



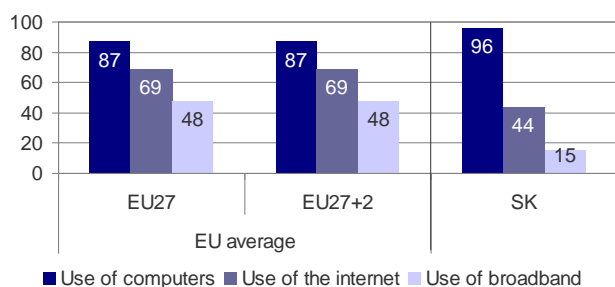
# Benchmarking ICT use among General Practitioners in Europe 2007

## Country Profile: Slovakia

### Key findings: eHealth among GPs in Slovakia<sup>1</sup>

Slovakia can be regarded as a weaker average eHealth performer in the EU27. In terms of infrastructure, 96% of the Slovak GP practices use a computer. This puts Slovakia on a par with 13 other EU countries where a computer availability rate of nearly 100% is reached. When it comes to Internet connectivity (44%) and broadband connection (15%) however Slovakia can be regarded as one of the laggard countries as it positions itself together with Romania at the tail end of all European countries.

#### ICT Infrastructure in Slovakia GP practices



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

The storage of medical patient data is only averagely well developed in Slovakia. At least one type of individual data is stored in 92% of GP practices. However, for most data types under observation in the survey, the Slovakian GP practices display results that stay quite far behind the averages to be found across the EU27 member states. That means that most Slovakian GPs store only very few different data types.

A considerable share of Slovenian GP practices store administrative patient data: this pertains to 90% of the practices. This figure exceeds the EU27 average of 80%. The

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use of a Decision Support System is also more common in Slovakia than in the EU on average (88% versus 62%)

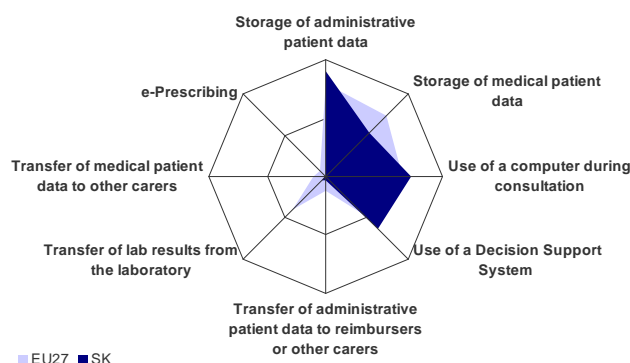
A computer is available in the consultation room of 90% of the Slovak GP practices. The PC is actually used for consultation purposes by 73% of the Slovakian GPs. This reveals a certain "availability versus use" gap that can be found in many European countries.

The electronic exchange of patient data is not yet very common; neither in Slovakia, nor in Europe as whole. Only 5% of Slovakian GPs use network connections for the reception of analytical results from laboratories and only 1% of GPs exchange medical data with other care providers. These figures - that compare to 40% and 10% on average in the EU27 - place Slovakia at the tail end of the European countries.

With 2% of Slovakian GP practices that exchange administrative data with other carers the country scores below the EU average of 10%. As far as the networked exchange of administrative data with reimburses is concerned, Slovakia is in a similar position. Networks are used for this purpose by 4% of GP practices, as compared to 15% on average in the EU27. This figure places Slovakia in a rather large group of laggard countries.

None of the GP practices in Slovakia uses e-Prescribing. However, this eHealth application can be regarded as a reality in only three Member States: Denmark, the Netherlands and Sweden. Apart from these countries adoption levels are never higher than 5%.

#### eHealth Use by GPs in Slovakia



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

## 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.

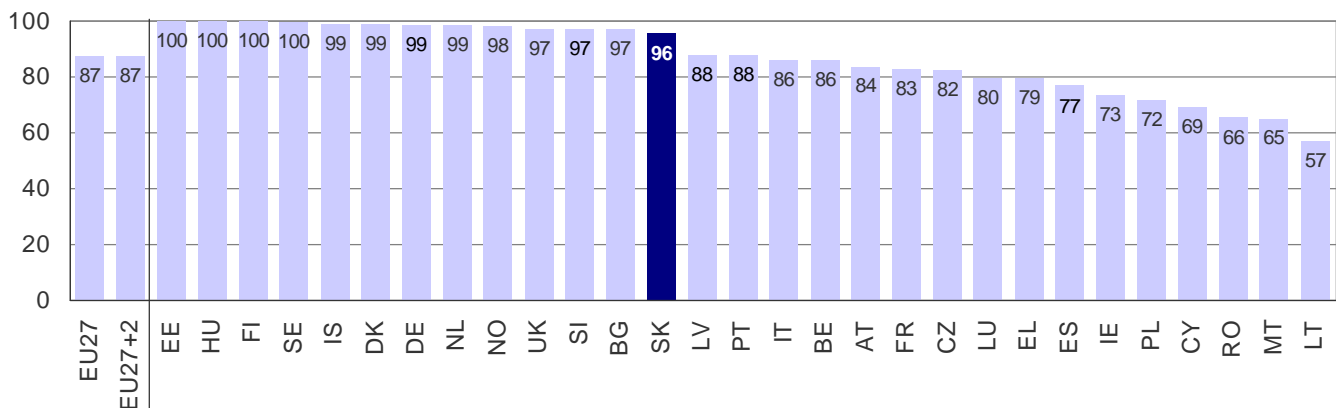
ICT infrastructure as understood here entails

- 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

Slovakia is among the top performers in this respect as 96% of GP practices are equipped with one or more PCs. This result puts Slovakia 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 features.

**Use of Computers in GP Practices in Slovakia**



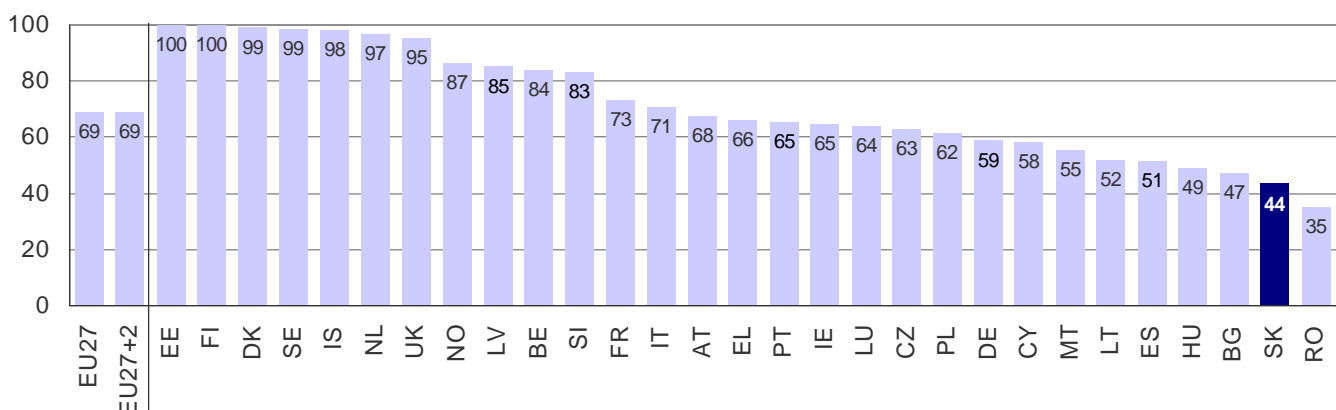
**Base:** All GPs. **Indicator:** R4 (cf. annex for more information), % values. **Source:** empirica, Pilot on eHealth Indicators, 2007.

## Use of the Internet and broadband

Even though a computer is nearly ubiquitous in Slovak GP practices, only 44% dispose of an Internet connection, a result which is clearly below the EU27 average of 69%. Slovakia therefore positions itself at the tail end of a rather large group of countries where less than 75% practices have Internet

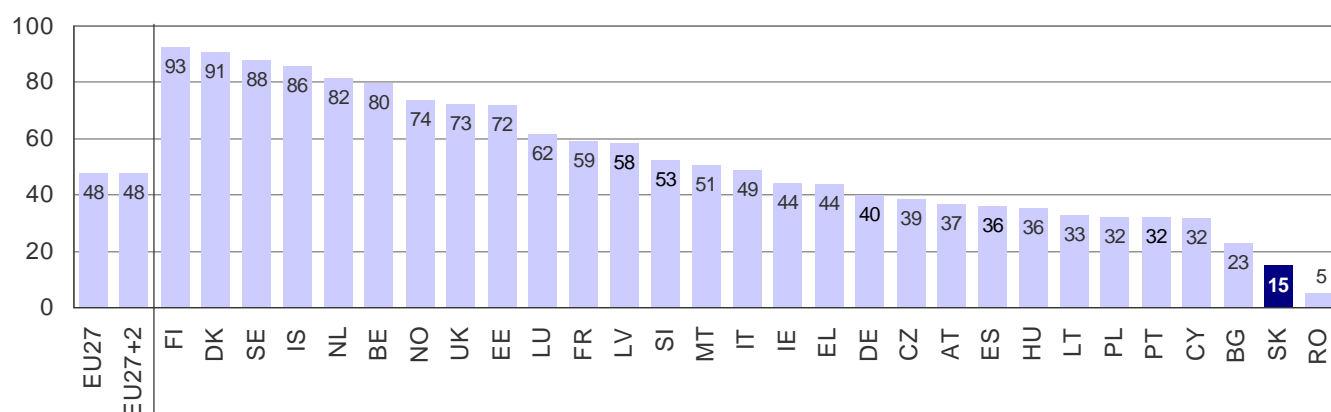
access. Only Romania shows an even lower Internet availability with only 35% of Romanian GP practices connected to the Internet. A connection to the Internet or any other dedicated network is a prerequisite for all those eHealth applications that are based on data transmission or information retrieval. .

**Use of the Internet in GP Practices in Slovakia**



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

## Slovak 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 Slovakia, only 15% of the practices use a broadband connection in order to access the Internet. Other than in case of computer and Internet use, differences regarding bandwidth remain high across the EU27 Member States. Availability rates vary between 93% and 5%. Slovakia belongs to a group of three countries where less than a quarter of GP practices use broadband connections in order to access the Internet.

### Use of eHealth Applications

With about 87% of European GP practices having a computer and about 69% being connected to the Internet, the question is 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 results attained by Slovakia when it comes to the storage of electronic patient data are more or less in line with the European average storage pattern. At least one type of individual patient data is stored in 92% of GP practices. The electronic data stored by Slovakian GPs refers most often to diagnosis (94% of GP practices using local EHRs), medications (85%), basic medical parameters (71%) and symptoms/reasons for encounters (60%). All other data types are registered between 10% and 50%.

### Electronic Patient Data Storage in Slovakia:

#### Storage of Different Types of Individual 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 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 electronic exchange of patient data is not yet very common; neither in Slovakia, nor in Europe as whole. Only 5%

of Slovakian GPs use network connections for the reception of analytical results from laboratories and only 1% of GPs exchange data with other care providers. These figures - that compare to 40% and 10% on average in the EU27 - place Slovakia at the tail end of the European countries. The rather low use rates in Slovakia are however not very surprising

considering the fact that less than one out of two GP practices is equipped with an Internet connection.

Telemonitoring has not yet arrived on the scene neither in Slovakia nor in the EU as a whole. In Slovakia not even one of the practices uses it. This compares to the highest usage rate which is realised in Sweden. Even there, not more than 9% of the GPs report making use of telemonitoring. The only other countries with a mentionable usage rate of telemonitoring are the Netherlands and Iceland, scoring 3% each.

A similar pattern can be discovered with regard to the exchange of medical patient data across borders. None of the Slovakian GP practices transfer any medical data across

national borders. In this case the Netherlands shows the highest usage level with however only 5% of practices taking part in cross-border transmissions of medical data. France, Cyprus, Malta, Denmark 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 Slovakia |        |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|-----------------------------|----|--|--------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
|                             |    | 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  | 1  | 0  | 0  | 1  | 0  | 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  | 0  | 3  | 5  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0  |

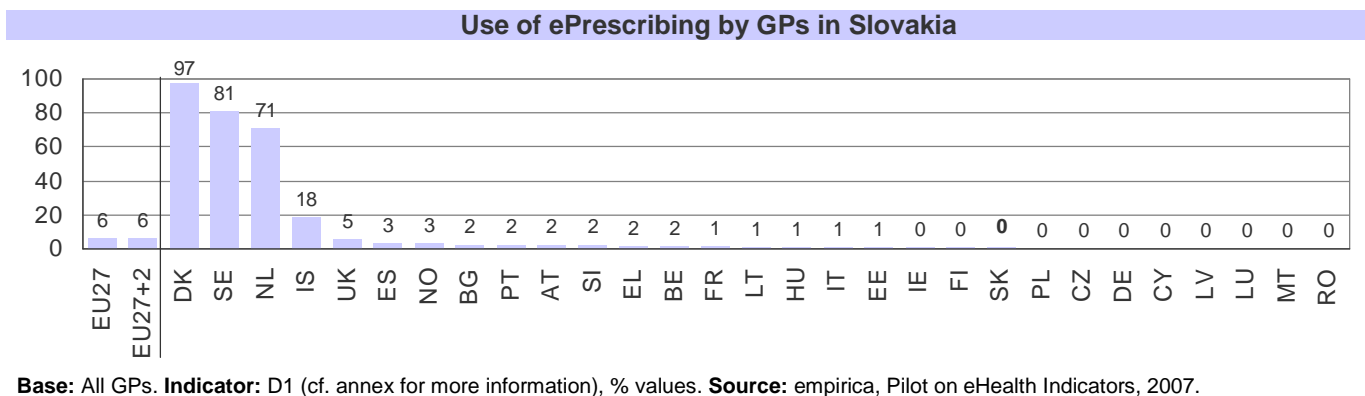
**Base:** All GPs. **Indicator:** D1 (cf. annex for more information), % values. **Source:** empirica, Pilot on eHealth Indicators, 2007.

### ePrescribing

Electronic exchange of prescriptions, commonly referred to as ePrescribing, is currently practiced by none of the GP practices in Slovakia. A similar situation can be found in nearly all EU27 Member States as well as in Norway.

The only three EU Member States where ePrescribing is a reality are Denmark, Sweden and the Netherlands.

This shows clearly that ePrescribing has so far not arrived on the scene throughout the EU.



### Coded data entry

In Slovakia the distribution pattern of coded and uncoded data entries corresponds roughly to the average EU27 usage pattern. 36% of GP practices use coded data only for their storage of electronic patient data. Coded data entry therefore is slightly more prevalent in Slovakia than in the other European member states on average. Around 24% of GP practices report resorting to un-coded data only. A mix of both coded and uncoded data is used by 36% of Slovakian GP practices, as compared to 45% on average. 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.

### Use of data coding for the storage of electronic patient data by Slovak 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.

Slovakia scores below the EU average of 10% for the exchange of administrative data with other carers used by only 2% of Slovakian GP practices. As far as the networked exchange of administrative data with reimburses is concerned, Slovakia is in a similar position. Networks are used for this purpose by 4% of GP practices, compared to 15% on average in the EU27. This figure places Slovakia in a rather large group

of laggard countries, where less than 10% of GP practices routinely transfer administrative patient data. This group includes several Eastern European countries, some small Member States, but also countries like Italy and Germany. Here again it should be mentioned that only one out of two practices does fulfil the infrastructural requirements for the electronic transfer of patient data.

When it comes to the exchange of administrative patient data in the EU27 Member States, huge variations come into view: as regarding the exchange of administrative data with other care providers, shares differ between 0% (Latvia and Luxembourg) and 74% (Denmark). Rates for the exchange of administrative data with reimbursers also differ widely: from 0% (Latvia and Luxembourg) to 48% (Denmark).

### Exchange of Administrative Patient Data in Slovakia

|                              | 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.

In Slovakia, 94% of GP practices have established a password protected access. This puts Slovakia on a par with most of the EU27 member states. As shown in the table below, nearly all (94%) of the European GPs use this feature. High use rates in almost all countries are due to the fact that password protection can be achieved comparatively easy as it is available for basically all commercial computer operating systems.

Password protection of transmitted files is used by 69% of Slovakian GP practices. Even though password protection of files is also technically available in many applications, only 57% of GPs in the EU27 use this technique.

28% of Slovakian GPs use encryption software in order to transmit data files. 19% of the GP practices use e-Signatures. Other than in the case of password protection, both encryption and the use of electronic signatures require a dedicated infrastructure, comprising special software, an encryption key and a signature. This infrastructure must be present at both ends: on the side of the transmitting as well as of the receiving party. This explains the relatively low usage rates in Slovakia but also in most of the countries of the EU27. Frontrunners in regard to the usage of both security methods are Denmark and Estonia.

## GPs Use of Security Features in Slovakia

|                                    | 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.

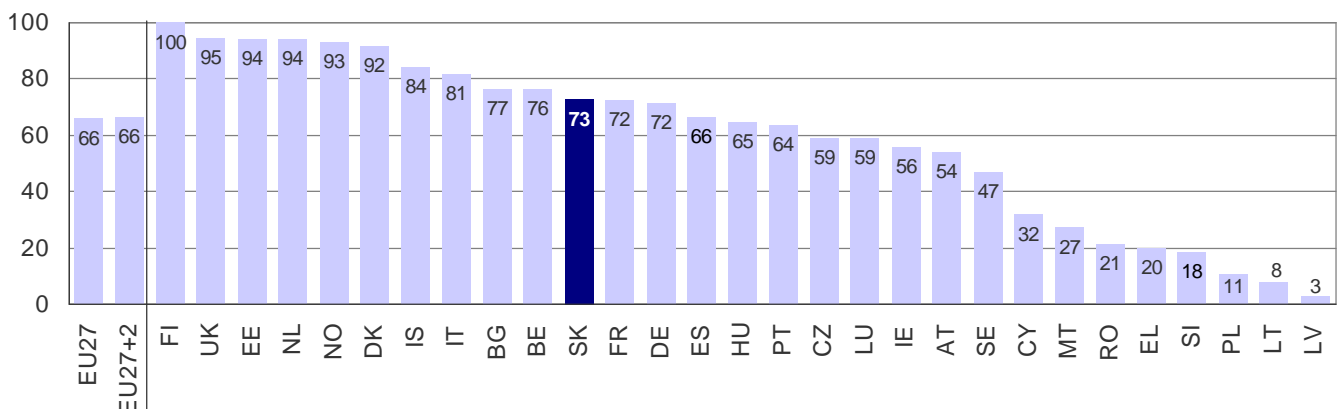
## Computer use in consultation

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.

73% of the GPs in Slovakia use a computer in patient consultation. This figure indicates that around 17% of the GPs that dispose of a PC in the consultation room do not actually use it for consultation purposes when the patient is present.

The results for the EU27 show a significant gap between frontrunners with more than 90% of GP practices using a computer (Finland, United Kingdom, Estonia, Netherlands and Denmark) and the countries following or lagging behind (less than 30%). With 72% Slovakia is part of a group of average performers where usage rates vary between 60% and 90%.

## Computer Use in Consultation with the Patient in Slovakia



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

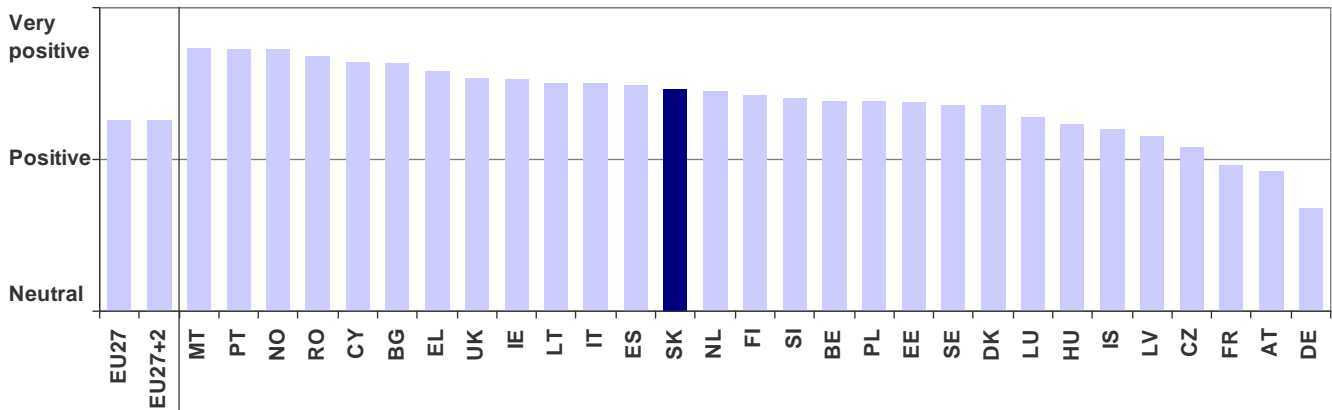
## Attitudes and Impacts

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 Slovakia 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, Slovak 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 Slovakia



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

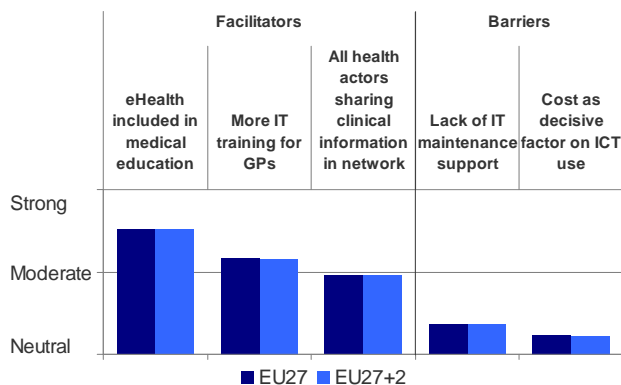
### Perception of facilitators and barriers

The perception of facilitators and barriers by Slovak GPs goes more or less in line with the perception shown by the majority of GPs in the EU27.

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 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 Slovakia 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.

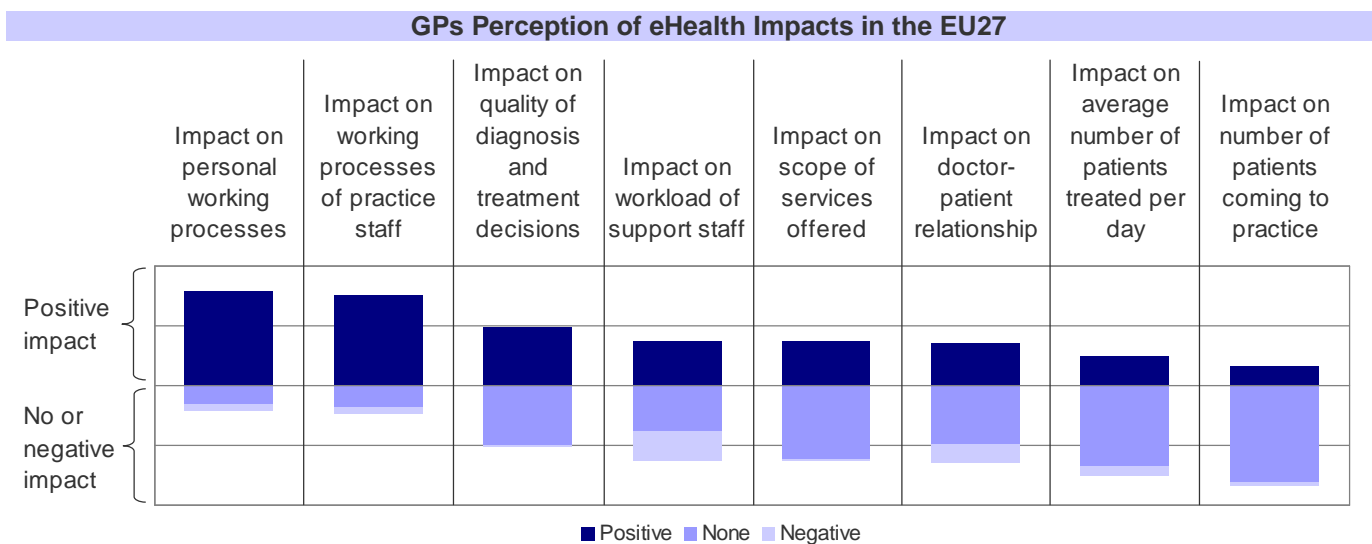
When it comes to patient-related or medical impacts a more ambivalent picture emerges. For every GP being positive about those impacts, there is at least one other GP not perceiving any benefit. This pattern hold true for the EU27 as a whole as well as for the Slovak GPs in particular. This is for instance 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. 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. About one-third of the practitioners state that the scope of services offered by the practice actually increased due to the use of IT systems and software. In Slovakia this positive impact could be discerned by 38% of GP practices. It can be assumed that for those 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. A majority of Slovak GPs did not experience any changes in the number of patients coming to the practice (83%) nor the number of patients treated per day (66%) that could be related to the introduction of eHealth solutions. The general impression by European GPs is equally ambiguous as a majority of GPs do not perceive any changes

in the number of patients coming to the practice or being treated per day.

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

Slovakia can be regarded as one of the slightly weaker average eHealth performer in the EU27. Computer availability in GP practices is as high in Slovakia as in the EU27 on average. When it comes to Internet connectivity and broadband connections however, Slovakia belongs to the laggard countries. In comparison to the other EU Member States Slovakia is last by one – only Romania displays lower usage rates.

While the storage of patient data is averagely well developed in Slovakia, the transfer of electronic patient data has not yet arrived in Slovakia at all. Average use rates are reached in regard to the use of computers during the consultation with the patient and the use of Decision Support Systems.

The “New Healthcare System” program initiated by the Ministry of Health included the approval of the eHealth Roadmap and the Action Plan for 2006. The program resulted in the foundation of the “National Health Information Centre” (NHIC). The NHIC is supervised by the Ministry of Health via the eHealth committee, which works as a consultation organ and coordinator for developing eHealth strategies.

The Slovakian eHealth strategy aims at the development of the National Healthcare Information System, a national healthcare portal, as well as an ePrescribing system that is to include a patient medication record combined with a decision support system. Some of these components have been introduced recently while others are not yet implemented. This uneven implementation of the strategy is reflected in the survey that exposed high use rates for electronic data storage while at the same time the transfer of electronic data remains underdeveloped.

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### Slovak policy strategies with eHealth relevance

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eHealth Road Map and Action Plan for 2006

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## 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          |
|                                | <b>Total</b>   | <b>6.789</b> |

#### 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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