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Mapping Skills and Competencies; Providing Access to Knowledge, Tools and Platforms; and Strengthening, Disseminating and Exploiting Success Outcomes for a Skilled Transatlantic eHealth Workforce

Case Study: Joint Action Between Academia and Government to Develop Digital Competencies for Health Professionals in Latvia

University of Latvia

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ORGANIZATION

The University of Latvia (UoL) is one of the largest higher education institution in the Baltics with a century-long tradition of research and science-based education in the natural and social sciences, humanities, medicine, mathematics and computer science.

The goal of the Centre for Health Management and Informatics (CHMI) at the Faculty of Medicine is to promote and coordinate interdisciplinary applied research and educational projects in a respective field. Over the last five years, CHMI has been involved with research projects in collaboration with the Ministry of Health (MoH), Ministry of Welfare and State Centre for Disease Prevention. In the field of informatics, researchers from CHMI participated in health data related projects led by the Institute of Mathematics and Informatics (IMI) of UoL, devoted to elaboration of ontologies-based health data querying tools for non-programmers [1].

BACKGROUND

Rationale for the Integration of Managerial and Digital Competences into Medical Studies

It is widely recognized that clinicians' performance is best when "being invited, empowered and nurtured rather than directed, micromanaged and controlled through a hierarchy" [2], and top-down efforts to make clinical processes more effective can be perceived as a threat to professional autonomy [3]. At the same time, the professional autonomy of clinicians for independent bedside decisions is increasingly linked to responsibility for the balance of clinical and resource dimensions of the whole organization [4]. This is a profound change in the medical profession, and it demands the integration of targeted training for new skills, values and competencies into the medical education of future professionals. This reasoning, backed up by a pilot study conducted to evaluate the knowledge gap amongst medical students of UoL [5], informed the decision to introduce a Health Management and Economics course as a part of studies in both general medicine and within a master studies program in nursing sciences in 2012. The integration of these new curricula topics in medicine studies aimed to develop specific general competencies, which are required for work in modern and increasingly complex health care systems.

One of the topics covered by this course is the introduction to resources focused on clinical, operational, administrative and financial data needed to analyse the varying aspects and processes of delivering health services. Students are taught to identify changes needed in existing clinical and organizational practices to improve health care delivery and to identify indicators in the data that will allow them to measure the impact of proposed interventions. In this context, they must understand how the data is used to represent the clinical process and to collect and integrate the data into information.

Access to Health Administrative Data as a Prerequisite of Health Professionals-led Health Services Research

When venturing beyond theory, having access to the main pool of care and administrative data is essential to students and young health professionals who are interested in further health services research.

Big data, accumulated over time from providers' claims for reimbursement of delivered inpatient and outpatient services and prescriptions, presents a number of advantages. In Latvia, a single governmental National Health Service (NHS) collects such data from state-paid health services for the entire population. This wide coverage ensures statistical significance of results, even in detailed analyses of specific subgroups of diseases, age, geographical localisation and other factors. The use of this data also saves money in circumstances where it substitutes the collection of new data for epidemiological studies and health services research. Additionally, if there is an elevated need for data for research purposes, the data is in a standardized format that can be quickly accessed [6-8].

Currently in Latvia, data access is limited to governmental institutions overseeing large and comprehensive patient level administrative data. This is as an obstacle to developing digital skills amongst health professionals caring for individual patients, and is a limitation to being able to research the ways to improve the care processes and systems in general. It also explains why the field of health services research in Latvia is still at the early stages of development, while internationally this kind of data has already been the subject of numerous publications on various topics. Access to data in other countries has provided information on epidemiology of specific diseases, patient care pathways, utilization of specific care services, real-life compliance to prescribed drugs, design, monitoring and the benchmarking of health status indicators and outcomes related to health services delivery.

The scientific research potential focused on health administrative data is well documented. For example, after gaining access to national health insurance data in France, more than 400 scientific papers based on health administrative data research have been published since 2007 [8]. It is also important to note that in other countries, once the fundamental problems of data access and collaboration and knowledge sharing between institutions and specialities have been overcome, studies based on administrative data are increasingly published in a growing number of diverse journals, covering both health and clinical sciences studies [9].

As research and evaluation contribute to health service performance, the promotion of access to administrative data and the introduction of the mechanisms facilitating it is encouraged amongst health administrators [10].

Health Care System and Current Status of Health Data Use for Evidence-based Policy Making and Quality Improvement in Latvia

The health care system in Latvia is characterised by a tax-financed statutory health care provision and a purchaser–provider split. The NHS is the central organisation, which purchases publicly financed health services from providers, collecting patient level data of services provided during this process. The other central organisation that collects provider-reported patient level data is the Centre for Diseases Prevention and Control (CDPC), which, among other functions, is the responsible organisation for the national registries of selected diseases and death causes registry.

The Organization for Economic Cooperation and Development (OECD), which provides a forum where governments from around the globe can work together to share experiences and seek solutions to common problems [11], recently reported the Latvian health system lags behind many OECD countries in terms of the degree in which data is used to systematically measure, compare and improve the performance of services. The report goes on to explain that under-exploitation of data on health system

performance leads to policies that are "too often scattergun and short term" [12]. According to this report, Latvia has not exploited the possibilities of using health information to develop a more data-driven system, despite the fact that there is data available. Thus, it is advised that Latvia should develop more complete and more granular performance indicators linked to particular providers to fully address efficiency, waste and care quality issues. In a resource-stretched country like Latvia, such advances in data exploitation, including open publication and benchmarking, can bring greater value for spent money in promoting quality over resource-intensive accreditation or clinical audit programmes.

However, one of the barriers to exploiting the potential of health data for evidence-based policy making and driving health care quality and efficiency, is the objectively limited capacity of the compact governing institutions. Latvia is not only a small country with a population of only 2 million, but also a country with very low spending on public health, by European Union (EU) standards. In 2017, administrative costs were less than 2.4% of public financing for health, compared to 22% in purchasing power parity (PPP) throughout the EU in 2014 [13]. At the same time, the small size of the health care system does not guarantee that it would be less complex to manage, as the scope of the issues is probably the same for larger countries. In connection to the need for more advanced use of health data, there are very few data professionals working in governing institutions with a good working knowledge about the health sector, nor are there data processing specialists with a background in health care. If there are specialists in these fields, they are most likely busy with competing tasks.

STATUS/CURRENT DEVELOPMENTS
In 2016, the CHMI at the Faculty of Medicine at UoL, prepared and presented a proposal to the MoH of Latvia for a joint applied sciences project titled "Transparency and health care system data - towards public monitoring for quality and efficiency". Due to common interests, this proposal was endorsed at the ministerial level, and the state CDPC was assigned as project partner. The participation of academia in the creation of the NHS performance assessment system and facilitated access to unique health data promotes the development of the promising field of health informatics (HI) and health systems research, and creates conditions necessary for the development of new, system-oriented competences for future health professionals. On the other hand, the task of ensuring the sustainability of the public health care system is increasingly challenging, as it is continuously affected by the concurrent growth of financial pressures and healthcare related societal expectations, as well as demands from policy makers and administrators.

ACTIVITIES/MEASURES
Since this is a multi-layered problem, the project simultaneously addresses the health policy and management, HI and legal / data protection issues. There are several parallel activities being planned to achieve our goals and create successful outcomes:

- Elaborate on the principles, workflow and technical specifications to create a new research-purposed database to extract, link and anonymize data from separate databases (NHS data on inpatient and outpatient services and prescriptions, State Emergency Medical Service data on ambulance calls, CDPC data on registries of certain diseases and death causes, etc.)
- Evaluate international practices to set forth the principles for a health care performance assessment system, and to collaborate on identification, description and initial validation of key performance indicators

- Explore teaching approaches to increase the motivation of health professionals and medical students to understand and develop competencies in order to study complex health data
- Draft proposals that serve to modernize the legal framework that regulates access to health administrative data for both scientific research and public transparency
- Draft and finalize policies, processes and technical requirements for exploratory data analysis to minimize the risk of the patient's identification, and to protect the security of the data (e.g. methods for automatic data aggregation in the case of unique combination of indirect identifiers in the selected data sets)
- Develop user-friendly health data structure images and data dictionaries designed to facilitate correct data selection and querying
- Draw proposals for the simplification of the administrative data architecture within research-purposed databases (e.g. structuring consumption data of particular services, selection of relevant and pre-calculated variables for patient groups according to tracers for specific diagnoses)
- Test commercially available business intelligence (BI) applications and develop new querying tools as well as data selection tools for independent use among health professionals (e.g. domain specialists with limited programming and complex data processing skills)

RESULTS

At the time of writing this report, the integration of data over the last three years has already been realised, and the practical task of identification, description and initial validation of performance indicators has begun. As the process for the adaptation of the legal framework is still ongoing, the access to integrated data and, therefore, the involvement of academia and health professionals in health services research is still limited. However, the increasing awareness and understanding from both health professionals and policy-makers on the value of health professionals' involvement in health services performance assessment and research, serves as a solid basis for realization of this important project.

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Case Study Checklists

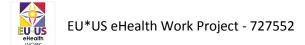| Checklist of eHealth topics (competencies) |
| --- |
| *Role of "Peopleware":* human factors, awareness, satisfaction and acceptance of health IT, usability measurements, evaluation of health IT, communication, leadership, change management, ethics and IT and similar topics

Yes |
| *Role of inter-professional approaches:* inter-professional versus mono-professional training and learning activities. What subjects lend themselves to inter-professional vs. mono-professional classes, learning environments and similar topics

N/A |
| *Role of healthcare data sciences:* data and information acquisition including documentation, data quality, data, information and knowledge management, data analysis and statistics, clinical decision making instruments, reporting and similar topics

Yes |
| *Fusion of medical technology & informatics:* software as a device, smart devices, automatic data acquisition via devices, risk and safety management

N/A |
| *Role of process and workflow management:* clinical and administrative processes, information continuity and information logistics, management of processes, workflow management systems and similar topics

Yes |

Role of ethics, legal and data protection issues: ethics and IT, legal requirements, data protection and information self-determination, data safety and similar topics

No

Role of learning and teaching: learning techniques ("learn how to learn"), learning and teaching styles (online, blended, face-to-face), learning management, information management for learning and teaching and similar topics

No

Role of management related topics in health informatics and IT: principles of management, strategic management, stakeholder and change management, leadership, financial management, risk management, quality and safety management, resource planning and management and similar topics

Yes

Role of technology: information and communication systems, telemedicine, telematics, assistive technologies, mHealth, life-cycle-management including systems development/engineering

N/A

Role of consumers and populations: consumer health informatics, public health informatics

N/A

Role of Research: information management in research, data analytics

Yes

Role of interoperability: systems integration, IT standards, terminologies and classifications

N/A

Checklist of eHealth topics (gaps and deficiencies)

Teaching the teachers: Are there any activities in your organisation to teach health IT/eHealth to teachers in healthcare?

Yes

Supporting participatory design and acceptance testing/research: Are there any educational activities to teach or practice participatory design? Are there any activities including research in user acceptance testing and satisfaction measurement?

No

Integrating eHealth/health informatics into traditional curricula: Are there any activities to include eHealth/health informatics into traditional curricula of physicians, nurses and other health professionals with direct patient care?

Yes

Motivating clinicians and managers: Are there any incentives and opportunities for clinicians and healthcare managers to acquire and update digital eHealth/health informatics skills and knowledge?

Yes

Engaging women: Are there any activities to attract female students in eHealth/health informatics or employ female health IT staff?

N/A

Adjusting job descriptions and enable continuing education: Are there any activities to adjust job descriptions, e.g., for clinicians, that include health informatics competencies (also proper use of health IT/eHealth systems) and are there activities to support staff updating and upgrading their health IT related skills and knowledge? This topic is mainly related to provider organisation and also to IT vendors.

N/A

Updating teaching and learning material: Are there any activities to ensure that the material is up-to-date and of high quality?

N/A

Availability of courses including electronic courses: Are there any additional activities to improve the availability of courses such as implementation of new courses, new course formats that recognise previous experiences/training in particular for continuing education?

N/A

Informal caregivers: Are there any educational activities to teach health IT usage to informal caregivers, e.g. for assistive technologies?

N/A

Shortage of health informatics specialists: Are there any programmes to attract health informatics specialists?

Yes

eHealth Budget: Does your organization, area or region have a dedicated budget set aside for eHealth/health informatics training, education or workforce development initiatives?

N/A

eHealth Specialty Areas: Does your organization address any of these speciality settings/areas of training or outreach for eHealth education or workforce development: ambulatory care, social medicine, geriatric/ageing medicine, rehabilitation?

N/A