lays the ground for different eHealth use cases (such as storage of patient data, its exchange etc.). It is therefore the baseline from which a European GP can start his or her professional activities in the eHealth domain.

ICT infrastructure as understood here entails

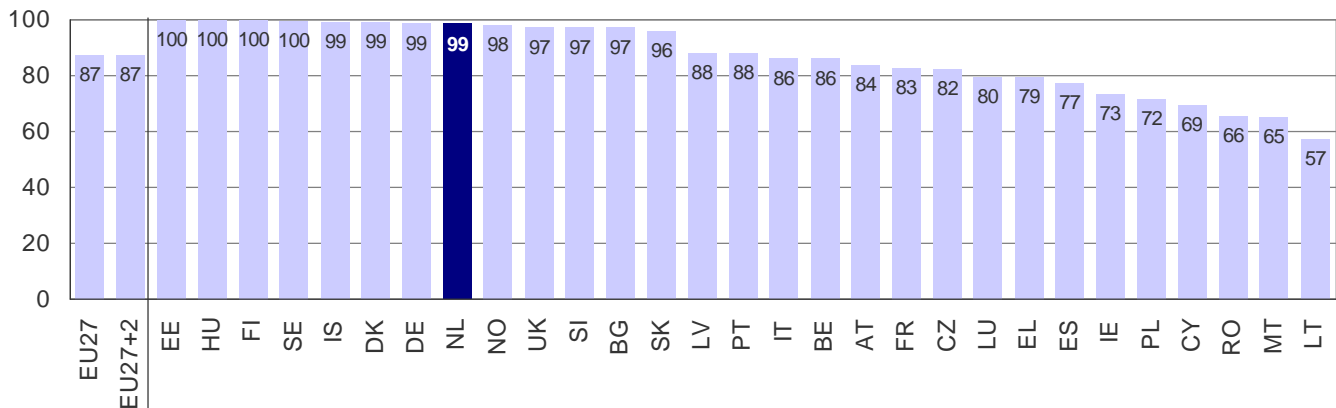
- the availability of one or more computers in the practice;
- a connection with the Internet; and
- the availability of a broadband connection.

Use of computers

With regard to the use of computers in GP practices, the Netherlands are among the top performers as 99% of GP practices are equipped with one or more PCs. This result puts the Netherlands on a par with 13 other EU countries where a computer availability rate of nearly 100% is reached. All in all 24 countries show a penetration rate of more than 75%, a fact that clearly indicates that Computers have arrived in EU GP practices. They are becoming more and more an essential and unquestioned part of practice fixtures.

The Netherlands clearly fulfill the infrastructural prerequisite for the successful implementation of eHealth applications.

Use of Computers in GP Practices in the Netherlands



Base: All GPs. **Indicator:** R4 (cf. annex for more information), % values. **Source:** empirica, Pilot on eHealth Indicators, 2007.

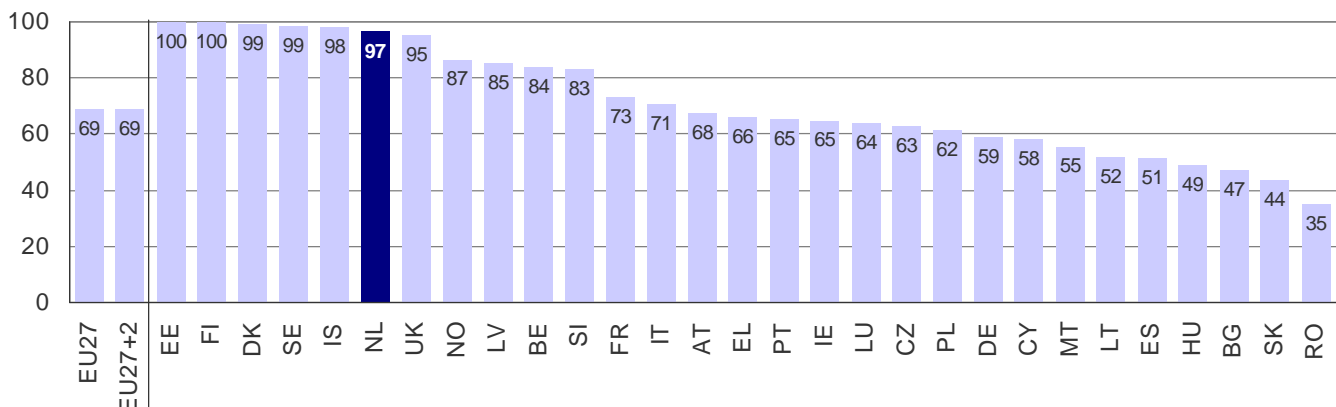
Use of the Internet and broadband

A connection to the Internet or any other dedicated network is a prerequisite for eHealth applications that entail data transmissions and information retrieval. In this regard the Netherlands again score very well. 97% of Dutch GP practices are connected to the Internet. As a result the Netherlands is again

part of the frontrunner group together with Estonia, Finland, Denmark, Sweden, and the United Kingdom.

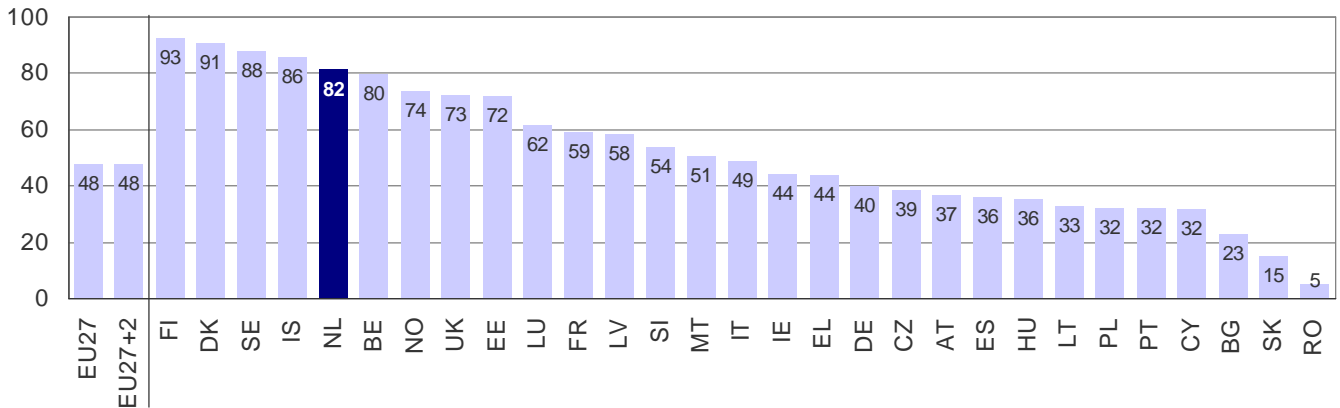
On average about 70% of the EU GP practices have an Internet connection. However, large differences between Member States persist and there is still a number of countries with less than 75% practices having Internet access.

Use of the Internet in GP Practices in the Netherlands



Base: All GPs. **Indicator:** C1 (cf. annex for more information), % values. **Source:** empirica, Pilot on eHealth Indicators, 2007.

Dutch GP Practices Using a Broadband Connection



Base: All GPs. **Indicator:** C2 (cf. annex for more information), % values. **Source:** empirica, Pilot on eHealth Indicators, 2007.

In the Netherlands, 82% of the practices use a broadband connection. As regards broadband, the Netherlands are one of the six frontrunner countries in Europe where more than 80% of GP practices use broadband. The Netherlands thus position themselves clearly above the EU average of 48% of broadband connections. All in all, the differences regarding bandwidth across the EU27 member states remain high and there are still several countries where less than 50% of GP practices have broadband connections.

Use of eHealth Applications

With about 87% of European GP practices having a computer and about 69% being connected to the Internet, the question as to if and how this ICT infrastructure is used. The following sections deal with the use of ICT for different purposes in a GP practice's day-to-day business.

Electronic patient data storage

The storage of electronic patient data is common practice in the Netherlands. 97% of Dutch GP practices register at least

one type of patient data. Given that the Dutch GP practices display extremely high usage rates for all types of medical patient data under observation in the survey, it might be deduced that most GP practices store more than only one type of information. It may be assumed that an encompassing patient information data base is rather the norm in the Netherlands.

Most types of individual patient data are stored in more than 92% of the Dutch GP practices that make use of local EHRs. The only exception is the storage of radiological images. These are registered in 43% of GP practices, a percentage that is still above the EU27 average of 34%. Medications, diagnoses and symptoms are registered most often (97%, and 96% of EHR-using practices). All other data on lab results, medical history, treatment outcomes, basic medical parameters and examinations and results are stored by 94%-95% of Dutch GP practices. Only slightly less used is the possibility for the storage of data on vital signs measurements (92%).

Electronic Patient Data Storage in the Netherlands:

Storage of Different Types of Individual Patient Data by GPs storing electronic medical patient data

| | EU27 | EU27+2 | BE | BG | CZ | DK | DE | EE | EL | ES | FR | IE | IT | CY | LV | LT | LU | HU | MT | NL | AT | PL | PT | RO | SI | SK | FI | SE | UK | IS | NO |
|---------------------------------|------|--------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|-----|
| Diagnoses | 90 | 91 | 93 | 97 | 89 | 93 | 99 | 94 | 74 | 89 | 89 | 79 | 85 | 93 | 58 | 65 | 88 | 99 | 80 | 96 | 88 | 73 | 77 | 69 | 89 | 94 | 81 | 97 | 94 | 100 | 100 |
| Medications | 90 | 90 | 93 | 93 | 88 | 99 | 93 | 86 | 71 | 94 | 91 | 95 | 95 | 90 | 50 | 8 | 95 | 99 | 80 | 97 | 84 | 55 | 85 | 36 | 43 | 85 | 96 | 95 | 98 | 100 | 99 |
| Basic medical parameters | 83 | 83 | 91 | 80 | 82 | 96 | 80 | 58 | 65 | 88 | 93 | 85 | 85 | 86 | 42 | 14 | 90 | 96 | 73 | 94 | 80 | 35 | 63 | 49 | 31 | 71 | 90 | 82 | 98 | 90 | 84 |
| Lab results | 79 | 80 | 96 | 83 | 58 | 99 | 78 | 58 | 64 | 81 | 77 | 82 | 75 | 76 | 42 | 17 | 52 | 91 | 66 | 95 | 79 | 53 | 59 | 63 | 20 | 26 | 98 | 97 | 96 | 93 | 98 |
| Symptoms/reasons for encounters | 77 | 77 | 89 | 94 | 70 | 97 | 67 | 59 | 68 | 82 | 92 | 80 | 64 | 86 | 42 | 28 | 88 | 96 | 70 | 96 | 82 | 46 | 73 | 32 | 33 | 60 | 96 | 95 | 92 | 98 | 95 |
| Medical history | 75 | 75 | 89 | 93 | 74 | 97 | 52 | 55 | 73 | 86 | 89 | 84 | 70 | 83 | 50 | 13 | 90 | 93 | 75 | 95 | 69 | 46 | 63 | 34 | 18 | 48 | 98 | 90 | 95 | 100 | 97 |
| Examinations and results | 75 | 75 | 87 | 86 | 62 | 95 | 56 | 51 | 64 | 81 | 81 | 68 | 82 | 67 | 42 | 20 | 60 | 93 | 66 | 95 | 76 | 55 | 67 | 58 | 15 | 35 | 98 | 76 | 88 | 92 | 98 |
| Vital signs measurements | 74 | 74 | 88 | 93 | 67 | 92 | 59 | 51 | 62 | 80 | 88 | 73 | 69 | 88 | 42 | 12 | 76 | 93 | 64 | 92 | 63 | 34 | 70 | 52 | 15 | 51 | 93 | 73 | 92 | 79 | 85 |
| Treatment outcomes | 65 | 66 | 81 | 78 | 68 | 96 | 52 | 46 | 62 | 76 | 66 | 53 | 58 | 71 | 50 | 26 | 62 | 92 | 58 | 94 | 77 | 49 | 52 | 25 | 14 | 47 | 88 | 78 | 77 | 76 | 91 |
| Radiological images | 34 | 35 | 53 | 50 | 20 | 98 | 15 | 47 | 42 | 55 | 65 | 23 | 5 | 29 | 42 | 2 | 43 | 70 | 34 | 43 | 49 | 40 | 29 | 12 | 8 | 10 | 95 | 34 | 30 | 87 | 54 |

Base: GPs storing electronic medical patient data. **Indicator:** A2 (cf. annex for more information), % values. **Source:** empirica, Pilot on eHealth Indicators, 2007.

Electronic exchange of patient data via the Internet or other dedicated networks

The Netherlands hold a position in the outstanding European frontrunner group with regard to the exchange of medical data with other carers and when it comes to receiving analytic results from laboratories as well.

26% of the practices exchange medical data with other care providers or professionals, compared to 10% being the European average. The Netherlands rank fifth among the EU27 member states. Denmark - where up to 74% of GP practices exchange medical information with other carers - remains the unchallenged frontrunner in this respect.

In the Netherlands, the reception of digital laboratory results via networks is even more common: 84% of GP practices in the Netherlands use networks to receive laboratory results. This amounts to one of the highest usage rates in Europe. The advantages to be gained from networking with regard to the transfer of lab results appear to be sufficiently substantial to result in a relatively high uptake of this mode of communication across Europe. On average 40% of the GP practices in the EU receive analytic results from labs via different networks.

Telemonitoring has not yet arrived on the scene neither in the Netherlands nor in the EU as a whole. With 3% of GP

practices actually using telemonitoring, the Netherlands hold nonetheless the third position in Europe, just behind Sweden, where telemonitoring is used in 9% of GP practices, and on a par with Iceland (also 3%).

5% of the Dutch GP practices take part in cross-border transmissions of medical data. Although this figure might seem very low, the comparison to the other European countries reveals that the Netherlands hold the absolute top position with regard to this indicator. Denmark, Cyprus, Malta, France and Greece come in second with scores between 2% and 3%. The relatively high usage rate in the Netherlands may be explained by the high priority given to this domain in the scope of the national health care policy. Several initiatives in the international domain have already been launched (e.g. Large Scale Pilots, SNOMED, Sustainable Telemedicine). The objective of enhancing trans-border mobility and (preventive) medicine has been set and is to be realized during the forthcoming years.

The overall low level of trans-border data sharing may be explained by the fact that the health care jurisdiction is explicitly under the jurisdiction of the individual Member States. Due to the differing health care systems in EU Member States, it is unsurprising that, with only very few exceptions, planned treatment is provided principally in the country of residence.

Electronic Exchange of Different Types of Medical Patient Data in the Netherlands

| | EU27 | EU27+2 | BE | BG | CZ | DK | DE | EE | EL | ES | FR | IE | IT | CY | LV | LT | LU | HU | MT | NL | AT | PL | PT | RO | SI | SK | FI | SE | UK | IS | NO | |
|-----------------------------|------|--------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---|
| Medical data with carers | 10 | 11 | 13 | 3 | 6 | 74 | 4 | 1 | 4 | 13 | 5 | 2 | 7 | 3 | 0 | 3 | 0 | 2 | 7 | 26 | 12 | 2 | 8 | 2 | 0 | 1 | 55 | 13 | 26 | 17 | 35 | |
| Analytic results from labs | 40 | 40 | 73 | 5 | 25 | 96 | 63 | 39 | 3 | 30 | 33 | 40 | 8 | 10 | 1 | 8 | 27 | 12 | 11 | 84 | 37 | 10 | 1 | 4 | 10 | 5 | 90 | 82 | 85 | 52 | 88 | |
| Telemonitoring | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 9 | 2 | 3 | 0 | |
| Medical data across borders | 1 | 1 | 1 | 1 | 1 | 2 | 0 | 0 | 2 | 1 | 2 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 3 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |

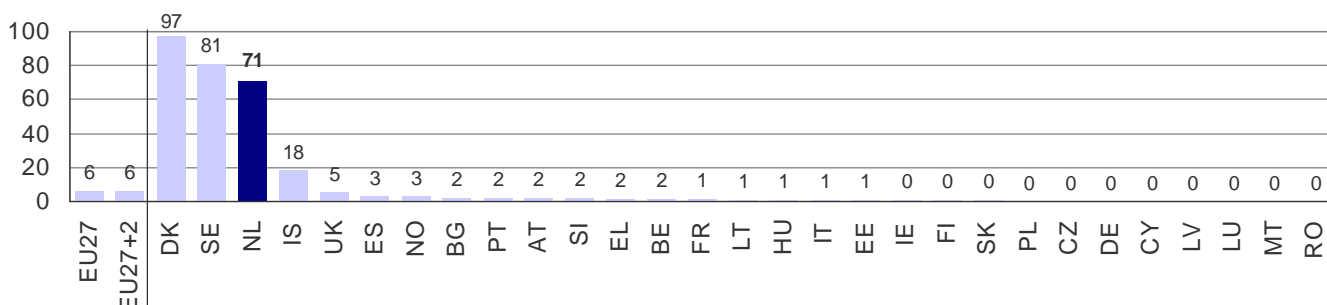
Base: All GPs. Indicator: D1 (cf. annex for more information), % values. Source: empirica, Pilot on eHealth Indicators, 2007.

ePrescribing

The Netherlands are one of only three EU countries where ePrescribing is a reality. In this domain the country takes third place with 71% of the practices using ePrescribing. Apart from

the other EU frontrunners Denmark (97%) and Sweden (81%), and Iceland outside the EU27, none of the other European countries shows adoption levels that rise above 5%.

Use of ePrescribing by GPs in the Netherlands



Base: All GPs. Indicator: D1 (cf. annex for more information), % values. Source: empirica, Pilot on eHealth Indicators, 2007.

Coded data entry

In the Netherlands 37% of the practices use coded data only for the storage of electronic patient data. This share is significantly above the EU27 average of only 21%. Actually the

Netherlands show one of the highest usage rates of coded data in the EU27. A higher share is only to be found in Lithuania, where 68% of GP practices use coded data. In the Netherlands, exclusively un-coded data is used in only 13% of Dutch GP practices. As in most European Member States, about half

of the practices (49%) store both coded and uncoded data. For the latter, a clear estimation of the coded/uncoded share is not possible.

Coded data entry in this context refers to the use of coding systems such as the ICD (the WHO's International Classification of Diseases) that allows to store a disease or diagnoses

as a code rather than as a textual description. Only in a handful of countries the share of practices using solely coded data is above one third. Rather, most practices use a combination of coded and uncoded data.

Use of data coding for the storage of electronic patient data by Dutch GPs

| | EU27 | EU27+2 | BE | BG | CZ | DK | DE | EE | EL | ES | FR | IE | IT | CY | LV | LT | LU | HU | MT | NL | AT | PL | PT | RO | SI | SK | FI | SE | UK | IS | NO |
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| Coded data only | 21 | 21 | 29 | 22 | 6 | 19 | 19 | 35 | 20 | 35 | 6 | 10 | 22 | 10 | 25 | 68 | 2 | 6 | 14 | 37 | 11 | 30 | 18 | 24 | 25 | 36 | 2 | 10 | 24 | 41 | 14 |
| Un-coded data only | 30 | 30 | 36 | 27 | 56 | 31 | 33 | 5 | 58 | 26 | 66 | 50 | 26 | 64 | 25 | 8 | 60 | 5 | 39 | 13 | 55 | 25 | 23 | 26 | 34 | 24 | 26 | 29 | 5 | 5 | 18 |
| Both coded and un-coded data | 45 | 46 | 33 | 50 | 33 | 49 | 48 | 59 | 16 | 36 | 19 | 34 | 50 | 14 | 50 | 13 | 24 | 88 | 25 | 49 | 31 | 19 | 49 | 43 | 33 | 36 | 72 | 54 | 70 | 52 | 64 |

Base: GPs storing patient data. **Indicator:** A4 (cf. annex for more information), % values. **Source:** empirica, Pilot on eHealth Indicators, 2007.

Exchange of administrative patient data

Data transfer via networks concerns not only medical data, but can also be used for administrative purposes, i.e. for data exchanges between the GP practice and reimbursers or other care providers.

Again, the Netherlands take a well placed position in both areas, the exchange of administrative data with other carers being implemented by 28 % of practices and 45% of practices making use of the possibility to share administrative data with reimbursers. As far as the data exchange with reimbursers is

concerned, only Denmark (48%) and the United Kingdom (43%) display an equally high usage rate. The exchange of administrative data with other care professionals is used more often only in Denmark and the UK (74% and 32% of GPs respectively).

On average the exchange of administrative data with other care professionals amounts to no more than 10%. Data exchange with reimbursers is only slightly more frequent with 15% of GP practices in the EU27 making use of this solution.

Exchange of Administrative Patient Data in the Netherlands

| | EU27 | EU27+2 | BE | BG | CZ | DK | DE | EE | EL | ES | FR | IE | IT | CY | LV | LT | LU | HU | MT | NL | AT | PL | PT | RO | SI | SK | FI | SE | UK | IS | NO |
|------------------------------|------|--------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Admin data with other carers | 10 | 10 | 13 | 6 | 6 | 74 | 3 | 1 | 4 | 6 | 4 | 4 | 3 | 3 | 0 | 10 | 0 | 1 | 7 | 28 | 7 | 6 | 6 | 6 | 3 | 2 | 21 | 16 | 32 | 12 | 25 |
| Admin data with reimbursers | 15 | 15 | 3 | 10 | 13 | 48 | 4 | 5 | 3 | 2 | 26 | 15 | 1 | 3 | 0 | 21 | 0 | 5 | 3 | 45 | 19 | 23 | 5 | 2 | 14 | 4 | 8 | 8 | 43 | 1 | 19 |

Base: All GPs. **Indicator:** D1 (cf. annex for more information), % values. **Source:** empirica, Pilot on eHealth Indicators, 2007.

Data exchange and security

Data security is an important issue when sensitive, identifiable patient data is stored and transmitted electronically. There are a number of different techniques to make the handling of patient data secure, including password protection of the computer system and of transmitted files, encryption of transmitted files and e-mails as well as the use of e-signatures.

For most security features, the Netherlands show scores that roughly correspond to EU27 averages.

An exception is the use of e-signatures which is more common in the Netherlands than in the EU27 on average: 28% of the Dutch GP practices use e-signatures, a rate clearly above the European average of 19%. This security method is the one the less used in the EU27, which might be due to the more substantial prerequisites which are attached to this security feature (a dedicated infrastructure, comprising a software, an encryption key and a signature, all of which have to be present on both ends of the data transaction). An absolute

exception in Europe is Denmark, where an astounding 93% of GP practices resort to this security method.

With regard to the option of password protected access - the most readily available form of data protection - the Netherlands hold a middle position. With 95% of GP practices protecting their computer by the use of passwords slightly the Netherlands equal the average score to be found in the EU.

Password protection of transmitted files, which amounts to a less complex security measure as well, is used by 62% of Dutch practices. All in all in the EU27 only slightly more than half of all practices use password protection for transmitted files.

When it comes to the use of encryption software for the transfer of sensitive patient data, the Netherlands score slightly below the EU27 average of 42%. However, even this security feature is used by 36% of the Dutch GP practices.

GPs Use of Security Features in the Netherlands

| | EU27 | EU27+2 | BE | BG | CZ | DK | DE | EE | EL | ES | FR | IE | IT | CY | LV | LT | LU | HU | MT | NL | AT | PL | PT | RO | SI | SK | FI | SE | UK | IS | NO |
|------------------------------------|------|--------|----|----|----|----|----|-----|----|----|----|----|-----|----|-----|----|----|-----|----|----|----|----|----|----|----|----|-----|----|----|-----|-----|
| Password (PW) protected access | 94 | 94 | 97 | 92 | 97 | 97 | 95 | 100 | 59 | 93 | 88 | 97 | 100 | 72 | 100 | 92 | 96 | 100 | 94 | 95 | 94 | 86 | 97 | 80 | 92 | 94 | 100 | 98 | 98 | 100 | 100 |
| PW protection of transmitted files | 57 | 57 | 60 | 77 | 65 | 71 | 63 | 76 | 40 | 56 | 39 | 59 | 70 | 41 | 100 | 45 | 54 | 57 | 47 | 62 | 60 | 63 | 62 | 62 | 64 | 69 | 56 | 27 | 58 | 83 | 59 |
| Encryption of transmitted files | 42 | 42 | 64 | 49 | 31 | 68 | 53 | 85 | 22 | 35 | 36 | 30 | 45 | 19 | 50 | 32 | 42 | 31 | 21 | 36 | 46 | 40 | 26 | 44 | 32 | 28 | 14 | 20 | 42 | 37 | 58 |
| Use of e-signatures | 19 | 19 | 22 | 68 | 49 | 93 | 7 | 58 | 15 | 24 | 16 | 11 | 40 | 13 | 0 | 12 | 12 | 7 | 9 | 28 | 12 | 11 | 5 | 12 | 20 | 19 | 16 | 41 | 10 | 43 | 48 |

Base: All GPs. **Indicator:** D4 (cf. annex for more information), % values. **Source:** empirica, Pilot on eHealth Indicators, 2007.

Computer use in consultation

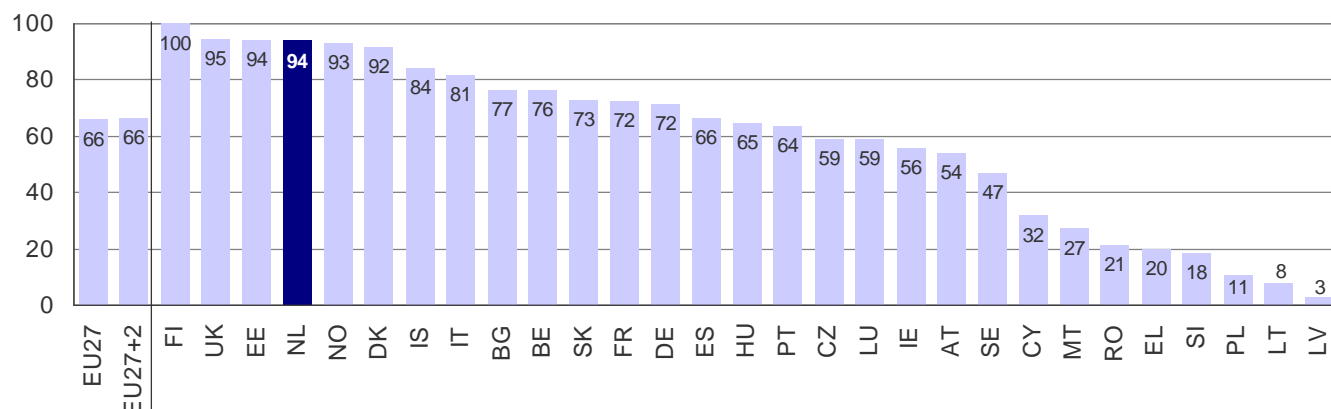
Apart from the storage and exchange of patient data, a computer can also be used in direct interaction with the patient, i.e. during the consultation in the practice. It can be used to display a patient's file to the practitioner, to provide supporting information when making treatment or medication decisions, but also for the explanation of medical issues to the patient, e.g. by means of a graph, photo or animation.

94% of the GPs in the Netherlands use a computer in consultation with the patients. This result places the Netherlands

on a par with Estonia, the United Kingdom, Norway and Denmark. Only in Finland all of the GPs use a computer for consultation purposes. This above mentioned result positions the Netherlands clearly above the EU27 average score of 66%.

This indicator shows a considerable gap between frontrunners with more than 90% of computer use in consultation and the countries following or lagging behind. In seven countries computers are used for consultation with the patients in less than 30% of the GP practices.

Computer Use in Consultation with the Patient in the Netherlands



Base: All GPs. **Indicator:** B2 (cf. annex for more information), % values. **Source:** empirica, Pilot on eHealth Indicators, 2007.

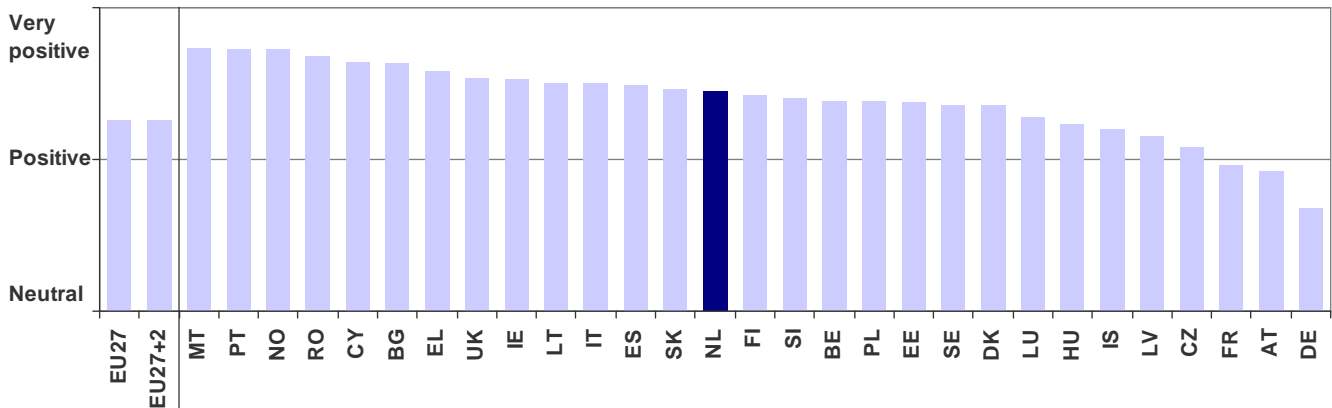
Attitudes and Impacts

What role do ICTs play in the day-to-day work of a European General Practitioner? What is a GPs general attitude towards ICT and what facilitators and barriers towards a wider uptake of eHealth do they perceive? What are the impacts of eHealth?

GPs in the Netherlands are quite positive when it comes to the question whether ICT really and tangibly improves the quality of health care services, as are basically all GPs in Europe. On a scale ranging from a very negative to a very positive attitude, Dutch GPs can be found somewhere between positive and very positive. When looking at the other countries it is interesting to see that in none of the 29 countries under observation a negative attitude is prevalent.

This positive attitude seems to have nothing to do with whether a country is more of an eHealth laggard or a frontrunner. Those countries displaying an only moderately positive attitude (such as Germany, France and Austria) are all average eHealth performers. At the same time, GPs using eHealth and practising in countries that can be considered eHealth laggards (e.g. Greece, Cyprus or Romania) show an attitude that is more positive than the EU average. Since differences between the countries in relation to the perception of facilitators and barriers as well as eHealth impacts are only small, the following analysis focuses on the EU average results, reporting national deviations where they occur.

GPs General Attitude Towards ICT Use in Health Care in the Netherlands



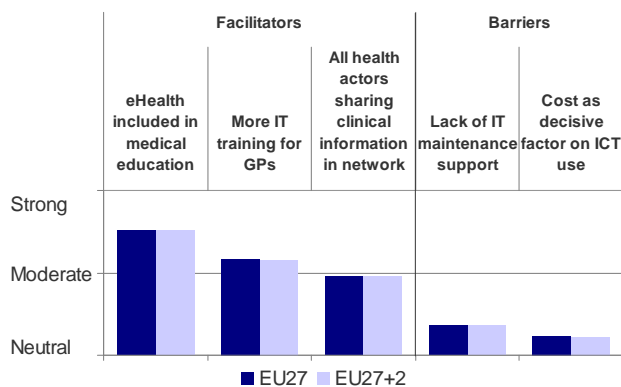
Base: GPs using computers. **Indicator:** F1 (cf. annex for more information), attitude scores. **Source:** empirica, Pilot on eHealth Indicators, 2007.

Perception of facilitators and barriers

Among the factors that could facilitate the diffusion of eHealth, most European GPs would prefer if the issue were included in the curricula of medical education. The second most important facilitating factor is related to IT training provided to the GPs themselves. Thirdly, a better networking of all health actors in order to share clinical information is also regarded as beneficial by a majority of GPs.

As regards the electronic exchange of clinical information, GPs in Germany, Poland, Iceland and Norway are less positive about this than the European average, but still mostly agree to a certain extent. On the other hand, Greek, Lithuanian and Romanian GPs are considerably more positive on this issue than their European peers. In relation to IT training for GPs, practitioners in Denmark, Germany, Hungary and the Netherlands see this as a less important issue.

GPs Perception of Facilitators and Barriers in the EU27



Base: GPs using computers. **Indicator:** F1b (cf. annex for more information), agreement scores. **Source:** empirica, Pilot on eHealth Indicators, 2007.

When it comes to potential eHealth barriers, most practitioners seem — on average — to consider neither a lack of IT maintenance support nor cost as a factor that seriously hampers their use of ICT. In some of the Eastern European Member States, GPs are however considerably more critical about both issues. A lack of IT maintenance support is seen as a barrier to eHealth — at least to a certain extent — by a majority. In these countries cost are perceived as a barrier to

eHealth by a noticeably larger number of GPs than in the EU on average.

Noticeable deviations from these patterns can also be found in Greece, Spain and Ireland, here a majority of GPs somewhat agrees to the statement that a lack of IT support has a negative impact on eHealth use.

Perception of impacts

In the Netherlands the perception of eHealth impacts resembles the general layout found in the EU27. The general impact perceptions show quite a clear pattern: the GPs are most positive about the administrative impacts of ICT use in health care, namely impacts in relation to their personal or practice staff working processes.

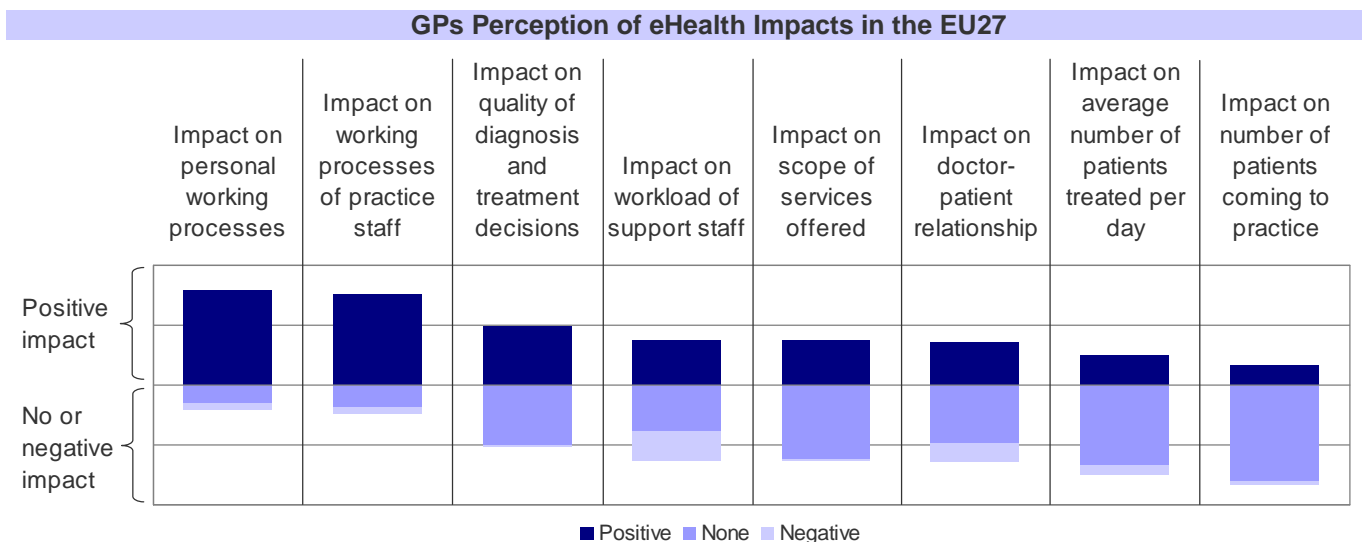
When it comes to patient-related or medical impacts a more ambivalent picture emerges. For every GP being positive about those impacts, there is at least one other GP not perceiving any benefit. This is for instance the case in relation to impact on the quality of diagnosis and treatment decisions: here about half of the GPs see positive impacts as compared to the other half seeing no impacts. This holds true for the Netherlands as well, where 57% of the GPs reported a positive influence, the other GPs not being able to signal an improvement whatsoever with this regard. In case of doctor-patient relationship and the workload of the support staff — including nurses etc. — between 16% and 25% say that the impacts are actually negative, i.e. that the relationship to the patient has deteriorated or that the workload of the support staff has gone up. The latter could indicate that the brunt of additional effort created by ICT use is not borne by the GP but by the other workers in the practice. This is also not contradicted by the perceived improvement of working processes. For the practitioner this may be due to the fact that they are not burdened with additional work generated by ICT and for the rest of the practice staff improved working processes might mean that an overall increased workload is simply handled more efficiently. This effect is evident in the Netherlands as well, where over 80% of the practitioners report improved working processes while at the same time 40% deplore increased workloads of the support staff.

About one-third of the practitioners in Europe state that the scope of services offered by their practice actually increased due to the use of IT systems and software. In the Netherlands this hold true for nearly half of the practitioners. It can be

assumed that for these GPs IT is not just a tool to make existing — e.g. administrative — processes more efficient but to broaden the range of their activities.

The last two areas under observation here are the impact on the number of patients treated as well as on the number of patients coming to the practice. Across Europe most GPs do not perceive any impact in relation to both areas. Only 16-20% of GP practices across Europe report an actual increase in the number of patients. These figures are mirrored in the survey results for the Netherlands.

GPs from eHealth frontrunner countries tend to be somewhat more positive about impacts on personal and staff working processes and also about impacts on the quality of diagnosis and treatment decisions. They perceive a higher increase in the scope of services offered by their practice compared to their colleagues in the other countries. At the same time, negative impacts on the workload of the practice staff are deemed to be stronger.



Base: Users of electronic records, or access to health networks, or electronic patient data exchange. **Indicator:** F1 (cf. annex for more information), attitude scores. **Source:** empirica, Pilot on eHealth Indicators, 2007.

Making Sense of eHealth Use Patterns in the Member States

The Netherlands can be regarded as one of the European frontrunners in eHealth use among General Practitioners. In most areas under observation (use of local and networked EHRs, exchange of administrative patient data, and computer use in consultation), usage rates are well above the averages found in the EU27, Iceland and Norway. When comparing the overall use of eHealth solutions in the EU27, the Netherlands come in second, being ranked only by the absolute frontrunner Denmark.

With relation to infrastructure, the Netherlands are well positioned with virtually all GP practices being equipped with a computer, 97% of practices being connected to the Internet and 82% of these GP practices using a broadband connection. As regards patient data transfer, the Netherlands are one of the top performers, including the area of ePrescribing which otherwise is done to a larger extent only in Sweden and Denmark.

Dutch policy strategies with eHealth relevance

Legislation on the Electronic Health Records (as of 2007: yet to be passed in parliament)

eHealth in the Netherlands is on a very high level, both regarding the actual usage levels and the political framework conditions. The National IT Institute for Healthcare (NICTIZ) and the Dutch government have made a lot of effort to extend the use of ICT in the healthcare sector in recent years. One step was the founding of the foundation for nationwide elec-

tronic communication and exchange of medical data in the healthcare sector.

The Netherlands has been fairly successful in spreading eHealth use among General Practitioners. Almost all GPs store individual patient data and use a computer during consultation. With the realization of AORTA — the national infrastructure for healthcare installed in 2006 — secure and reliable exchange of medical data is now available to all Dutch GPs and positive impacts on their daily work can be expected soon. As a part of the AORTA infrastructure, an Electronic Health Record as well as an Electronic Medication Record were implemented and are now available to all healthcare providers.

An Electronic General Practitioners Record (WDH) was introduced taking into account that many Dutch General Practitioners work only part time and patient data are often not available to other GPs caring for the same patient. With the WDH the summary of a patient's history can be recorded by the GP allowing other practitioners to access it. The EMD/WDH implementation was tested under laboratory conditions and pilots were launched in the environments of the healthcare providers in seven selected regions.

ANNEXES

The Pilot on eHealth Indicators Study

The “Pilot on eHealth Indicators” study was carried out by empirica in association with IPSOS on behalf of the European Commission, Information Society and Media Directorate-General. The purpose of the present study was to measure the availability and use of ICT by primary care physicians in the EU27 and EEA countries, achieved by means of a survey of primary care physicians on their use of ICT for communicating with patients and between primary and secondary care and other eHealth agencies. Through this survey up-to-date information and data on eHealth developments was obtained. In addition 29 Country Briefs for each of the Member States, Norway and Iceland were developed.

The Final Report

The Final Report of the study puts together all the results from the General Practitioner survey, including many indicators not used for this Country Profile. It also contains an extensive analysis of data, drawing a coherent picture of ICT use among General Practitioners in Europe.

Indicators used

The Final Report contains an indicator annex listing all statistical indicators covered by the survey, including those used for this Country Profile. The indicator codes used in the footnotes of the graphs and tables (e.g. B2, C1 etc.) can be used to identify the corresponding indicator in the list.

Methodology Report

The survey

Data used for this Country Profile were collected by means of a survey of primary care physicians and their use of ICT with patients and between primary and secondary care and other health agencies.

The survey was carried out in all 27 Member States of the European Union and in Norway and Iceland. The fieldwork took place in the third quarter of 2007. It was coordinated by the German Ipsos branch Ipsos GmbH, Mölln and was conducted in cooperation with local partner institutes.

The survey was carried out in form of Computer-Aided Telephone Interviewing (C.A.T.I.). Exception is Malta where face-to-face interviews using P.A.P.I. methodology (Paper-and-Pencil Interviews) were conducted. In Sweden CATI interviews were used, until the sample was exhausted due to the specificities of the Swedish health system. The remaining interviews were accomplished through Computer-Aided Web-Interviews.

Universe/ Target Person and Sampling

The universe consisted of all General Practitioners in the respective countries. From the universe a random sample of practices / institutions with a quota on region and - where possible - private practice / institution was drawn. The target respondent within the practice / institution was selected via a random procedure if more than one GP were present. In total, 6,789 interviews were achieved. The sampling was done in a decentralised way and by each of the partner institutes.

Number of Interviews Conducted

| | Country | Interviews |
|----|----------------|--------------|
| BE | Belgium | 318 |
| BG | Bulgaria | 206 |
| CZ | Czech Republic | 304 |
| DK | France | 261 |
| DE | Germany | 253 |
| EE | Estonia | 150 |
| EL | Greece | 315 |
| ES | Spain | 325 |
| FR | France | 302 |
| IE | Ireland | 206 |
| IT | Italy | 290 |
| CY | Cyprus | 72 |
| LV | Latvia | 177 |
| LT | Lithuania | 263 |
| LU | Luxembourg | 63 |
| HU | Hungary | 251 |
| MT | Malta | 92 |
| NL | Netherlands | 258 |
| AT | Austria | 299 |
| PL | Poland | 351 |
| PT | Portugal | 284 |
| RO | Romania | 304 |
| SI | Slovenia | 103 |
| SK | Slovakia | 261 |
| FI | Finland | 250 |
| SE | Sweden | 267 |
| UK | United Kingdom | 257 |
| IS | Iceland | 103 |
| NO | Norway | 204 |
| | Total | 6.789 |

Weighting schemes

After the fieldwork, weighting coefficients were computed giving each country a weight according to its population size in the respective group of countries: EU27+2 (for all 29 countries surveyed), EU27 (all EU Member States).

More information

If you wish to be provided with more details, or to receive news and updates, please contact us at: [indeh \[at\] empirica \[dot\] com](mailto:indeh[at]empirica[dot]com) or get in touch with us.



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