

*CHAFEA/2016/Health/17 for the implementation of FC
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Provision of a market study on telemedicine

*Final Presentation
October 2018*

Agenda

1. Study overview
2. Methodology
3. Key takeaways
4. Conclusions and recommendations
5. Questions

Study overview

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Objectives, scope and timeline

The purpose of the present study is to provide a full analysis of the market for telemedicine applications and solutions based on the current conditions.

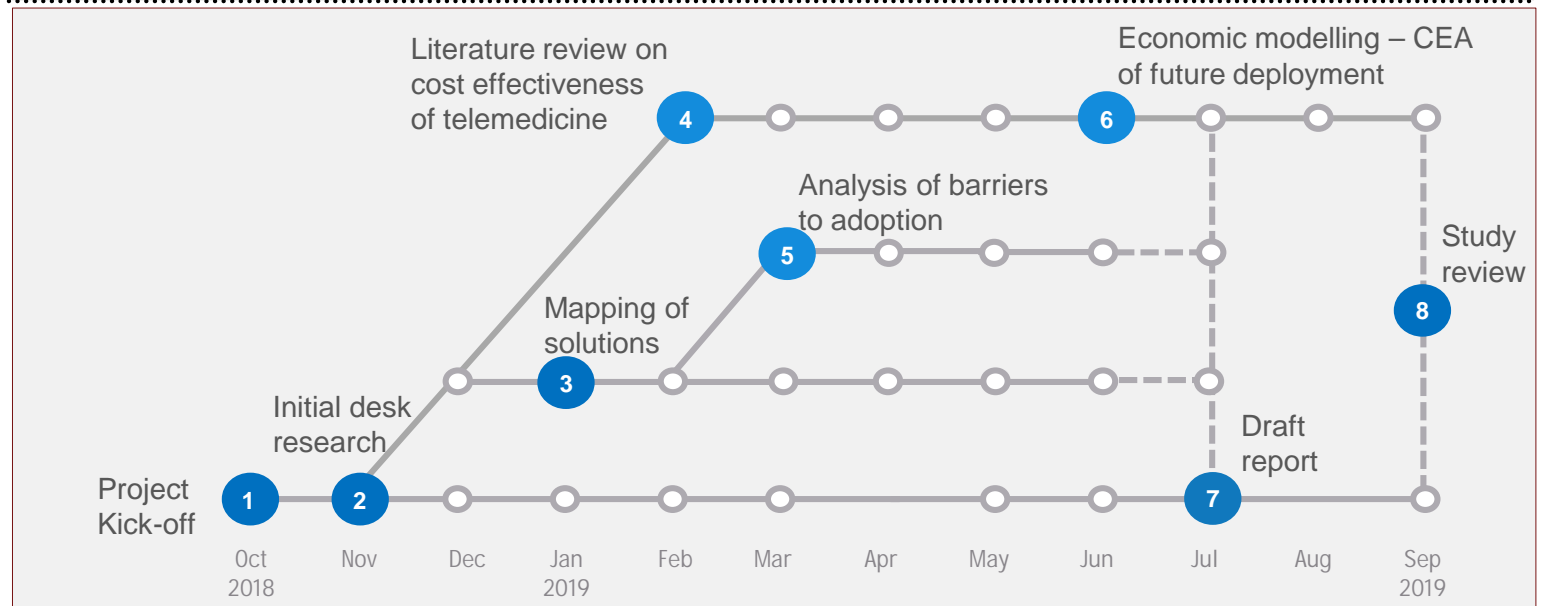
It investigates four principal domains in the current adoption and uptake of telemedicine solutions amongst health professionals and end users across the EEA area.

Main activities

The study focuses on an analysis of:

1. Existing telemedicine solutions and relevant technical standards and/or guidelines;
2. The market environment and dynamics for such solutions;
3. The barriers to the wider implementation of telemedicine, as well as potential EU-wide approaches or solutions;
4. The cost-effectiveness of existing solutions and of potential wide-scale deployment

Study roadmap and timeline



Methodology

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Research methods



- The present study relies on 4 key research methods designed and implemented along the project timeline. These methods are:
 - Documentary research. Transversal to all work packages of the study (mapping of solutions, market analysis, analysis of barriers, and economic assessment).
 - Primary research. Transversal to the market analysis, the analysis of barriers and the economic assessment.
 - Qualitative and quantitative analysis. Transversal to all work packages of the study.
 - Economic modelling. Specific to the economic assessment of cost effectiveness of future deployment of telemedicine.
- We provide hereafter details for the documentary research, the primary research and the economic modelling.
- Further details on all activities performed are detailed in the study report.

Documentary research across all activities

Desk research across all domains of investigation included documentary research on market studies, institutional reports, scientific publications and statistical notes

Mapping of solutions and Market

Literature review

- Review of the literature provided by CHAFAEA (EU-funded pilots, JRC reports)
- Review of sources from PwC knowledge databases
- Review of market reports and studies from business research providers.

Data sources

- Studies from EU-funded pilots
- Reports from WHO
- Scientific papers
- Statistical data from OECD, Statista
- Market reports (Research2Gate)
- Owners' website
- Telemedicine Glossary
- National and international standardisation bodies' publications

Analysis of barriers

Literature review

- Desk research and analysis of the barriers country by country.
- Review of the literature provided by CHAFAEA (EU-funded pilots, JRC reports).
- Review of PwC information database.

Data sources

- Country reports from OECD.
- Statistical data from Statista.
- SIMPHS publications from JRC and other scientific papers (including surveys).

Economic analysis

Literature review

- Identification of the literature sources and repositories to ensure access to a relatively wide sample of articles and reports,
- Identification of studies based on key topics (cost efficiency and telemedicine, eHealth, mHealth or digital health),
- Selection of relevant studies for review (PRISMA approach)
- Creation of a data base from the selected literature for analysis..

Data sources

- Electronic searches conducted across several databases:
- Cochrane Database of Systematic Reviews,
 - Database of Abstracts of Reviews of Effectiveness (DARE),
 - CRD database of the University of New York,
 - Jstor, Science Direct, and PubMed.

Primary research – Stakeholder interview

Primary research methods included a stakeholder interview.

The questionnaire design allowed to collect information on the current and views and outlook from key stakeholders on the uptake of telemedicine

Typology of stakeholders

Stakeholders contacted for interviews where:

- Healthcare Providers and medical associations
- Telemedicine solutions provider associations
- Standardisation body
- Public bodies (eHealth agencies)
- Public and private payers
- Patient associations
- Nurse and other personnel associations

Structure of the interview guide

The interview guide focused on the following topics:

- Validating preliminary analysis results
- Stakeholder's views on the current telemedicine market
- Discussion of collective stakeholder views obtained during the research and analysis phases
- Stakeholder's views on the short term outlook of the market
- Stakeholder's views on the long term outlook of the market
- Validation of the definition and development of future deployment scenarios
- Stakeholder's views on the future uptake and cost effectiveness of telemedicine solutions

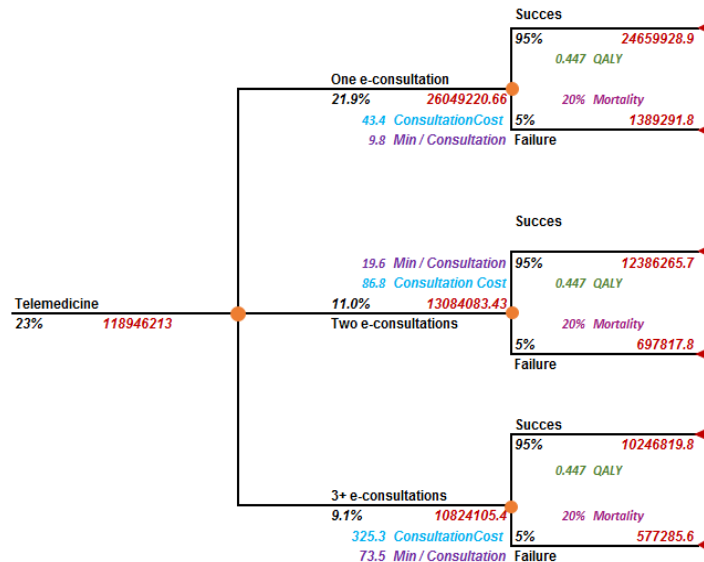
Economic Modelling

A decision model was developed to evaluate the cost and effectiveness of an intervention through traditional means or through telemedicine.

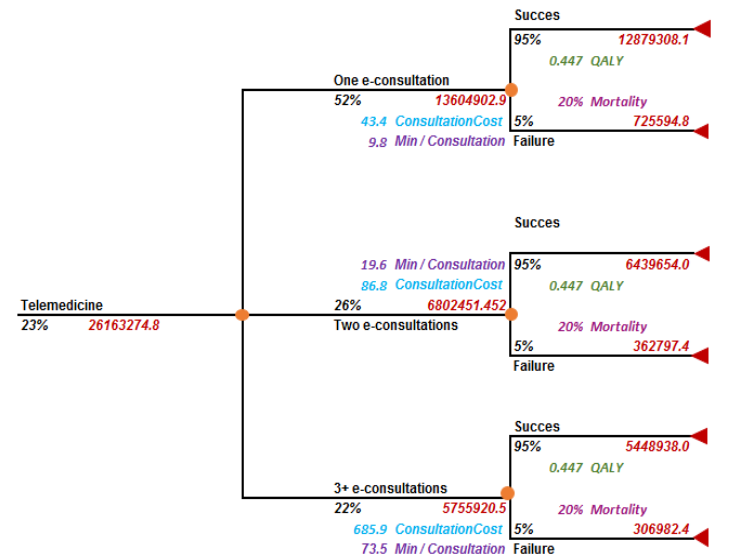
The model draws probabilities and population counts from established studies and official statistics; it also draws costs and benefit parameters collected throughout the literature review.

- The decision model simulates the patient journey from an initial consultation to a final treatment.
- The decisions are visualised as a decision tree
- The split of the population moving in each branch is the result of the literature on an assumption and it is open for feedback.
- The model allows for summary statistics to be made for the initial population at risk. These are currently under evaluation.

Decision Model – Increasing telemedicine adoption by 5% (full population)



Decision Model – Increasing telemedicine adoption by 5% (chronically ill population)



Key takeaways

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WP1 – Mapping and categorisation of telemedicine solutions

	Main activities performed	Key takeaways
Identification and collection of relevant materials	<ul style="list-style-type: none"> • Review of all the literature base on telemedicine solutions • Collection of official telemedicine reports (JRC, WHO...) and scientific papers • Gathering of statistical data (OECD, Statista...) 	<ul style="list-style-type: none"> • Germany, the UK, France and the Nordic countries (Denmark, Sweden and Finland) are the most advanced countries regarding the uptake of telemedicine. • Telemonitoring and prevention are the main types of intervention for telemedicine solutions. • Telemedicine's focus is on primary care, cardiovascular diseases (CVDs), chronic obstructive pulmonary diseases (COPDs) and diabetes. • A great number of solutions target well-being and self-care, especially mobile health applications. • Standards and guidelines mostly address technical requirements.
Study and mapping out of the materials	<ul style="list-style-type: none"> • Classification of telemedicine solutions according to categories • Identification and analysis of dominant trends • Comparison of the findings with official reports' conclusions 	
Comparison of the conclusions	<ul style="list-style-type: none"> • Extraction of several standards from the "Telemedicine glossary - Glossary of Concepts, Technologies, Standards and Users", 5th edition, 2003. 	
Identification and collection of standards and guidelines	<ul style="list-style-type: none"> • Review of literature base on standards • Collection of publications by official standardization bodies (ISO, CEN) and medical associations 	
Study and mapping of the standards and guidelines	<ul style="list-style-type: none"> • Classification of telemedicine standards according to categories • Analysis of dominant trends • Comparison with official reports' conclusions 	

WP2 – Market analysis

	<i>Main activities performed</i>	<i>Key takeaways</i>
Definition of market research framework	<ul style="list-style-type: none"> • Definition of the market study approach. • Definition of the market segments under study. • Scoping of the principal market actors under study. • Description of the principal characteristics of the market. 	<ul style="list-style-type: none"> • The uptake of information technologies in Europe is the main accelerator for telemedicine. • The market potential of telemedicine is strong. It is expected to grow at a compound annual growth rate of 14% in the coming years. • The well-being market enabled by digital technologies (mobile applications, devices) is rapidly growing as well. • Demand outpaces supply, but this should be read with care, as there are many telemedicine initiatives but hospitals and clinics do not have the means to pay for the technology. • Market players include: telecommunication companies, ICT tools and electronics manufacturers, device manufacturers, pharmaceutical industry companies, and start-ups. • US and Canada have outperformed the EU, whilst Japan has a lower number of users of telemedicine.
Systematic data collection	<ul style="list-style-type: none"> • Identification of market data sources, national statistics and from public reports. • Data collection from sources. • Data cleansing for analysis 	
Data analysis, assessment and consolidation	<ul style="list-style-type: none"> • Analyses on the potential demand and supply. • Analysis of the market segmentation using a bottom-up approach • Descriptive analysis of principal actors 	
Targeted interviews	<ul style="list-style-type: none"> • Selection of stakeholders for interviews. • Design of an interview guide/questionnaire focusing on the market's current status, and its evolution in the short and long term. 	

WP3 – Barriers on the access to telemedicine

	<i>Main activities performed</i>	<i>Key takeaways</i>
Identification and collection of relevant materials	<ul style="list-style-type: none"> • Review of all the literature provided by CHAFEA • Data collection from country reports provided by OECD • Research of scientific papers 	<ul style="list-style-type: none"> • Telemedicine barriers exist in all countries but do not affect them to the same degree. It is difficult to quantify how their impact varies from one country to the next. • Since telemedicine is a multi-stakeholder market, barriers also affect the players differently within the countries. • The lack of a legal framework means there are other underlying obstacles (reimbursement, lack of interoperability, lack of acceptance). • Funding and financial incentives are key drivers of telemedicine initiatives. • From our mapping, the lack of acceptance of telemedicine solutions by stakeholders, the poor regulatory framework, the insufficient funding and the inadequate IT infrastructure are the most prevalent barriers to telemedicine widespread deployment.
Identification of telemedicine framework conditions	<ul style="list-style-type: none"> • Classification of main barriers to telemedicine country by country • Identification and analysis of recurrent barriers • Comparison of the findings with official reports' conclusions • Provision of policy recommendations to overcome barriers to telemedicine wider deployment 	
SWOT analysis of the telemedicine framework	<ul style="list-style-type: none"> • Collection of information from official sources • Identification of the main strengths, weaknesses, opportunities and threats for all conditions (cultural, regulatory, social, industrial/technical, knowledge, financial and market) 	
Survey	<ul style="list-style-type: none"> • Designed the survey questions on Qualtrics • Collected the details of the targeted contacts • Sent emails to approach the contacts 	

WP4 – Economic analysis

High level report on WP progress

	<i>Main activities performed</i>	<i>Key takeaways</i>
Systematic review of cost effectiveness studies	<ul style="list-style-type: none"> • Identification of references for the literature review on the cost effectiveness of telemedicine. • Appraisal and systematic review. • Descriptive analysis on the conclusions from the review. 	<ul style="list-style-type: none"> • In essence, telemedicine is generally perceived and judged to be cost-effective in 73.3% of the cases addressed by the literature. • Neutral effects were discussed in 21.3% of the selected references, mainly in systematic reviews. • Negative effects account for 5.6% of the studies. • Further adoption of telemedicine increases benefits: it reduces costs (consultation costs, travel costs, time spend) and increases patient survival and life quality. • To overcome the barriers there is a need for more scientific evidence for its efficiency and large scale experiments to assess the impact of a wider deployment. • Raising awareness (patients, doctors), stimulate integration between stakeholders and reimbursement are keys to success.
Design of an economic decision model	<ul style="list-style-type: none"> • Definition of an impact assessment model based on a decision tree analysis. • Estimation of parameters to take into account during the assessment (linked to WP2). 	
Definition of analytical scenarios	<ul style="list-style-type: none"> • Definition of the scenarios to be tested under the decision model: <ul style="list-style-type: none"> • Baseline: current mix of adoption (18% telemedicine). • Alternative: future mix of adoption (23% telemedicine). 	
Assessment of the impacts	<ul style="list-style-type: none"> • Impact assessment on each scenario and evaluation of benefits. 	
Estimation of the future costs	<ul style="list-style-type: none"> • Estimation of costs based on information from WP4 objective 1 and WP2 analyses. 	

Conclusions and recommendations

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Main conclusions and recommendations

	Main findings	Recommendations
Solutions	<ul style="list-style-type: none"> The telemedicine solutions landscape is concentrated in a number of MS, and primarily targets the telemonitoring and prevention space in primary care, and in relation to main chronic diseases. A great number of solutions target well-being and self-care, especially mobile health applications 	<ul style="list-style-type: none"> Interoperability between solutions – which is another challenge to cross-border use – can be addressed by policy-makers at EU level and should remain a priority in the coming years, to stimulate the market. Considering a ‘solution’ as an entire ecosystem and the related data flow end-to-end are also key in effective regulation and market facilitation. New ‘solution’ definitions may be required to reflect this complexity. At the same time, different companies offer the individual solution components, so fragmentation between legal frameworks regulating different components must be eliminated.
Standards and guidelines	<ul style="list-style-type: none"> The applicable standards and guidelines mostly address technical requirements 	<ul style="list-style-type: none"> As Member States set their own national standards, it is important to tackle this heterogeneity especially as it directly links to the need for interoperability. the role of EU policy makers would also be to: <ul style="list-style-type: none"> Better understand current limitations and needs, Offer more detailed specifications, Work with the entire range of stakeholders (SDOs, market players, healthcare providers, etc.), Raise awareness and support capacity-building related to the use of standards and guidelines, Link legislative effort with necessary supporting measures related to standards and guidelines.
Telemedicine market	<ul style="list-style-type: none"> The market potential of telemedicine is strong. It is expected to grow at a compound annual growth rate of 14% in the coming years. The well-being market enabled by digital technologies (mobile applications, devices) is rapidly growing as well. 	<ul style="list-style-type: none"> Remote transmission of information at ease, speed and at marginal cost, are the main accelerators of telemedicine. These require two key preconditions: access to the technology or infrastructure, and favourable financial conditions for telemedicine programmes Policy making can help to identify good practices across MS related to funding schemes for telemedicine and provide support for its adoption by other interested countries. Policy making can also provide better regulation as an incentive for the emergence of relevant business models that would optimally exploit telemedicine adoption.

Main conclusions and recommendations

	Main findings	Recommendations
Barriers to uptake	<ul style="list-style-type: none"> Difficulties relating to access to telemedicine in Europe exist in all countries, with: the lack of acceptance of telemedicine solutions by stakeholders; the unfavourable regulatory framework; the insufficient funding; and the inadequate IT infrastructure being the most prevalent ones. 	<ul style="list-style-type: none"> Decision-makers should be attentive towards barriers preventing the wide deployment and adoption of telemedicine, and pursue actions to overcome these. Conservatism or resistance to adopting new medical processes, integration between technology and medical practitioner's procedures, and (data protection) regulations are delaying the generation of the base of evidence necessary to convince all actors. Incentive to spur partnerships between healthcare institutions and technology providers can allow health systems to properly pay the utilisation of the technology, meaning developing reimbursement schemes for telemedicine utilisation.
Cost factors	<ul style="list-style-type: none"> Telemedicine is generally perceived and judged to be cost-effective, as evidenced by trials documented in academic literature. 	<ul style="list-style-type: none"> Cost factors or cost parameters have strong impact on the cost-effectiveness of telemedicine solutions. These include: distance between patient and nearest healthcare professional; time required per consultation; cost of a doctor visit; QALY; mortality rate. Attention should be given to studies analysing the cost effectiveness of individual trials. Policy making can provide research incentives to accelerate wider studies on cost effectiveness and better assess the economic and societal impact of telemedicine.
Large-scale deployment	<ul style="list-style-type: none"> Further adoption of telemedicine is cost-effective, though benefits from wider uptake will be tangible for patients and society at large through logistics savings and productivity gains, and less so for healthcare providers or social schemes. More scientific evidence is needed from larger scale trials and telemedicine programmes to conclude on this definitively. 	<ul style="list-style-type: none"> As increasing returns to scale can be inferred from the assessment of the scenarios of the cost effectiveness analysis, the benefits drawn from large scale adoption will be increasing faster with respect to the adoption rate of telemedicine across Europe. The role of decision makers should already be to design the incentives necessary to help increase the adoption rate of telemedicine solutions.

Questions

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Thank you

For further information please contact:

Guy Brandenbourger
PwC Partner

guy.brandenbourger@lu.pwc.com

Antonia Auman
PwC Manager

antonia.auman@lu.pwc.com

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