



Benchmarking ICT use among General Practitioners in Europe 2007

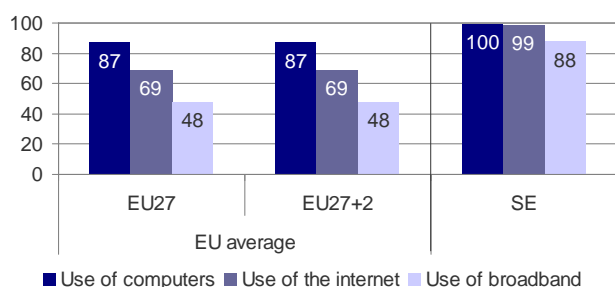
Country Profile: Sweden

Key findings: eHealth among GPs in the Sweden¹

Sweden is 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.

In terms of infrastructure, virtually all Swedish GP practices use a computer. Almost the same share, that is 99% of practices, disposes of an Internet connection. In Sweden, broadband represents the most common form of access to the Internet with 88% of GP practices resorting to broadband connections.

ICT Infrastructure in Swedish 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, Sweden scores well above average with regard to nearly all aspects of eHealth use covered by the survey. The only exception is the use of a computer for consultation. In this exceptional case, Sweden displays substandard results. While in 62% of the GP practices a computer is available in the consultation room, it is actually used for consultation purposes with the patients in only 47% of the practices.

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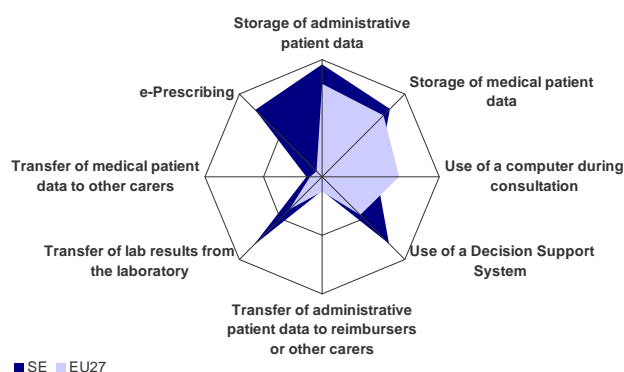
Decision Support Systems are extensively used in Sweden: more than 85% of Swedish GP practices use them either for prescription or diagnosis reasons.

The storage of electronic patient data is common practice in Sweden. Virtually all GP practices store at least one type of medical patient data in digital form. With regard to the storage of the different types of medical patient data Sweden also shows results that are above the EU27 averages. Administrative patient data is registered in 96% of the practices.

The use of networks for the transmission of electronic administrative and medical patient data is less well established. 13% of Swedish GP practices transfer medical data to other care professionals and 16% exchange administrative data with other carers. These results are only slightly above average. With regard to the exchange of administrative data with reimbursers, Sweden does not exceed the EU27 average of 10%. An exception in the field of electronic data transfer is the reception of analytic results from laboratories. 82% of Swedish GP practices receive laboratory results electronically; a share which amounts to two times the European average.

Especially remarkable in Sweden is the high prevalence of ePrescribing, which is used in 81% of the GP practices. Only Denmark achieves even higher usage rates. Sweden is also the country with the highest occurrence of telemonitoring in Europe, even if this concerns only 9% of the GP practices.

eHealth Use by GPs in Sweden



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

Although an explicit national eHealth strategy in Sweden dates back only to 2006, the regional Health care actors have

been active in this domain for a longer period of time. Coordination between regional activities was achieved by the establishment of the organisation “Carelink” in 2000. A physical network for eHealth purposes (Sjunet) that links public authorities, primary health care institutions and pharmacists has been introduced in 2002 already. This network includes an application for ePrescribing which might to a certain extent account for the particularly good results that Sweden attains with regard to this eHealth indicator.

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

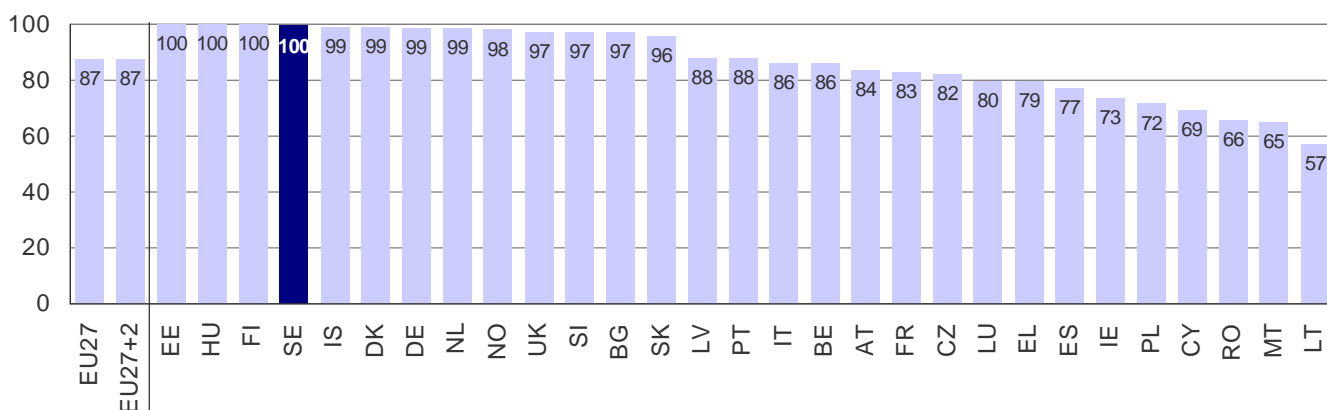
- the availability of one or more computers in the practice;
- a connection with the Internet; and
- the availability of a broadband connection.

Use of computers

With regard to the use of computers in GP practices, Sweden is among the top performers as 100% of GP practices are equipped with one or more PCs. This result puts Sweden 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.

Sweden clearly fulfils the first infrastructural prerequisite for the successful implementation of eHealth applications.

Use of Computers in GP Practices in Sweden



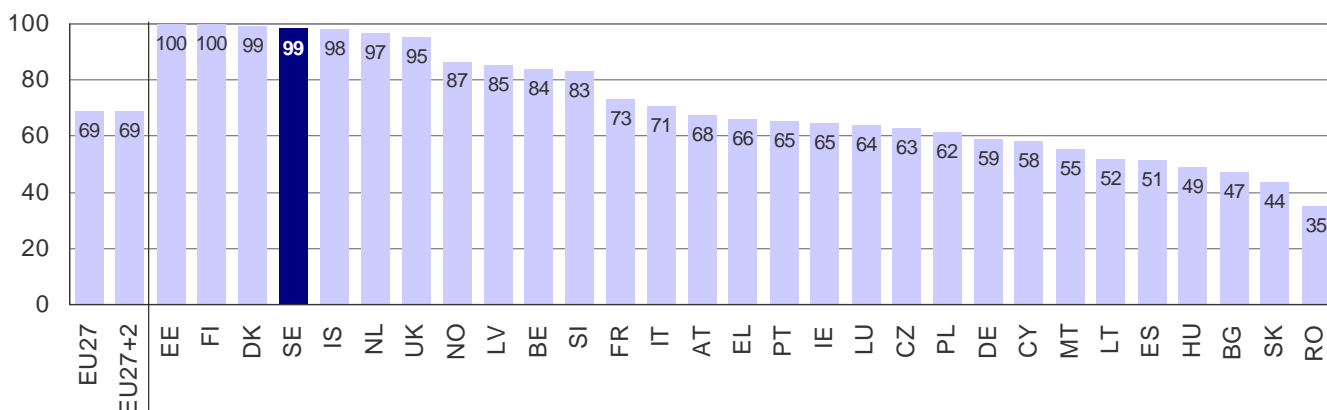
Base: All GPs. **Indicator:** R4 (cf. annex for more information), % values. **Source:** empirica, Pilot on eHealth Indicators, 2007.

Use of the Internet and broadband

A connection to the Internet or any other dedicated network is a prerequisite for all those eHealth applications that entail data transmissions and information retrieval. In this regard Sweden again scores extremely well. 99% of the Swedish GP practices are connected to the Internet. As a result Sweden is again part of the frontrunner group together with Estonia, Finland, Denmark, the Netherlands, and Iceland.

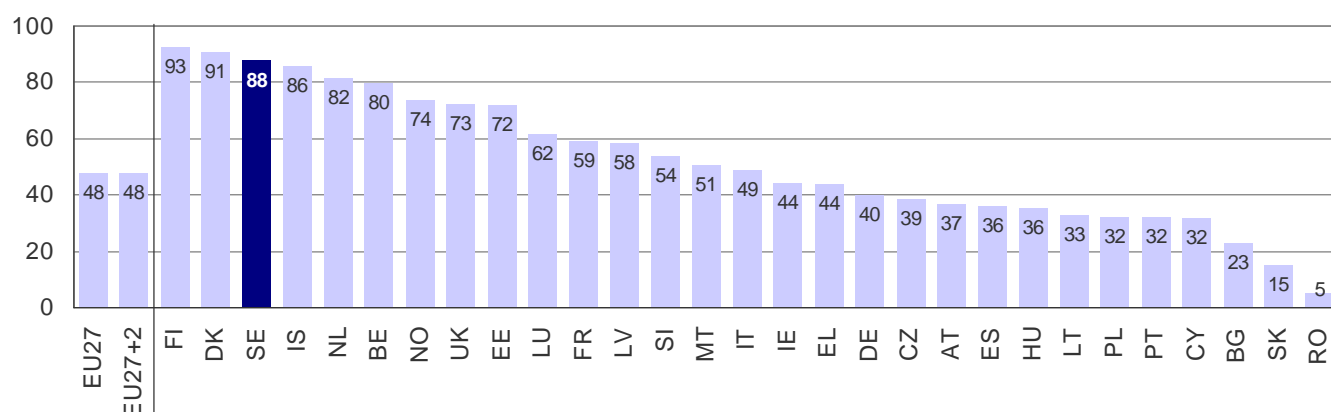
On average about 70% of the EU GP practices have an Internet connection. However, large differences between member states persist and there are still a number of countries with less than 75% practices having Internet access.

Use of the Internet in GP Practices in the Sweden



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

Swedish 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 Sweden, 88% of the practices use a broadband connection. This places Sweden in the group of frontrunner countries where more than 80% of GP practices use broadband. Sweden positions itself clearly above the EU average of 48% of broadband connections. Across Europe the differences regarding bandwidth 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 medical patient data is common practice in Sweden. Sweden is one of the EU27 member

states where the storage of electronic medical patient data is developed to a very high degree. Virtually all GP practices store at least some sort of medical data. Given that Swedish 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. A rather encompassing patient information data base seems to be the norm in Sweden.

In Sweden diagnoses and lab results are registered most often (97%, of practices). Medications and symptoms are registered by 95% of Swedish GPs and medical history is recorded in 90% of practices. All other data types (treatment outcomes, basic medical parameters, examinations and results, vital signs measurement) are stored in 73% to 82% of Swedish GP practices. The only type of patient data being stored less often relates to radiological images. These are registered in 34% of Swedish GP practices, a level corresponding to the EU27 average.

Electronic Patient Data Storage in Sweden:

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

Sweden holds a position in the outstanding European front-runner group when it comes to telemonitoring and to receiving results from laboratories.

82% of GP practices in Sweden receive laboratory results via network connections, which is 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 in the European Union. In Sweden it is not yet common practice either. However, already 9% of practitioners in Sweden use telemonitoring, which represents the highest use rate among the EU27 member states, Norway and Iceland. With 3% of GP practices actually using telemonitoring, the Netherlands and Iceland are the only other countries where telemonitoring is used at least to some extent.

In Sweden, 13% of GP practices exchange medical data with other care professionals. This is quite in line with the EU27 average of 10%. The highest use rate is realised in Denmark, where 74% of practitioners exchange medical data with other carers.

Only 1% of Swedish GP practices are involved in medical data transfers across national borders. This figure corresponds to the EU27 average which is also 1%. In this case, the Netherlands show the highest use rate with only 5% of practices taking part in cross-border transmissions of medical data. Denmark, Cyprus, Malta, France and Greece come in second with scores between 2% and 3%.

The 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 Sweden

| | 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 |
| 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 | 1 | 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 | 1 | 0 | 0 | 0 |

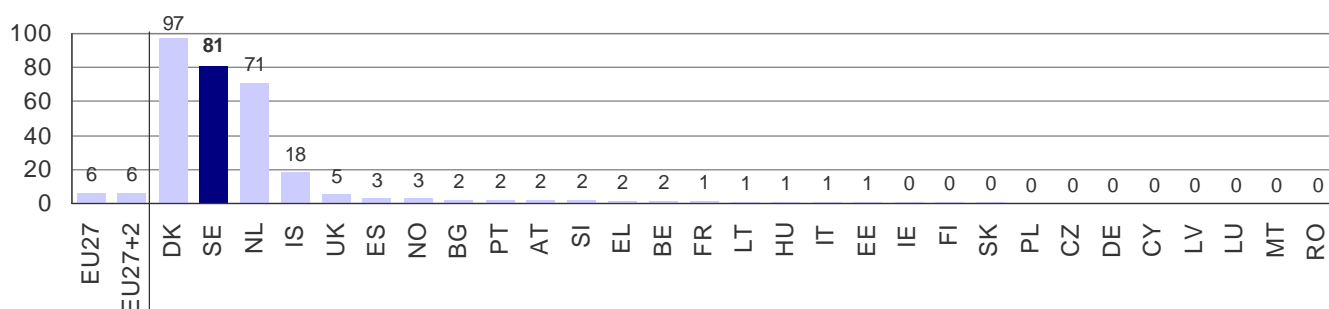
Base: All GPs. Indicator: D1 (cf. annex for more information), % values. Source: empirica, Pilot on eHealth Indicators, 2007.

ePrescribing

Sweden is one of three EU countries where ePrescribing is a reality. In this domain the country takes second place in the EU with 81% of the practices using ePrescribing. Apart from

the other EU frontrunners Denmark (97%) and the Netherlands (71%), as well as Iceland outside the EU27, none of the other European countries shows adoption levels that rise above 5%.

Use of ePrescribing by GPs in Sweden



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

In Sweden, the ePrescribing system is quickly spreading. It is one of the services supported by Sjunet, a fibre-optical network separate from the Internet which has been developed for eHealth purposes and allows for the secure and reliable exchange of confidential data, including images. A further increase in ePrescribing in Sweden is to be expected as the ePrescribing system is being further developed by Apoteket

AB with the addition of a national database of medicines sold on prescription

Coded data entry

When it comes to the use of data coding for the storage of electronic patient data Sweden shows little deviation from the average European pattern. Only 10% of the practices store data solely in a coded format (as compared to 21% on average

in the EU). In Sweden, exclusively un-coded data is used in one third of GP practices. More than half of the practices (54%) 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 Classifica-

tion 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 Swedish 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 |
| 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.

16% of Swedish GP practices use network connections for the exchange of administrative data with other carers. While this share is only somehow above the EU27 average of 10%, it

is at the same time the fifth-highest share to be found inside the EU. The frontrunner in this regard is Denmark, where 74% of GP practices exchange data with other careers.

Only 8% of practices make use of the possibility to share administrative data with reimbursers. This is only half the European average of 15%. In this respect, Sweden scores slightly less well than in the other areas of eHealth applications.

| | | Exchange of Administrative Patient Data in Sweden | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------------------|----------------|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| | 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.

Swedish GPs show a somehow unusual pattern with respect to the use of security features.

The use of e-Signatures is far more common in Sweden than in the EU27 on average: 41% of the Swedish GP practices use e-signatures. This rate is one of the highest in Europe and clearly above the EU27 average of 19%. It is still a far shot however from the top score in Denmark, where an astounding 93% of GP practices resort to this security method.

The option of password protected access is the most readily available form of data protection which enjoys the highest use rate in Europe (94% of GP practices on average). In this

regard Sweden holds a top position with virtually all (98%) of its GP practices resorting to this security feature.

However Swedish GP show results which are clearly below average when it comes to password protection of transmitted files, or the encryption of transmitted files. While on average in the EU27 57% of GP practices protect transmitted files by the means of passwords, this is only practiced by 27% of Swedish GP practices. Encryption software is used for the protection of transmitted files on average by 42% of European GP practices. In Sweden however, only half as many (20%) of GP practices make use of this security method.

The low usage rates of common security methods for the transmission of sensitive patient data might be explained by a secure e-mail system which has been established under the umbrella of Sjunjet and which might be resorted to instead of using other, additional, security features. It should be noted that Sunjet is a network that is separate from the Internet and therefore provides for a secure and reliable exchange of information.

GPs Use of Security Features in Sweden

| | 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

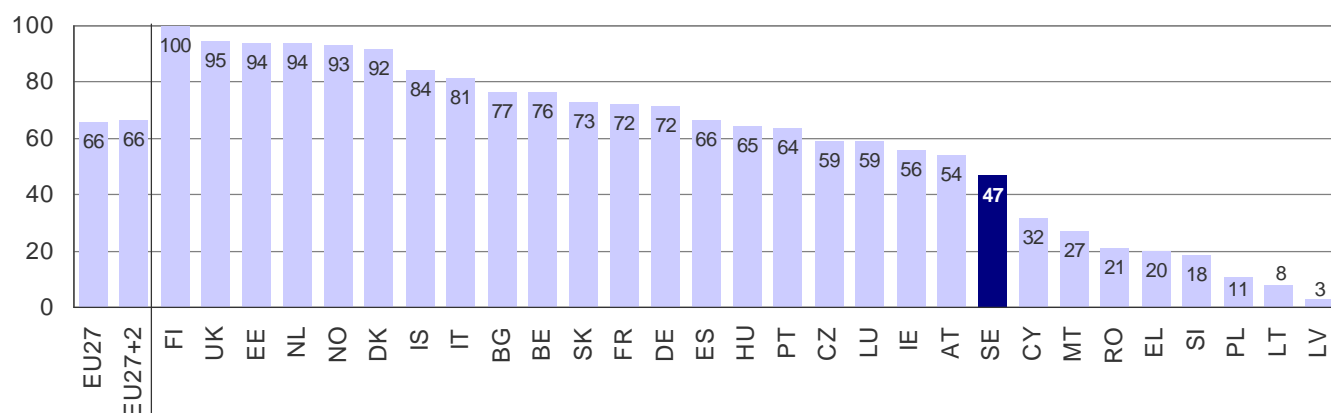
Apart from the storage and exchange of patient data, a computer can also be used in direct interaction with the patient, i.e. during the consultation in the practice. It can be used to display a patient's file to the practitioner, to provide supporting information when making treatment or medication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

Quite surprisingly, Swedish GPs, who use ICT in an extensive manner for administrative purposes, seem to refrain from using a computer when in consultation with a patient. While

62% of the GP practices are at least equipped with a computer in the consultation room, it is actually used in only 47% of the GP practices. This score is well below the EU27 average of 66% and places Sweden at the rear end of the middle field with regard to this indicator.

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

Computer Use in Consultation with the Patient in Sweden



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

Attitudes and Impacts

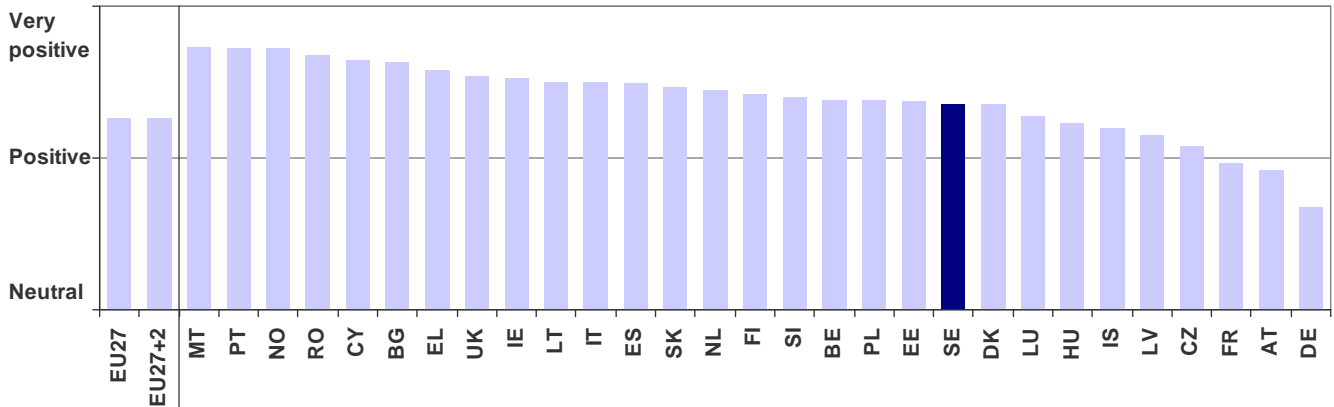
What role do ICTs play in the day-to-day work of a European General Practitioner? What is a GPs general attitude towards ICT and what facilitators and barriers towards a wider uptake of eHealth do they perceive? What are the impacts of eHealth?

GPs in the Sweden are rather 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, Swedish 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 difference 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 Sweden



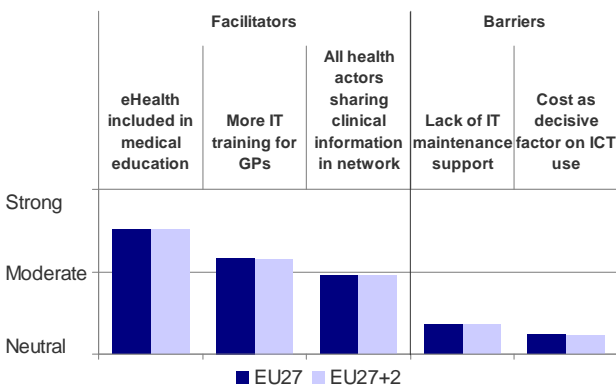
Base: GPs using computers. **Indicator:** F1 (cf. annex for more information), attitude scores. **Source:** empirica, Pilot on eHealth Indicators, 2007.

Perception of facilitators and barriers

Among 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, the Netherlands and Sweden 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. This applies to Swedish GPs as well. 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 Sweden the perception of eHealth impacts resembles the general pattern 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 Sweden as well, where 57% of the GPs reported a positive influence, the others not being able to signal an improvement whatsoever in this regard. In the cases 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 Sweden as well, where over 80% of practitioners agree to the statement that the use of ICT has contributed to improved working processes while at the same time one out of two GPs deplores that workloads on the support staff actually increased due to eHealth applications.

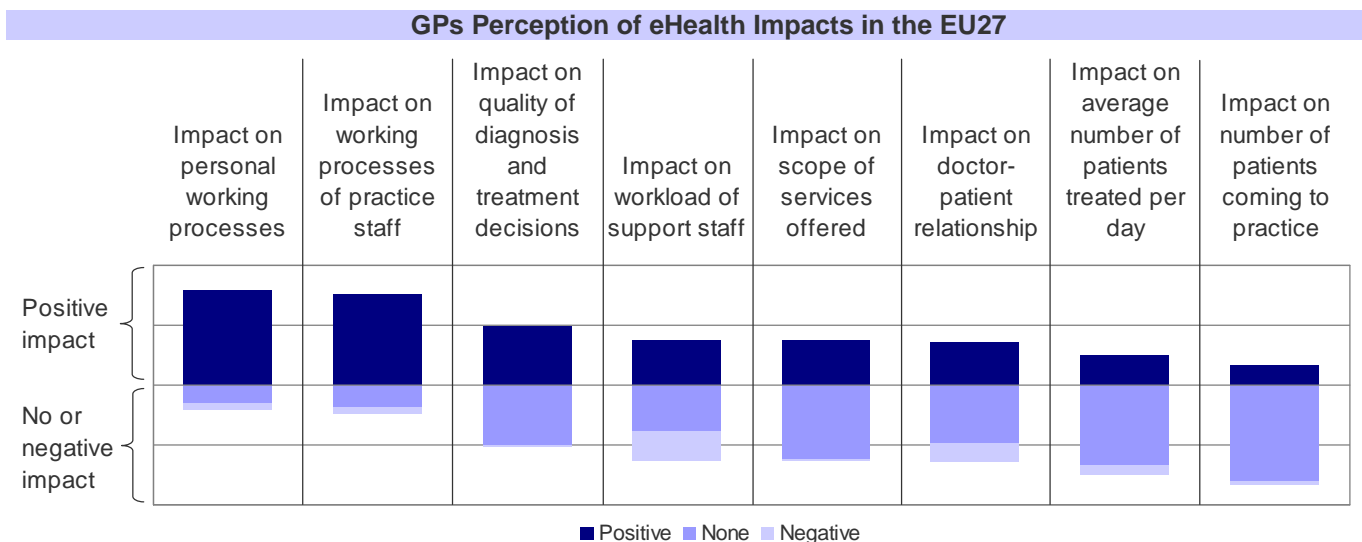
About one-third of the practitioners in Europe state that the scope of services offered by the practice actually increased due to the use of IT systems and software; GP practices in Sweden are presenting the same picture. It can be assumed

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. In Sweden these figures are somewhat higher as one out of four GP practices report an increase in the number of patients in general and even one out of three GP practices report an increase in the average number of patients that can be helped in one day. This noticeable increase in the

number of patients might explain to a certain extent why 40% of the practices involved in the survey consider the workload of their support staff to have increased due to the use of ICT in the practice.

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

Sweden can be regarded as one of the European frontrunners in eHealth use among General Practitioners. With regard to data storage, as well as in relation to the networked exchange of medical data, usage rates are well above the averages found in the EU27, Iceland and Norway.

With respect to infrastructure, Sweden is exceptionally well positioned with virtually all GP practices being equipped with a computer, 99% of practices being connected to the Internet and 88% of these GP practices using a broadband connection. As regards patient data transfer, Sweden is one of the top performers, especially in the area of ePrescribing which otherwise is done to a larger extent only in Denmark and the Netherlands.

Despite the absence of a national eHealth strategy for many years, Sweden has been fairly successful in spreading eHealth use among General Practitioners as a result of the cooperation between national and regional authorities.

A National High Level Group for eHealth was established in 2005 and presented the first National eHealth Strategy including social care in 2006.

Swedish policy strategies with eHealth relevance

National strategy for eHealth Sweden - 2006

The objectives are the creation of a common information infrastructure, the accomplishment of laws and regulations and the facilitation of interoperable, supportive ICT systems. The strategy was approved by the government and implementation plans will follow.

A joint telecommunication network, called Sjunet, was implemented in 2002 and connects all hospitals, primary care centres, county councils and pharmacies. It won the eEurope award for eHealth in 2003. The system allows the secure and reliable exchange of patient data. Sjunet supports different eServices including video conferencing, telemedicine and ePrescribing.

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 or get in touch with us.



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