



Benchmarking ICT use among General Practitioners in Europe 2007

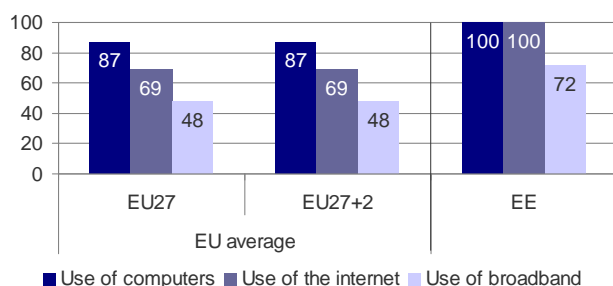
Country Profile: Estonia

Key findings: eHealth among GPs in Estonia¹

Among the East European EU member states, Estonia is one of two eHealth frontrunners — the other one being Hungary. Estonia is one of the EU27 member states where the highest rates of infrastructure availability are attained. GPs in Estonia also show extremely high use rates of security features.

100% of the Estonian GP practices use a computer. The same share of practices disposes of an Internet connection. In Estonia, broadband represents the most usual form of access to the Internet with 72% of GP practices resorting to broadband connections.

ICT Infrastructure in Estonian GP practices



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

In terms of eHealth use a somehow more diverse picture emerges: In the areas of storage of administrative data and the use of computers in consultation with the patient, Estonia can be compared with top EU27 performers such as Denmark, the Netherlands and the United Kingdom. 98% of GPs in Estonia store administrative patient data and 94% use a computer in consultation with the patients. This amount to one of the highest usage rates across Europe. With respect to the use of

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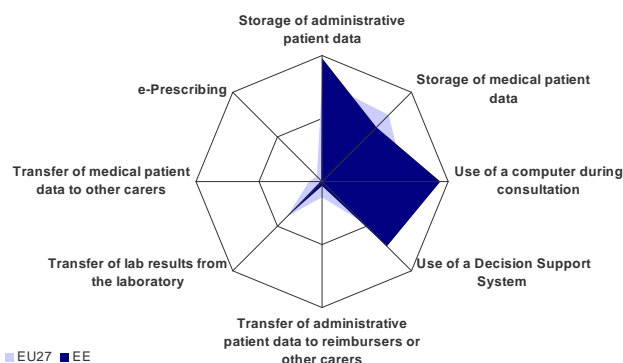
Decision Support Systems (DSS), Estonia also scores highly above average with 94% of the GPs reporting using a Decision Support System for prescribing or diagnosis. Virtually all Estonian GP practices store at least some sort of electronic medical patient information. The data types stored most often include diagnoses (95% of GPs) and medications (84% of GPs). Other types of medical data are stored less frequently, but all types are stored by at least 50% of the GP practices.

When it comes to the electronic transfer of patient data, Estonia shows a slightly weaker performance, the only exception being the transfer of lab results from laboratories to GP practices, where Estonia equals the EU27 average of around 40%. Only 1% of Estonian GP practices however transfer either medical or administrative patient data to other care providers. Both figures compare to EU27 averages of 10%.

ePrescribing is still not a reality in most European member states. This holds true for Estonia as well where only 1% of GPs having participated in the survey reported using ePrescribing.

The use of eHealth applications today seems to be well in line with the history of the Estonian eHealth strategies. A rather mature eHealth strategy had already been launched in 2000. At the same time, all primary care practices were obliged to procure computers and Internet connections. Today these infrastructure prerequisites have not only been purchased, but are moreover heavily used, as shown by the high rate of Estonian GPs using a PC in consultation with the patients.

eHealth Use by GPs in Estonia



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

Electronic patient data transfer via network on the contrary has been covered only recently under a new, and still ongoing EHR project, which will be operational by the end of this year. The successful implementation of the new policy – in addition to the rather positive attitudes of the Estonian GPs vis-a-vis eHealth applications – might result in a substantial increase in the use of networked data transfers in the near future.

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.

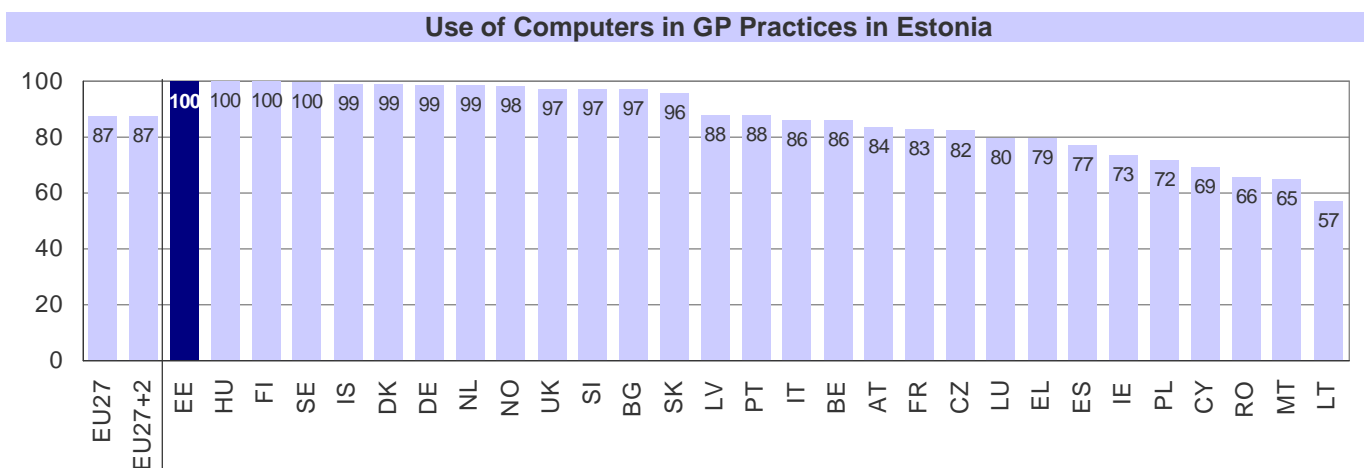
ICT infrastructure as understood here entails

- 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, Estonia is among the top performers as virtually all GP practices are equipped with one or more PCs. This result puts Estonia 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. Computers are becoming more and more an essential and unquestioned part of practice fixtures. Estonia clearly fulfills the infrastructural prerequisite for the successful implementation of eHealth applications. The encompassing availability of computers and Internet in the practices is explained by a governmental regulation dating back to the year 2000 obligating all primary care providers to proceed to the procurement of a PC and Internet connection.



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

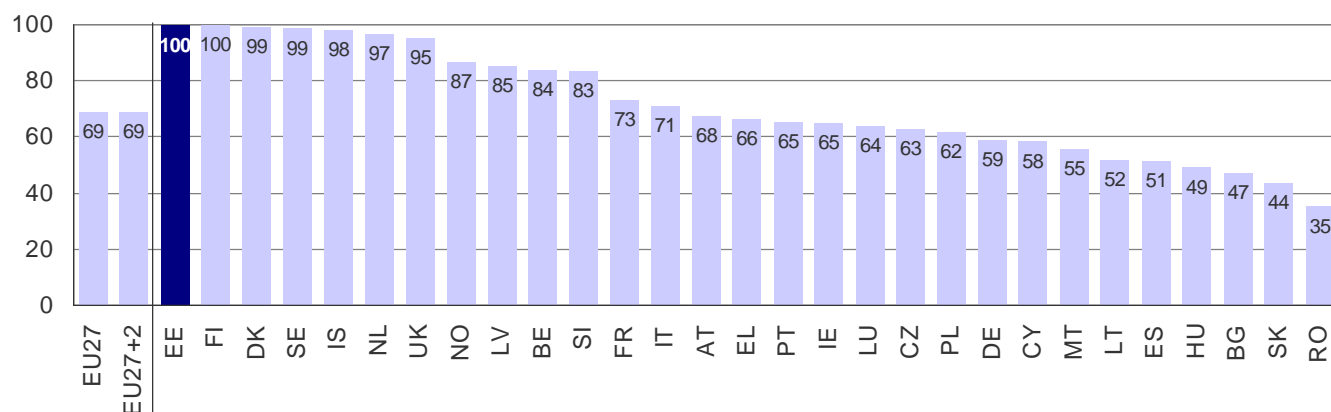
Use of the Internet and broadband

A connection to the Internet or any other dedicated electronic network is a prerequisite for all those eHealth applications that entail data transmissions and information retrieval. In this regard Estonia again scores extremely well as 100% of Estonian GP practices are connected to the Internet. As a result Estonia is again a member of the frontrunner group together with Denmark, Finland, Sweden, the Netherlands 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.

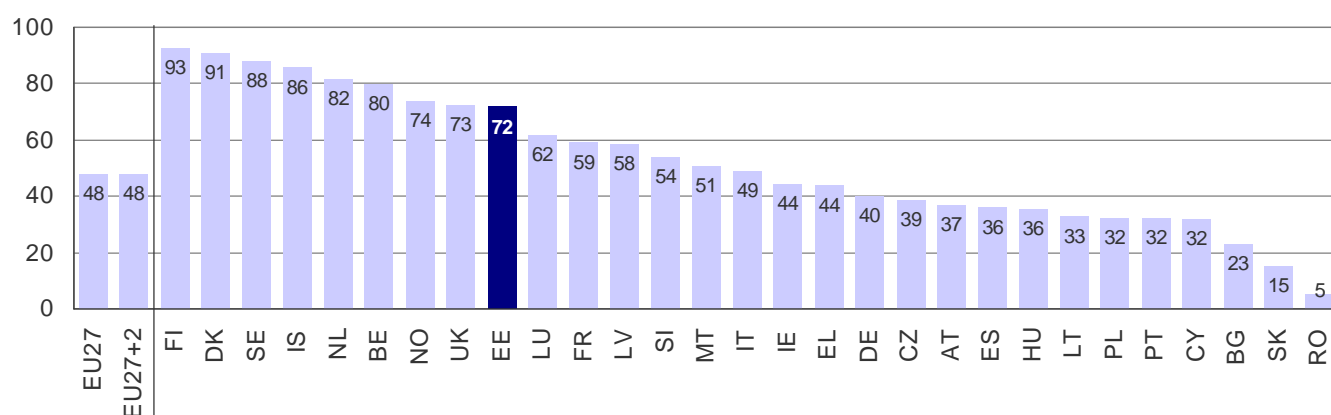
72% of Estonian GP practices are equipped with a broadband Internet connection. This figure positions Estonia very close to the top group of European countries, where broadband availability rates of over 90% are attained. In comparison to the other east European member states Estonia holds first place. The differences regarding bandwidth remain high across the EU27 Member States. Broadband availability rates vary between 93% and 5%.

Use of the Internet in GP Practices in Estonia



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

Estonian GP Practices Using a Broadband Connection



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

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 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 electronic storage of patient data is not so common in Estonia. Concerning the different data types, usage rates vary substantially, with Estonia following more or less a common European usage pattern. For most types of patient data, Estonia scores below the EU27 average. An exception is the storage of diagnoses that is exercised in 94% of the Estonian GP practices.

In addition to diagnoses, medications are also registered by a majority of Estonian GPs. They are registered by 86% of the practitioners, only slightly less than the EU27 average of 90%. Treatment outcomes and radiological images are registered by 46% and 47% of Estonian GPs, the latter figure being well above the EU27 average of 34%. All other data types are registered in between 50% and 60% of the GP practices.

**Electronic Patient Data Storage in Estonia:
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 electronic exchange of patient data via the Internet or other dedicated networks has not yet arrived: neither in Estonia, nor in Europe as a whole. In Estonia, the reception of laboratory results by GP practices (39%) corresponds to the average score of the EU27 Member States. With regard to the transmission of data towards other care providers, Estonia scores substantially lower as only 1% of Estonian GPs make use of this option, as compared to 10% on average in the EU27.

Telemonitoring has not yet arrived on the scene neither in Estonia, where none of the GP practices offer telemonitoring services, nor in the EU as a whole.

In Estonia none of the GP practices reported using ePrescribing. This should be seen in relation to the highest usage rate which is realised in Sweden, where also not more than 9% of GPs offer telemonitoring services. 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. In Estonia, not one of the GPs participating in the study engaged in cross-border data exchanges. In this case the Netherlands shows the highest usage level with 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.

It is possible that rates for the exchange of medical patient data will go up in Estonia in the near future as a new networked Electronic Health Record project is currently under preparation. Estonia also participates in the cross-border Baltic eHealth project. The basic infrastructure having been established, Denmark, Norway, Sweden, Lithuania and Estonia plan to consolidate their cross-border network and to increase and enhance the services available through it.

Electronic Exchange of Different Types of Medical Patient Data in Estonia

	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	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

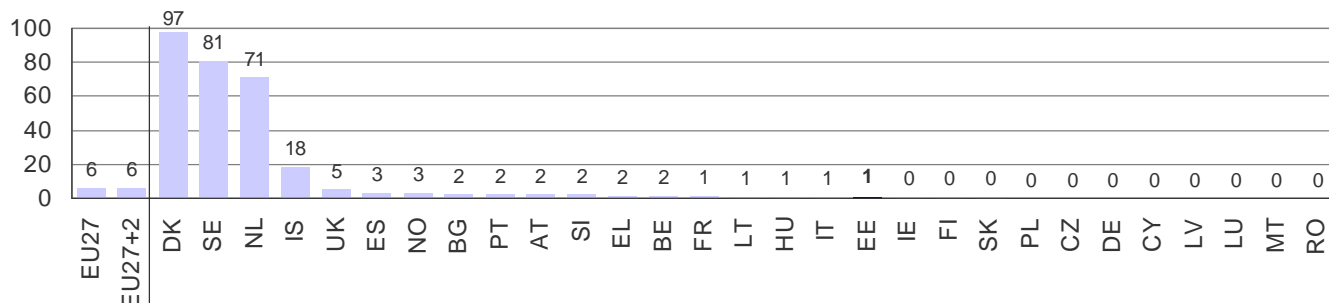
Base: All GPs. **Indicator:** D1 (cf. annex for more information), % values. **Source:** empirica, Pilot on eHealth Indicators, 2007.

ePrescribing

The only three EU Member States where ePrescribing is a reality are Denmark, Sweden and the Netherlands. Apart from this frontrunner group, only Iceland as non-EU Member State shows an adoption level that rises above 5%.

In Estonia virtually none of the GP practices having participated in the survey make use of ePrescribing. Only 1% of the practitioners regularly resorted to ePrescribing.

Use of ePrescribing by GPs in Estonia



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

Coded data entry

With regard to data coding, Estonia shows some deviation to the average European usage pattern. Only 5% of the GPs use exclusively uncoded data for the registration of medical patient data. 35% however use solely coded data, a figure clearly above the EU27 average of 21%. Most GP practices (59%) use both uncoded and coded 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 medical patient data by Estonian 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.

Estonia scores well below the EU average of 10% for the exchange of administrative data with other carers, which is used by only 1% of Estonian GP practices.

The networked exchange of administrative data with reimbursers is also used in no more than 5% of the GP practices (as compared to 15% on average in the EU27). This figure places Estonia in the lower third of the countries participating in the survey. Here the frontrunners are Denmark, the Nether-

lands and the United Kingdom, but even in these countries not more than one out of two GP practices uses this feature.

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 Estonia

	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.

With relation to the use of security features Estonian GP practices follow the general pattern found in the EU27, however scoring substantially above average for all security issues.

Password protected access is the most readily available form of data protection and therefore unsurprisingly the method the most widely used. 94% of GP practices in the EU27 have established a password protection. In Estonia virtually all of the GP practices resort to password protection access which places Estonia on the top of the frontrunner group. The situation for the use of passwords for the protection of transmitted files is similar: password protection is used by 76% of GP practices in Estonia, as compared to the significantly lower EU27 average of 57%.

Other than the case of password protection, both encryption and the use of electronic signatures require a dedicated infrastructure, which must be present at both ends. The higher effort required by these security techniques explains why they are used by a significantly lower percentage of European GP practices.

The encryption of transmitted files is a security feature that is used by only 42% of GP practices in the EU Member States. In Estonia, this figure is doubled as up to 85% of GP practices use encryption technology for the transmission of data files. With respect to this security feature, Estonia attains the highest percentage of all countries participating in the survey.

The use of eSignatures varies widely across Europe. However, on average only 19% of GP practices use e-signatures. With respect to this security feature as well, Estonia scores highly above average with 58% of GP practices resorting to this security measure. This amounts to the third-highest value in the EU27, Estonia being outnumbered only by Denmark and Belgium.

GPs Use of Security Features in Estonia

	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	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

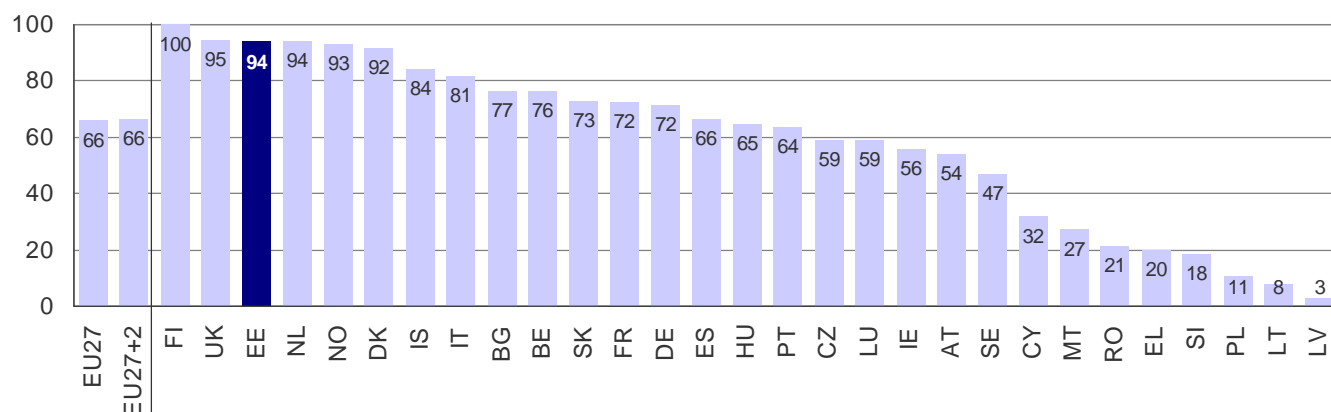
Base: All GPs. **Indicator:** D4 (cf. annex for more information), % values. **Source:** empirica, Pilot on eHealth Indicators, 2007.

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.

When it comes to the use of a computer in consultation with the patients, a gap can be observed between frontrunners with more than 90% of computer use and the countries following or lagging behind. With 97% of Estonian GP practices using a computer for consultation, the country clearly ranks in the frontrunner group, outnumbered only by Finland and the United Kingdom and more or less on a par with the Netherlands, Norway and Denmark.

Computer Use in Consultation with the Patient in Estonia



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

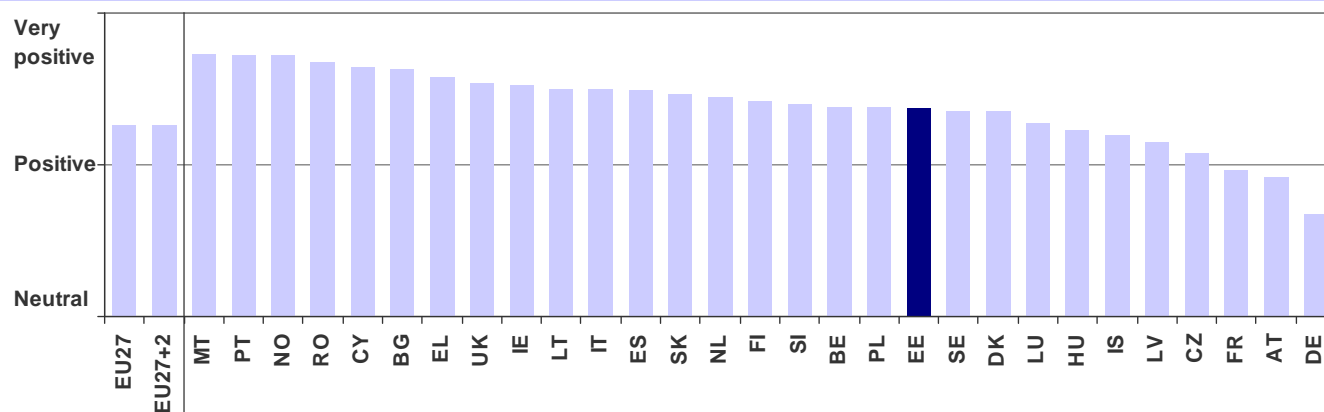
Attitudes and Impacts

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 Estonia are quite positive when it comes to the question whether ICT really and tangibly improves the quality of health care services. On a scale ranging between very negative and very positive, Estonian GPs are to be found 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 Estonia



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.

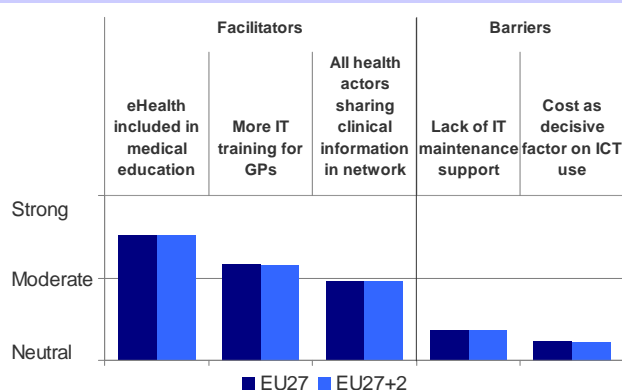
Estonia belongs to the rather large group of countries where GPs would want more eHealth issues to be included in the medical education.

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. In Estonia a majority

of GPs would find more IT training helpful. 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 is also perceived as a barrier to eHealth by a noticeably larger number of GPs than in the EU on average. This holds not true for Estonia however, where neither costs nor lack of IT support are considered as essential barriers that could hamper eHealth applications.

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.

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.

Perception of impacts

In Estonia the perception of eHealth impacts resembles the general pattern found in the EU27 to a very high degree. 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. In Estonia nearly 90% of the practitioners agreed that the use of ICT had a positive impact on both personal and 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

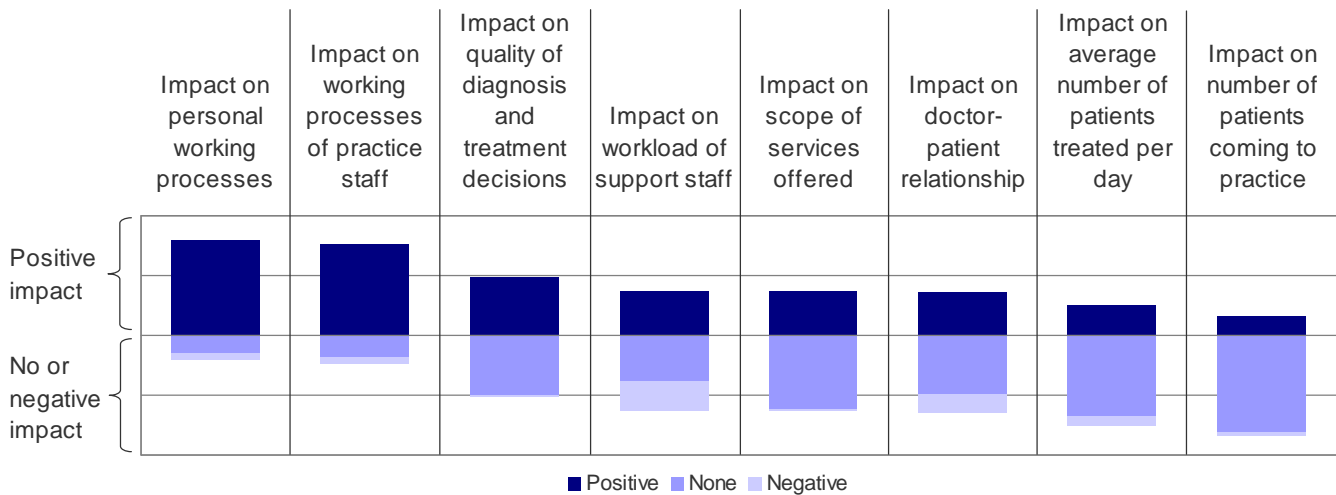
impact on the quality of diagnosis and treatment decisions: here about half of the GPs see positive impacts as compared to the other half seeing no impacts, which is the case in Estonia as well as in the most other European Member States. In case of doctor-patient relationship and the workload of the 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 observation holds true for Estonia as well. 90% of Estonian GPs state that the use of IT in the practice had a positive impact on the working processes of the staff. At the same time nearly 50% of the GPs consider the staff workload to have increased (another 30% however report that it has decreased due to the use IT solutions).

About one-third of the Estonian practitioners state that the scope of services offered by the practice actually increased due to the use of IT systems and software. In Estonia nearly one fourth of the practitioners reports an increase in the scope of services. 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 Estonian GPs did not experience any changes neither in the number of patients coming to the practice nor in the number for patients being treated per day. This goes in line with the general impression by European GPs, most of whom did not report any changes in the number of patients coming to the practice or being treated per day. However it should be noticed, that one out of four Estonian practitioners did actually experience an increase in the number of patients being treated per day, which might be explained by the enhanced working processes that go along with the introduction of IT solutions 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.

GPs Perception of eHealth Impacts in the EU27



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

Among the 12 new Member States, Estonia is one of two eHealth frontrunners — the other one being Hungary. In the areas of storage of administrative data and the use of computers in consultation with the patient, Estonia can be compared to the top EU27 performers such as Denmark, the Netherlands and the United Kingdom. In other areas — namely use of DSS and electronic transfer of lab results — the country is at or even above the EU27 average. Weaker performances are only found in the areas of patient data transfer — i.e. transfer of administrative and medical data as well as ePrescribing.

The history of the Estonian eHealth strategies seems to be well in line with the factual eHealth use by GPs today. The country has launched a rather mature eHealth strategy in 2000 by the Ministry for Social Affairs. In the same year, the Ministry issued a regulation addressed to all primary care practices making it an obligation for them to procure computers and Internet connections. In addition, and since 2001, all claims for reimbursement sent to the Estonian Health Insurance Fund (EHIF) must be in electronic format. Especially the first regulation might well explain the high usage rates for computer-based eHealth applications in Estonian GP practices. In relation to the latter it should however be noted that "electronic format" does not in the first place mean data transmission via Internet but also comprises the use of diskettes or CD-ROMs sent by ordinary mail or courier.

Electronic patient data transfer via network was covered only recently under the new Electronic Health Record project which is still ongoing. The full EHR is planned to be operational by the end of this year. It will therefore be interesting to further monitor developments in Estonia in this area to see whether the country will show an equally good performance here as it did for patient data storage and computer use in consultation.

Estonian policy strategies with eHealth relevance

Electronic Health Record Project of Estonia (2005 - 2008)

eHealth strategy of the Estonian Ministry for Social Affairs (2000)

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 use of ICT by primary care physicians in the EU27 and EEA countries,
- achieved by means of a survey of primary care physicians and their use of ICT and Internet 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
- and an appropriate benchmarking framework and procedure for eHealth defined,
- thereby — and through 29 Country Briefs for each of the Member States, Norway and Iceland — enabling Member States to monitor their performance to improve public services.

To meet these objectives the study organised and executed a survey of primary care physicians as described above.

The Analytic Report

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

Indicators used

The Analytic 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 and Internet for communication 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@empirica.com) or get in touch with us.



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