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SITUATION ANALYSIS ON EVIDENCE-INFORMED HEALTH POLICY-MAKING

Estonia

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Situation analysis to improve evidence-informed health policy-making in Estonia

Estonia

EVIPNet Europe Series, N° 3



ABSTRACT

The aim of the situation analysis is to provide deeper understanding of the major factors that may facilitate or hinder the evidence-informed health policy in Estonia. It was conducted based on the WHO situation analysis manual and it found that in order to ensure research use among policy-makers in a systematic way, a knowledge translation platform could be created. A knowledge translation platform is a national-level entity designed to create and nurture links among researchers, policy-makers and other research users. With the aim of using the available resources in the best possible ways in order to obtain good population health outcomes, the platform would support already existing practices in health policy-making with high-quality evidence and implementation considerations. It would support the work of policy-makers and focus on knowledge translation that will help to make evidence available in the policy-making process without limiting choices among decision-makers.

KEYWORDS

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HEALTH POLICY MAKING
RESEARCH USE IN POLICY MAKING
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KNOWLEDGE TRANSLATION PLATFORM
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Abbreviations

CeHWIS	Centre of Health and Welfare Information Systems
Centre for HTA	Centre for Health Technology Assessment
EBP	evidence brief(s) for policy
EHIF	Estonian Health Insurance Fund
e-HIS	e-Health Information System
EIP	evidence-informed policy
ERC	Estonian Research Council
EU	European Union
EVIPNet	Evidence-informed Policy Network
GDP	gross domestic product
HB	Health Board
HIS	health information system
HTA	health technology assessment
ICD-10	International Statistical Classification of Diseases and Related Health Problems, 10th Revision
ICT	information and communications technology
KB	knowledge brokering
KT	knowledge translation
KTP	knowledge translation platform
NHP	National Health Plan
NIHD	National Institute for Health Development
OECD	Organisation of Economic Co-operation and Development
PD	policy dialogue
R&D	research and development
R&D&I	research and development and innovation
R&I	research and innovation
RRS	rapid response service
SA	situation analysis
SAM	State Agency of Medicines
SNOMED	Systematized Nomenclature of Medicine
TalTech	Tallinn University of Technology
TLU	Tallinn University
UT	University of Tartu
WB	World Bank

EXECUTIVE SUMMARY

Estonia has taken part in the WHO Evidence-informed Policy Network (EVIPNet) Europe activities since 2014; so far one capacity-building workshop has been organized and one evidence brief for policy has been developed (reducing the consumption of sugar-sweetened beverages and their negative health impact in Estonia). In order to identify strategies to improve and strengthen evidence-informed health policy in Estonia, a situation analysis was performed. The aim of the situation analysis is to provide deeper understanding of the major factors that may facilitate or hinder the evidence-informed health policy in Estonia. It was conducted based on the WHO situation analysis manual. The main sources for the analysis were literature reviews, key informant interviews and consultations with policy-makers. The findings were reviewed, critically appraised, consolidated and validated with the WHO EVIPNet Europe Secretariat, the oversight group and at a stakeholder consultation meeting.

Several institutions and departments in the government structure support evidence-informed policy-making in Estonia. Several government-level legislative elements also foster the use of evidence in the policy-making process (intent to elaborate a draft act, impact assessment). In the field of health, different institutions contribute to the use of health information, namely the National Institute for Health Development, the Estonian Health Insurance Fund, the Health Board, the State Agency of Medicines, and the Centre of Health and Welfare Information Systems. Generally, health data in Estonia are disseminated in user-friendly formats, are regularly used in policy-making processes and mostly cover the needs of policy-makers. In addition, research use is a normal part of health policy-making. Some evidence-supported systems that support evidence-informed policy are already in place in Estonia, namely the Centre for Health Technology Assessment at the University of Tartu, the process used by the Estonian Health Insurance Fund to define the health benefits package and the development of clinical guidelines. Examples of using health data and research in the policy-making process include green papers on alcohol, tobacco, and nutrition and physical activity.

The situation analysis also identified missing elements that are essential for evidence-informed policy-making. These are systemic problems, cultural issues or long-term processes (e.g. political culture, lack of experts and researchers in the field of health systems, fragmentation of the health information system, etc.) that need improvement in order to strengthen evidence-informed policy. Offering solutions to these is beyond the scope of the situation analysis.

However, the analysis also identified gaps in evidence-informed policy-making that need further improvement in which it can offer possible solutions. The gaps include:

- » no structure or person(s) in place who is responsible for supporting and developing evidence-informed health policy;
- » a lack of knowledge and skills about evidence-informed policy processes and tools among policy-makers, researchers and other research users;

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- » few research studies that find their way to the policy-making process, with a lack of knowledge and access among policy-makers and a lack of user-friendly research synthesis;
- » a lack of time, skills, access, guidelines and tools that support the use of evidence among policy-makers; and
- » no existing network or structure that systematically supports the evidence-informed policy process (creation of evidence briefs for policy, policy dialogue and rapid response service).

In order to ensure research use among policy-makers in a systematic way, a knowledge translation platform could be created. A knowledge translation platform is a national-level entity designed to create and nurture links among researchers, policy-makers and other research users. With the aim of using the available resources in the best possible ways in order to obtain good population health outcomes, the platform would support already existing practices in health policy-making with high-quality evidence and implementation considerations. It would support the work of policy-makers and focus on knowledge translation that will help to make evidence available in the policy-making process without limiting choices among decision-makers.

The platform's main tasks would be to synthesize and appraise already existing evidence in the form of evidence briefs for policy and rapid response services, on the topics defined in close collaboration with policy-makers and to support policy dialogue (PD) among stakeholders. Other tasks would include capacity building and networking among policy-makers, researchers and other stakeholders. A knowledge translation platform is ideally led by trustworthy, highly connected and credible experts, intermediaries who excel in various different fields, including evidence gathering, critical appraisal, facilitation, communication and networking. It requires experience and commands respect in the worlds of both research and policy. It could work in different forms (network, unit, organization) and could be based in different locations (part of government, in a university, in a national institute, as a member of civil society). Section 7.4.1 offers options for a knowledge translation platform in Estonia with the pros and cons in order to initiate further discussions.

1. INTRODUCTION

1.1 EVIPNet Europe and evidence-informed policy

Over the years, there has been an increase in global calls to ensure that health policy-making is informed by research evidence to improve health systems and population health [1–3]. The concept of knowledge translation (KT) has become a leading approach in narrowing the gulf between research and policy [4] and to forge the cycle of policy-informed research leading to evidence-informed policy (EIP). KT is the exchange, synthesis and effective communication of reliable and relevant research results [5]. The focus is on promoting interaction among the producers and users of research, removing the barriers to research use and tailoring information to different target audiences so that effective interventions are used more widely [5]. KT examples include development of evidence briefs for policy (EBP), conducting deliberative PDs and the creation of a rapid response service (RRS), where researchers respond to policy-makers' demands with a tailored synthesis of research evidence, etc. [4].

In order to improve public health and reduce inequities by increasing the systematic use of the best available scientific evidence to guide health systems policy development, WHO launched EVIPNet Europe in 2012. EVIPNet Europe is a key implementation pillar of the European Health Information Initiative and central to the goals of the Action plan to strengthen the use of evidence, information and research for policy-making in the WHO European Region (WHO Regional Committee for Europe resolution EUR/RC66/12). EVIPNet Europe encourages countries, as a first step, to conduct a collaborative situation analysis (SA) to assess their national EIP context and establish an EIP baseline, including the institutional and human capacity necessary to conduct EIP in a continuing, sustainable manner [6].

In 2013, a capacity-building workshop to raise awareness about available tools and resources that support the use of research among policy-makers was arranged in Tallinn, Estonia. Thereafter, Estonia has taken part in the EVIPNet Europe activities since 2014 and rather than first conducting an SA, Estonia chose to begin implementing EVIPNet Europe by developing an EBP on reducing the consumption of sugar-sweetened beverages and their negative health impact in Estonia [7]. The EBP was found to be useful and influential, and therefore showed the need to develop context-specific KT interventions and identify strategies to strengthen EIP activities, including the creation of a multistakeholder country team or network, known as the KT platform (KTP) [8] that brings together the worlds of research and policy [9]. In order to progress with the activities in the field of EIP in a systematic way in Estonia, an SA was conducted.

Box 1 defines key concepts and terms in EIP.

Box 1. Key concepts and terms in EIP

EIP can be defined as [10]: an approach to policy decisions that is intended to ensure that decision-making is well-informed by the best available research evidence. How this is done may vary and will depend on the type of decisions being made and their context. Nonetheless, evidence-informed policy-making is characterized by the fact that access and appraisal of evidence as an input into the policy-making process is both systematic and transparent.

WHO [11] defines **KT** as: the exchange, synthesis, and effective communication of reliable and relevant research results. The focus is on promoting interaction among the producers and users of research, removing the barriers to using research and tailoring information to different target audiences so that effective interventions are used more widely.

A **KTP** can be defined as [4]: a national- or state-level entity designed to create and nurture links among researchers, policy-makers and other research users; these links draw the research and policy communities closer together to ultimately create cycles of policy-informed evidence and evidence-informed policy. KTPs are ideally led by trustworthy, highly connected and credible experts, intermediaries who excel in various different fields, including evidence gathering, critical appraisal, facilitation, communication and networking. They almost certainly require experience – and command respect – in the worlds of both research and policy.

A KTP designs, leads and/or delegates strategies to:

- » understand the prevailing situation on a particular issue;
- » harvest local evidence and experience and synthesize it with global knowledge to provide guidance in policy development and implementation;
- » broker among stakeholders on key issues;
- » package syntheses and other communications for specific audiences; and
- » strengthen the capacities of researchers, policy-makers and other stakeholders in accessing research evidence, in performing synthesis work and in KT more generally [9].

The **EBP** is research synthesis in a user-friendly format, offering informed policy options. It is used to convince the target audience of the urgency of the current problem and the need to adopt the preferred alternatives or strategies of intervention. This type of policy brief involves systematic and transparent efforts to contextualize the results of systematic reviews and to integrate the evidence with setting-specific research results to support well-informed policy decisions [9].

PD is an EIP tool to guide policy development, which is typically informed by an EBP [12]. It helps to contextualize and utilize evidence within policy-making. The key features of PD:

- » enable interaction between stakeholders (e.g. researchers, policy-makers, civil society health professionals and the media);
- » integrate explicit knowledge with tacit knowledge (colloquial evidence) to guide policy development, one of the factors to EIP; and
- » are characterized by participatory and consultative processes, having clear objectives, being inclusive and transparent, providing an opportunity to reflect on the applicability of scientific evidence in different contexts, challenging science, promoting dialogue among different types of stakeholders and directly impacting on the decision itself [13,14].

Box 1. Contd.

RRS is typically a national-level entity that encourages policy-makers to pose a question that research evidence might answer, then in a matter of hours or days the service provides a synthesis of the best available research evidence [15].

1.2 Why is EIP relevant in Estonia?

There is increasing pressure on the health system and its budget as the population in Estonia (and in many other countries) is ageing. With an ageing population, noncommunicable diseases are increasing and in the upcoming years, they will become even more prevalent than today. This challenges the Government to find solutions on how to provide services and meet the needs of people. Therefore, it is important to try to ease the pressure on the health system through disease prevention, health promotion and improved chronic disease management by using the available resources in the best possible ways. In order to achieve this with limited resources, the implemented policy actions need to be evidence informed, outcome oriented and cost-effective. Even though some processes are in place to inform policy decisions by the best available evidence, they need to be more systematic and the proportion of policy decisions that are evidence-informed and well-analysed needs to increase.

1.3 Strengthening EIP in Estonia: a SA of the current EIP landscape

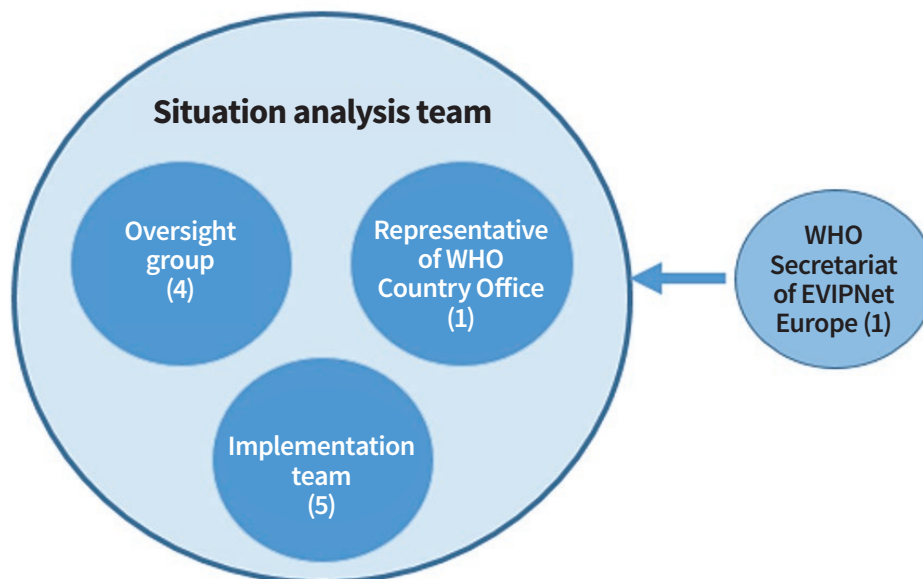
A SA was needed in order to identify strategies to improve EIP activities. The aim of the current SA is to provide deeper understanding of the major factors that may facilitate or hinder the systematic EIP processes in Estonia [16]. The specific objectives of this report are to:

- » describe and understand the local context that would potentially enable or inhibit EIP;
- » deliver background information to guide deliberations on the organizational form, location, strategic direction, etc. for a suitable and sustainable KTP and EIP; and
- » strengthen collaboration with international partners to support future work on strengthening EIP.

1.3.1 SA TEAM AND METHODS

In order to prepare and conduct the SA, an implementation team was formed. It consisted of five members who all work in the Ministry of Social Affairs of Estonia and who have different expertise in the fields that are covered in the SA (health system, health information system, health research system). An Estonian national champion of EVIPNet Europe who works in the Ministry led the team. The oversight group consisted of four persons with different backgrounds in the area of health (research and policy) who supported the implementation team by validating their work. A representative of the WHO Country Office in Estonia consulted and provided technical advice as well as administrative support in conducting the SA. At regional level, the WHO Secretariat of EVIPNet Europe provided further technical advice and support throughout the duration of the study (Fig. 1).

Fig. 1. Roles and responsibilities of the SA team^a



^a The number in parentheses represents the number of people involved.

The SA was conducted from November 2018 to March 2019. Data were collected using the EVIPNet Europe situation analysis manual [16], provided by the EVIPNet Europe Secretariat. The manual is a detailed guideline on the topics to cover, and the suggested methods and tools used to collect and synthesize information on these topics.

The following key sources were used to gather information for the SA:

- » a literature review to capture both the literature published in scientific journals and the grey literature (including websites);
- » key informant face-to-face interviews with policy-makers (six interviews that took between 45 minutes and two hours and six minutes);
- » key informant consultations either by phone (one person) or through face-to-face consultation (six people);
- » key informant written consultations (seven consultations, eight people);
- » key informant discussions through face-to-face meetings (two meetings, six people); and
- » findings and the draft report of the SA that were reviewed, critically appraised, consolidated and validated by four representatives of an oversight group and at a local stakeholder consultation; and one meeting held at the end of the SA after which the stakeholder recommendations were incorporated into this final SA report.

When information was missing after consulting these sources, a reasoned opinion or tacit knowledge derived from the observations and experiences of the SA team was used as an acceptable data source as long as the grounds for the arguments were adequately documented.

The conclusions of the SA stem from the investigators' interpretations, using all information sources. The risk of bias and errors inherent in interpretations was at least partly mitigated by conducting the stakeholder consultations described above, to verify the results.

1.4 Structure of the report

The report is structured as follows. Section 2 presents general information about Estonia, with a focus on the country's socioeconomic conditions, political structure, policy-making processes and key stakeholders in this process. Section 3 describes Estonia's health system and health policy frameworks, with a focus on delivery and financing of health care. Section 4 describes health information systems. Section 5 describes stewardship, resources and the context of health research in Estonia. Section 6 presents an overview of current EIP efforts and insight into how the health system, health information system and the health research system interface within these. Finally, Section 7 summarizes the conclusions of this SA, factors that may support or challenge EIP in Estonia and suggests next steps.

2. GENERAL COUNTRY CONTEXT

This section on the Estonian national context offers a general understanding of the country's major political and socioeconomic features and policy-making processes.

2.1 Political structure and socioeconomic conditions

Estonia is a democratic parliamentary republic [17]. The Government exercises the executive authority of the Republic of Estonia [18]. The legislative and supervisory power over government is exercised by a unicameral parliament, and the central government has almost exclusive power to formulate strategic directions and to issue and enforce regulations [18]. Governmental authorities (e.g. ministries, central government agencies) have a major role in the policy cycle (preparing policies as well as decision-making) [17]. Local governments have a significantly less policy-making influence; but in the field of health, they are responsible for health promotion at local level and most hospitals are under the control of local governments [17]. Several institutions or departments in the government structure support and/or develop general EIP in the country: the Legal and Research Department of the Parliament of Estonia (*Riigikogu*)¹ [19], the Strategy Unit of the Government Office² [20] and the National Audit Office³ [21]. The population of Estonia generally supports the use of research in policy-making [22].

Employees in ministries usually have academic degrees and specific positions, departments, or institutions of ministries support policy processes with analysis and data. However, (relatively) high voluntary turnover of employees might present a challenge to the sustainability and capacity of EIP and its culture [23].

Estonia, a member of the European Union (EU) since 2004 and the Organisation of Economic Co-operation and Development (OECD) since 2010, is considered a high-income economy by the World Bank (WB). The real gross domestic product (GDP) per capita in the EU in 2018 was €28 200 and €15 100 in Estonia [24]. In 2018, the employment rate in Estonia (79.5%) was higher than in the EU (73.2%) [25]. Average life expectancy in 2017 in Estonia (78.4 years) is considerably lower than the EU average (80.9 years) [26].

Based on the 2017 WB Worldwide Governance Indicators, Estonia ranks in the top 10% of countries in the world regarding voice and accountability, regulatory quality, rule of law and control of corruption; among the top 20% in government effectiveness; and in the top 30% in political stability and absence of violence/terrorism [27].

¹ The function of the Legal and Research Department is to advise members of Parliament (*Riigikogu*), the Parliament's Board, committees, factions and their employees so that discussions in Parliament are knowledge-based.

² The Strategy Unit of the Government Office supports the planning of work of the Government and coordinates the development and implementation of the Government's action plan, as well as strategic development plans for increasing the country's competitiveness and for sustainable development.

³ The National Audit Office is an independent institution acting in the interests of the Estonian taxpayers. Its function is to investigate and report how the government has spent taxpayer money.

2.1.1 THE POLICY-MAKING PROCESS

A legal framework is in place that legislates and obliges the use of evidence in policy-making processes. The intention to elaborate a draft act shall be created prior to drafting a draft act (analogous to the green paper in the EU decision-making process [28]), which shall include a comparative analysis of laying down legal provisions and other possible solutions together with a primary analysis of the impacts of the preferred regulation [29]. An intention to elaborate a draft act shall outline, in particular:

- » a description of the problem to be solved, the reason for the state to act and the urgency of the issue;
- » a description of the objective or the desired situation;
- » an overview of alternative solutions to the problem, a comparative analysis thereof and reasons for selecting the preferred alternative;
- » an overview of how similar problems have been resolved in countries legally, culturally and institutionally similar to Estonia;
- » a general description of the developed regulations and foreseeable period of validity;
- » a preliminary overview of potential risks that may impede or impair solving the problem in the proposed manner and impacts that may accompany the implementation of an act; and
- » an overview of further stages of elaborating the legislation and the activities taken during the process (a need for further assessment of the impacts related to the implementation of the legislation shall be considered inter alia) together with a detailed schedule and list of responsible persons.

In addition to the previously mentioned obligation, every change in legislation has to include an impact assessment in which its potential impacts to different fields, stakeholders and outcomes are assessed [30]. The aim of this is to improve the quality and transparency of government decisions and to improve the likelihood that the decisions will result in desired outcomes. There is an approved methodology for how the assessment should be carried out, in order to improve and harmonize government agencies' capabilities to plan, conduct and evaluate the policies. The methodology is meant to be used for all legal changes, development plans and decisions made by a minister or for other important decisions made by the government.

Even though mechanisms are in place, interviews with health policy-makers indicated problems in everyday practice. It was stressed that prepared materials, either policy papers or impact assessments for legislation changes, vary in quality. The impression is that they are not really thought through because of the lack of time, skills or access to evidence among policy-makers.

“Policy decisions are made fast and policy-makers do not have time to collect the evidence. There is a window of opportunity to make a difference and we have to take that opportunity at once – when we don’t the possibility will pass.” (Policy-maker)

“As policy-makers we do not have time or skills to find the research evidence.” (Policy-maker)

Therefore, it can be said that no standardized process or quality assurance mechanisms exist. No organization is in place to evaluate the impact assessments for legislation changes or evidence bases for implemented policies. An interview with a health policy-maker illustrates this sentiment.

“The obligation to assess impacts and offer different policy options in the case of legal changes supports evidence-based policy-making but the question remains how well are they done and who monitors the quality.” (Policy-maker)

In order to increase capacity among policy-makers, the Government Office manages a measure “Policy capacity development” from the European Structural Funds (2014–2020) under the priority direction “administrative capacity”. The aim of the measure is to improve the policy development process by introducing mechanisms and tools for more holistic, inclusive and knowledge-based policies. The desire is to get to the situation where:

- » impact analyses are ubiquitous and used to make decisions;
- » collaboration between different parts of government in implementing the main priorities that cover multiple sectors is efficient;
- » strategic and financial management are bound with each other and supported by evidence-based decision-making in priority areas;
- » capacity in ministries in engaging stakeholders and social partners to take part in policy-making processes has improved; and
- » the use of smart legislation will ensure the quality and transparency of the legislative process, so that legislation is easy to understand, evidence based and inclusive [31].

2.2 Nongovernmental policy stakeholder groups

The following key nongovernmental stakeholder groups are involved in or influence policy-making in Estonia.

Regarding **civil society**, since the restoration of independence, Estonia’s nongovernmental organization sector has undergone significant and often rapid changes, including the emergence of many specialized non-profit groups. More than half are real estate and business groups, while the rest are involved in community and social service activities, including education, health (for more information, see section 3.1) and women’s issues. Despite a general trend towards greater professionalism in the non-profit sector, most of them continue to suffer from limited institutional and organizational capacities. Nevertheless, cooperation between the state and the non-profit sector to shape public policy and legislation continues to expand [32].

Interest/lobby groups in Estonia are focused on very specific problems and exerting pressure on the government, without wanting, though, to gain power. The business–politics linkage is very strong in Estonia, with business groups exerting fairly strong influence. It is quite common that politicians enter the business sector once their political career has ended, or the other way around. In addition, as the Parliament and its committees are responsible for adopting policies, interests groups might hinder EIP as they are often consulted or asked to take part in committee discussions [33].

Regarding the **media**, according to the 2015 Freedom House's freedom of the press report, the Estonian constitution provides for freedom of speech and of the press and the government respects these rights in practice. The press status is regarded as free. The country's numerous media outlets represent a wide variety of views, generally independent, without government interference [34]. Recently, the media has also started to promote and to make evidence more user-friendly for the general population; one example is the science portal named Innovator (*Novaator*) [35], the collaboration between Estonian National Broadcasting and the University of Tartu (UT). Also, the Estonian Research Council (ERC) has supported an initiative that concentrates on evidence-based argumentation named "How do you know?" where politicians have to explain the bases of their claims [36].

Higher education institutions including universities, in the field of health especially the UT, play an important role in evidence collection and synthesis (for more information, see sections 3.2 and 6.1).

2.3 Stakeholder engagement in the policy-making process

Stakeholder engagement is an important part of the policy-making process to ensure the quality and legitimacy of decisions. To achieve democratic stakeholder engagement, the government has approved the Good Public Engagement Code of Practice, meant to be used by all public authorities [37]. Every ministry that is responsible for a specific sector has its own network of stakeholders with whom it commonly engages.

Most draft laws are forwarded to stakeholders for comments and in some cases, stakeholders have influenced the law-making process extensively: they have organized public seminars and forums, analysed the impact of drafts on popular opinion, challenged political parties, provided reports and expert opinions, etc. [38] (for more information about health-related stakeholders see section 3.2). In addition, the Electronic Coordination System for Draft Legislation publishes all draft laws. It is a channel where anyone can submit comments and proposals for draft laws, which are considered during the process.

The Ministry of the Interior plans and coordinates state policy in the field of civil society in order to ensure more effective cooperation between state structures, local governments and citizens' associations in the course of developing a secure and open society [39]. The Ministry of the Interior supports the development of civil society organizations through its National Foundation of Civil Society [40], whose goal is to strengthen civil society. It arranges calls for proposals, supports activities developing civil society organizations and contributes to international cooperation between civil society organizations [39].

The Government Office manages the network of engagement coordinators that are located in ministries with the aim of harmonizing and spreading best practices in the field of stakeholder engagement and participation. The network shares best practices and allows consultations between coordinators to find solutions to difficulties they have encountered in their ministries' engagement and participation processes [22].

Box 2 summarizes key opportunities and challenges for EIP considering the general country context.

Box 2. Summary of key opportunities and challenges for future EIP efforts considering the general country context

Challenges

- » A lack of time, skills and access among policy-makers can prevent the use of evidence in EIP processes.
- » Voluntary turnover of employees in ministries might present a challenge to the sustainability and capacity of EIP and its culture.
- » A wide range of different interest groups with varying degrees of capabilities and empowerment in relation to EIP makes their engagement somewhat challenging.
- » Strong business–politics linkages might hinder the use of evidence in policy-making.

Opportunities

- » Several institutions or departments in the government structure support and/or develop EIP in the country.
- » Employees in ministries usually have degrees in higher education, and specific positions, departments or institutions of the ministries support policy processes with analysis and data.
- » Several government-level legislative elements have fostered the use of evidence in policy-making processes (e.g.: intention to elaborate a draft act, compulsory impact assessment, public participation in the formulation of laws and decrees).
- » Some new emerging media initiatives support the use of evidence.

3. THE HEALTH SYSTEM

This section on the health system describes the characteristics of stakeholders, structures, decision-making processes and recent health system reforms.

3.1 Organization, governance and decision-making processes

Estonia has a publicly funded solidarity-based mandatory health insurance, and the provision of health care has almost become completely decentralized since the passing of the Health Services Organization Act [41], which took effect in 2002. Health care providers in Estonia are autonomous entities operating under private law and they consist of primary, emergency and specialized medical and nursing care providers. Health services purchasing builds on a contractual relationship with providers as well as financial incentives [17].

The health system is overseen by the Ministry of Social Affairs and its agencies, which include the State Agency of Medicines (SAM), the Health Board (HB), the National Institute for Health Development (NIHD), the Centre of Health and Welfare Information Systems (CeHWIS) and the Estonian Health Insurance Fund (EHIF). The responsibility for overall health care planning is at national level under the control of the Ministry of Social Affairs [17].

The main EIP-related tasks that the Ministry of Social Affairs conducts are performing legislation impact assessments, monitoring the health of the population, setting goals, developing indicators and preparing materials for the Government, Parliament and its committees in the field of health. The aim of the Analysis and Statistics Department [42] and the Health System Development Department [43] of the Ministry of Social Affairs is to create the bases for evidence-informed policy-making of the Ministry. During the above-mentioned tasks, the Ministry of Social Affairs uses publicly available reports and data from the SAM, EHIF, HB and NIHD or contacts them specifically when the Ministry of Social Affairs is aware of unpublished data and/or reports (for more information, see section 4). When selecting indicators; setting goals; writing reports, memos or briefs; or conducting evaluations, the Ministry of Social Affairs collaborates with its agencies and the NIHD to include their expertise in the policy-making process.

The **SAM** is a governmental body with the following objectives: to ensure that medicines approved for use in Estonia for the prevention, treatment and diagnosis of human and animal diseases are proven to be efficacious, of high quality and safe; to promote the rational use of medicines; to ensure that when participating in clinical trials conducted in Estonia, the safety of the participants is guaranteed and their rights are protected; to ensure that cells, tissues and organs used in the treatment of humans in Estonia are proven to be safe and of high quality; and to ensure that narcotic and psychotropic substances and their precursors are used appropriately and in accordance with international conventions [44].

The **NIHD** engages in public health-related research and health promotion as well as the development and implementation of disease prevention programmes and activities. Its mission is to establish and

share health-related knowledge as well as to influence health behaviour and determinants of health to increase the well-being of the people in Estonia and to help them live longer and healthier lives. The main activities of the NIHD in consultations on and influence of health policy are: provision of health-related assessments and implementation of analysis; planning of health promotion programmes and action plans; provision of ethical assessments on health-related research; and establishment and organization of medical terminology as well as related consultations [45].

The **CeHWIS** manages and handles the national e-Health Information System [e-HIS] [46]. The HB's main tasks include licensing health care providers, registering health professionals, controlling the quality of health care provision, and organizing primary care and ambulance services [47]. The responsibilities of the HB are divided into three broad functions: health care, health protection and enforcement. The HB is also the competent authority for regulating medical devices, cosmetic products, chemical safety, drinking-water and bathing waters as well as recognizing medical qualifications [47,48].

The **EHIF** is a legal entity [49,50] with the objective to ensure: payment of health insurance benefits payment for the provision of health services and the performance of other functions relating to the organization of health services mostly pursuant to the Health Insurance Act [51] and the Health Services Organisation Act [41] and costs prescribed in the budget of the health insurance fund.

Universities, especially the UT, play an important role in evidence collection, synthesis and assessment and, therefore, are also an important partner in relation to health policy (for more information, see sections 3.2 and 6.1).

Partners like the PRAXIS Centre for Policy Studies⁴ and the Centre for Applied Social Sciences (part of the UT Johan Skytte Institute of Political Studies) come into the view of policy-making when they win public procurement contracts with the Ministry of Social Affairs or another state agency or ministry to conduct a policy analysis or similar.

Different **medical specialities, health care providers and patient representatives** are also involved as important partners in the policy-making processes. Several professional organizations in Estonia in the field of health actively take part in policy processes. The most prominent professional group is the **Estonian Medical Association**. Over the years, it has been very active, together with other Estonian professional organizations, in negotiating minimum wages in collective agreements and in participating in the general debates and discussions on health care policies and challenges. The Ministry of Social Affairs (2001) recognizes 37 main medical specialties, which all have their own professional associations. Professional associations draft development plans for their respective medical specialties used by the Ministry of Social Affairs in the decision-making process; however, they do not have any legislative power.

Among these professional associations is the **Estonian Family Doctors' Association**. The Association has played an important role in developing family medicine and implementing family medicine reform since 1997 and it continues efforts to further strengthen the primary care system. The **Estonian Nurses Union** has been active in redefining professional standards in nursing, developing guidelines and improving the training curriculum for nurses. Together with the **Estonian Midwives Association**, a strategy was drafted setting priorities for development for 2011–2020. Hospitals have joined together

⁴ The PRAXIS Centre for Policy Studies is an independent non-profit civil initiative think tank. Its main policy research areas, alongside health policy, include education, civil society, as well as labour and social policy.

to form the **Estonian Hospital Association**, which takes part in negotiations with professional organizations about minimum wages and with the EHIF about the framework agreement. It also actively participates in discussions on health care legislation and policy development.

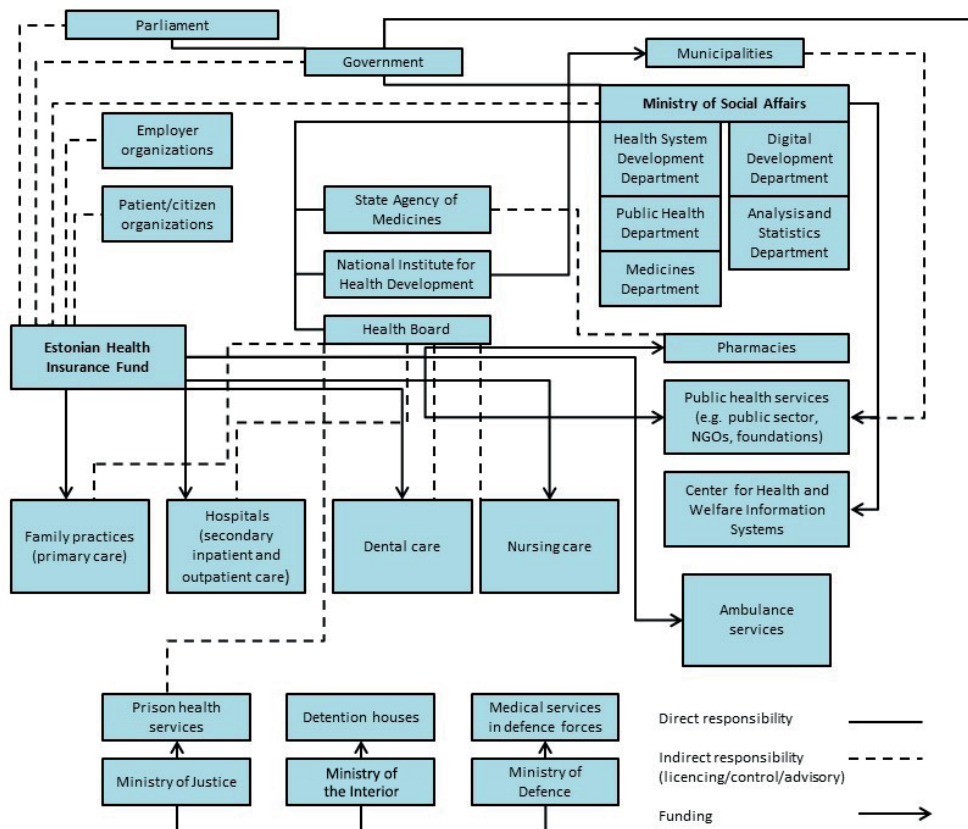
The oldest and most prominent patient organization is the **Estonian Patients Advocacy Association**. This organization has been actively involved in discussions and in drafting and debating legislation. It is involved in most ministerial working groups set up to discuss new policies or strategies and is a member of the Health Care Quality Expert Commission. The Society for Disabled People is represented on the EHIF Supervisory Board and the National Health Plan (NHP) Steering Committee. A patient organization linked to the pharmaceutical industry was created during a period of debate about introducing a reference pricing system for pharmaceutical reimbursements. However, there is room for improvements in terms of capacities and influence on health policies [17].

Those who have more to gain or lose are typically more organized and vocal in policy-making processes.

“Medical specialities or health care providers are more vocal on topics that are related to their everyday activities and less so on general health policy and topics related to the use of evidence. Also the voice of patient organizations is less audible.” (Policy-maker)

Fig. 2 shows the organizational structure of the Estonian health care system.

Fig. 2. Organizational structure of the Estonian health care system



NGOs: nongovernmental organizations. Source: [17].

3.1.1 NATIONAL STRATEGIC HEALTH SYSTEM FRAMEWORKS AND RELATED REFORMS

The main policy document in the area of health that sets strategic objectives in Estonia is the NHP [52], which integrates existing sectoral health plans, strategies and development plans into one plan that links various stakeholders of the health system and other sectors. The NHP contains measurable targets with specific indicators and a detailed list of activities that link directly to the state budget. All of the NHP activities and expenditures are reviewed annually and additional outcome reviews are carried out every second year (for more information, see section 4.3.2); additional need-based or specific analyses and evaluations are also carried out. Based on the reviews and assessments, recommendations are given on what needs to be changed in order to achieve the goals of the NHP. It is also the main tool for intersectoral health planning.

The NHP has a Steering Committee whose responsibility is to plan the activities and necessary resources based on the analysis of the previous implementation period. The Steering Committee consists of the following members: the Ministry of Social Affairs; the Ministries of Culture, Defence, Economic Affairs and Communications, Education and Research, the Environment, the Interior, Justice, and Rural Affairs; representatives of the main political parties in the Government; and representatives of the Association of Estonian Cities and Rural Municipalities, the Chancellor of Justice Offices, the EHIF, the Estonian Chamber of Disabled People, the Estonian Hospital Association, the Estonian Psychiatric Association, the Government Office, the HB, the Labour Inspectorate, the NIHD, and the UT. Members report to the Steering Committee on the organization of actions in their particular area of competence, on achievement of objectives in their respective government area and on the submission of the information required for reporting to the Ministry of Social Affairs and expert groups. An outcome and implementation report has to be presented to the Government. Currently there is scope to develop this Steering Committee into a more strategic intersectoral body in the updated NHP for 2020–2030 [17].

In addition to the NHP, the HB [53], the SAM [54], the EHIF [55] and the NIHD [56] have their own development plans. The EHIF development plan in relation to the health system is one of the most important ones as the EHIF has most of the budgetary resources of the health system. The consistency of goals between different development plans and the NHP are not always in line and needs further improvements.

If the updated NHP, currently under revision, can actually be used to plan activities, define measurable targets and hold stakeholders accountable, it will play a crucial role in the success of future reform efforts [17].

Several important recent health system reforms in Estonia include:

- » broadening the EHIF's revenue base in order to make the health system financially sustainable in the medium term and more resilient for future economic shocks [57];
- » strengthening primary health care by setting up health centres with a broader scope of services in order to improve access to services, care coordination and enhance chronic disease management; and
- » setting new rules for reimbursement of pharmaceuticals and dental care in order to decrease the out-of-pocket payments in these areas [17].

Other initiatives are also under way in order to improve coordination between sectors (e.g. integrated care coordination project), to implement new payment methods (e.g. bundled payment of stroke care), to develop e-health services and to reorganize hospital network. In addition, discussions are ongoing regarding implementation of universal health coverage [58] (for more information, see section 6.2).

Evidence is regularly used in Estonia when health system reforms are initiated and different stakeholders are involved in the planning of change processes and reforms. Other national and international organizations are often involved in the EIP process (e.g. UT, PRAXIS, WHO, WB, European Commission, OECD, etc.) in order to collect or synthesize evidence, including cost analyses, and to develop recommendations based on the evidence. Based on interviews with health policy-makers, it can be said that reports and recommendations from international organizations are generally more valued in Estonia than national ones [59,60].

As highlighted in interviews with policy-makers, **WHO** is an important partner in EIP for the Ministry of Social Affairs. WHO provides support, including training, for strengthening capacity for KT and EIP. It also facilitates the methods and tools for KT and knowledge brokering (KB) and advocates and raises awareness for promoting KT. WHO also provides direct support for and facilitates the use of evidence in policy-making, such as compiling, synthesizing and systematizing evidence, and also facilitates the participation of networks.

3.2 Delivery of health services

The four types of health care in Estonia are: primary care provided by family doctors, emergency medical care, specialized (secondary and tertiary) medical care and nursing care. Family doctors in Estonia exercise a partial gatekeeping function and control most of the access to specialist care. Patients need a family doctor's referral in order to use most of the specialists' services and in order to be admitted to services as a non-emergency inpatient.

Hospitals in Estonia are divided into regional, central, general, local, special, rehabilitation care and nursing care hospitals depending on the catchment area, services provided and/or the location of the hospital. The geographical location of hospitals has been chosen to ensure that treatment is available to everyone within 70 km or a 60-minute drive. The Ministry of Social Affairs has established special requirements for each type of hospital (e.g. the scope of services provided and standards for the rooms, medical equipment and medical staff) [17].

In recent years, Estonia has made substantial progress to establish adequate evidence-based health care standards and guidelines (for more information, see section 6.1), including streamlining the process for guideline development and making all guidelines available to providers on a central website [61]. In 2010, Estonia started revising its national clinical guideline development process as part of an overall programme of quality improvement in health care. One outcome of the two-year process is the "Estonian Handbook for Guidelines Development" [62] developed in collaboration with WHO, the EHIF and the Faculty of Medicine at the UT. The Handbook brought together internationally accepted methods for developing guidelines. Five years after implementing the Handbook, various stakeholders felt that the guideline development process was appropriately implemented and the Handbook was considered very helpful [63]. Over 200 health care workers have been trained in the guideline development process, primarily through annual workshops and during the initial panel meetings [63]. Capacity building is still required to ensure that participants and stakeholders have the required skills and understand and accept the methods.

Publishing periodic national assessments of health system performance (last done in collaboration with WHO and published in 2009 [64]) and linking funding to patient outcome data could also serve as an incentive for quality improvement. Performance monitoring would also contribute to EIP in general by guiding health policy. However, these approaches are not systematically used in Estonia.

Debates are ongoing about which agency should retain a leading role in health care quality improvement, which has raised concerns about stable funding in this area.

3.3 Health financing

The Estonian health care system is mainly publicly funded through solidarity-based mandatory health insurance contributions, in the form of an earmarked social payroll tax, contributing to 65% of health expenditure. Contributions are related to employment, but more than half of the insured are non-contributing individuals (e.g. children and pensioners) represents. The Estonian Tax and Customs Board collects the taxes. Private out-of-pocket expenditure makes up about a quarter of all health expenditure, mostly in the form of co-payments (22.7%) [17].

Financing of health care is mainly organized through the independent EHIF who finances outpatient and inpatient services provided to insured people, and in certain cases also rehabilitation, nursing and dental care services. Dental care is provided free of charge to children under 19 years of age and since 2017, the benefits package has also provided for adult dental care [17,49]. In the public health sector, services are provided by nongovernmental organizations, foundations or private entities that have contracts with the NIHD [17].

Box 3 summarizes key opportunities and challenges for EIP considering the health system.

Box 3. Summary of key opportunities and challenges for future EIP efforts considering the health system

Challenges

- » Funding is uncertain for quality improvement activities (clinical guidelines, pathways, patient safety etc.).
- » Health system-related goals are inconsistent between different development plans and the NHP needs improvement.
- » The NHP is not always the strategic document that plans activities, defines measurable targets and holds stakeholders accountable.
- » The health system performance assessment used to guide health policy is not systematically conducted.

Opportunities

- » Some people in the health system are knowledgeable in collecting and synthesizing evidence and making policy recommendations.
- » The health system uses evidence when making decisions and planning activities.
- » Stakeholders are actively involved in policy processes.

4. THE NATIONAL HEALTH INFORMATION SYSTEM

This section on the Estonian health information system (HIS) provides an overview of the main institutions, and describes the health data collection processes and the dissemination and use of health information.

4.1 Infrastructure and governance

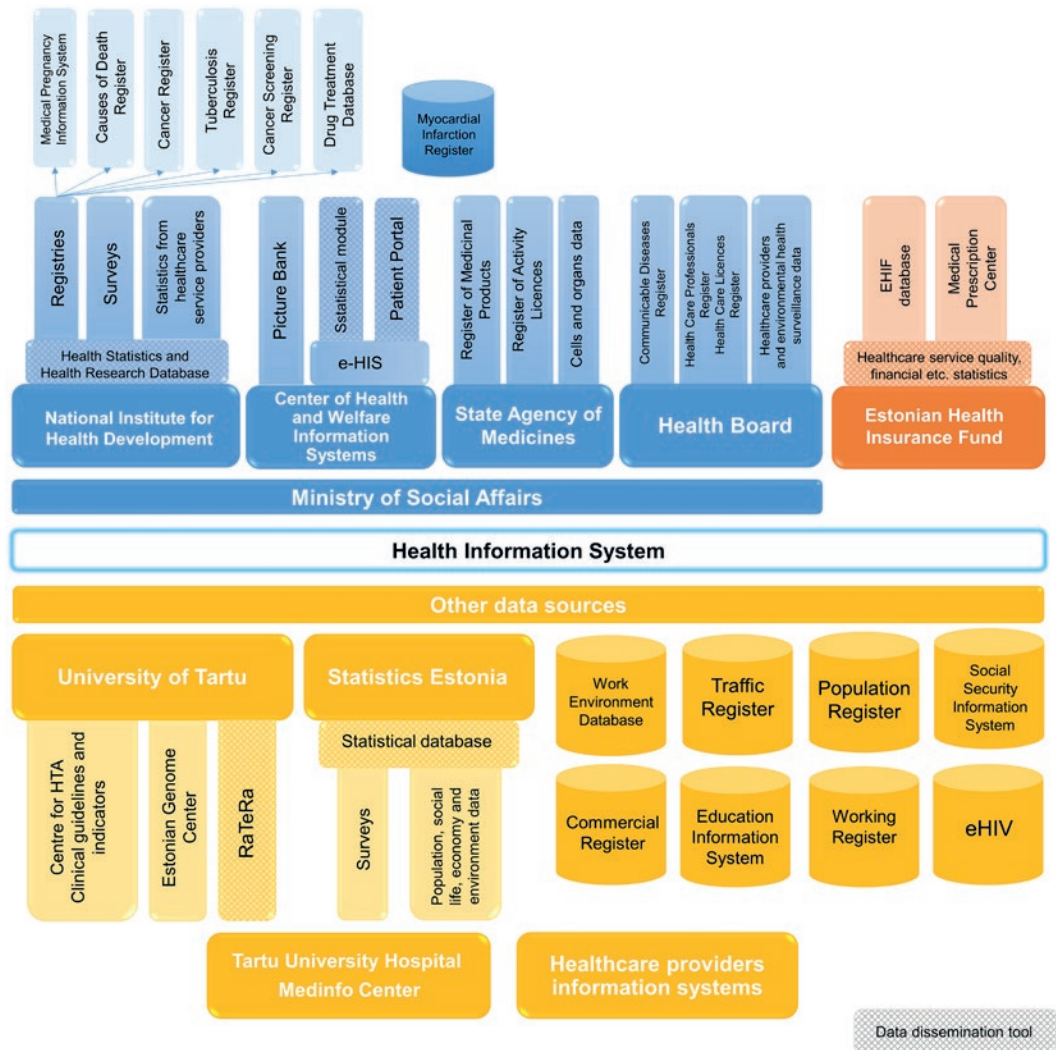
The main institutions that collect, analyse and disseminate health data are the NIHD [45,65], the CeHWIS [46], the HB [47,48] and the SAM [44,66] all administered by the Ministry of Social Affairs [67]. In addition, the EHIF collects, analyses and disseminates health data [49,68]. Other ministries and national agencies also maintain health data, for example Statistics Estonia [69] and the UT [70]. Fig. 3 presents the main stakeholders, data sources and data dissemination tools in the Estonian HIS.

The Ministry of Social Affairs has three main departments responsible for different aspects of governance of the national HIS [67]. The tasks include developing the overall infrastructure of the HIS, as well as providing analytical input for policy processes. The Analysis and Statistics Department is responsible for public health data analysis. The Health System Development Department coordinates health care data collection and data analysis, and the Smart Development Department coordinates e-health development (Fig. 3).

The NIHD plays a very important role in relation to the HIS. The NIHD [45,65] collects, connects and provides reliable national information from a multitude of sources, related to the health of the Estonian population. In addition, the NIHD administers six population-based registers and databases [71] (Fig. 3). The Department of Health Statistics of the NIHD [72] is the administrator of Estonian national health statistics. It collects and analyses aggregated data from health care providers [73]. The data covers: health care services (outpatient visits, hospital discharges, emergency care, surgery, dental care, diagnostics and therapeutic procedures, etc.), resources (hospital beds, medical devices, health care providers` economic activity, etc.), morbidity and the number of breastfed infants. In addition, it also collects individual-level data on health personnel and their wages and collects and analyses health expenditure information, based on the System of Health Accounts methodology [74] (Fig. 3).

Two other authorities (HB and SAM) administered by the Ministry of Social Affairs have a slightly smaller role in the HIS. The HB [47,48] is responsible for maintaining the Estonian Health Care Professionals Register [75] and the Estonian Health Care Licenses Register [76]. In addition, the HB is the competent authority for surveillance, prevention and control of communicable diseases, including risk analysis in epidemiology [47,48]. The National Communicable Diseases Register is located at the HB [77]. The SAM [44,66] collects and systematizes data about drug use and evaluates information about adverse drug reactions. The Register of Medicinal Products [78] and Register of Activity Licences [79] have been created to facilitate the before-mentioned functions. The SAM also records and monitors data related to cells, tissues and organs. The SAM publishes all the above-mentioned information on its website [44] (Fig. 3).

Fig. 3. Main institutions, data sources and data dissemination tools in the HIS



HTA: Health Technology Assessment; RaTeRa: Public Health Library.

The CeHWIS [46] is an information and communications technology (ICT) competence centre that manages and handles the national e-HIS and classifications (ICD-10, SNOMED, etc.).⁵ The e-HIS [80] is a uniform and standardized information exchange platform that collects data and uses it at individual level. The e-HIS connects all health care providers including the private sector and allows data exchange with other registries (e.g. the Population Register, EHIF database, etc.). The e-HIS stores millions of different health documents (case summaries, referrals, vaccinations, dental information, medical images, etc.) and events. The National

⁵ ICD-10 is the International Statistical Classification of Diseases and Related Health Problems, 10th Revision. SNOMED is the Systematized Nomenclature of Medicine.

Patient Portal [81] and Picture Bank (medical images) are also part of the e-HIS [46,80]. The e-HIS statistical module has also been developed with the aim to become the main data source for health statistics [82]. This goal has not been achieved, due to problems with data quality and low capture [83,84] (Fig. 3).

The EHIF collects information, based on health insurance claim data in order to perform its functions. The EHIF analyses the quality of health care services and monitors waiting lists. It also analyses data on prescription drug reimbursement and sick leave benefits [49,68]. In order to accomplish these functions, the EHIF database [85] and the Medical Prescription Centre [86] were created (Fig. 3).

4.2 Data sources, collection and quality

The main data sources in Estonia are registries, databases and surveys. Collection, management and analysis of all kinds of personal health data in Estonia is regulated by the Personal Data Protection Act [87]. Data protection is the responsibility of the Estonian Data Protection Inspectorate [88] and follows the General Data Protection Regulation [89]. Data protection regulations are rather strict: the e-HIS is expected to achieve the highest – and registries the medium – security levels. The fulfilment of these requirements is regularly evaluated [80,82].

4.2.1 REGISTRIES AND DATABASES

Estonia has 14 national health-related registries or databases (Fig. 3). All of them have statutes describing: the purpose; owner or authorized processor; main data providers; datasets; rules of procedures for data modification, access, extraction and dissemination; security measures; security levels; etc. [90–92].

The country also has the following health registries/databases.

- » The Drug Treatment Database contains data collected at an aggregated level [93].
- » The Myocardial Infarction Register is controlled by the Ministry of Social Affairs and located within the UT Hospital Information System [92,94].
- » The Cancer Screening Register is a digital registry. The data are obtained from the e-HIS via automatic data inquiries [92,95].
- » The Estonian HIV database (eHIV) is not a national database, but it is partially funded by the Ministry of Social Affairs. The data are used for national and international purposes. HIV patient data on demographic, clinical and biomaterial features are collected with informed consent (retrospectively and prospectively) [96].

According to multiple laws [41,49,77,90–92] all health care providers are obliged to collect health data into their information systems and these are the primary data sources for registries. Most data are collected electronically from health care service providers through the secured data exchange platform X-Road [97] and based on a patient identification code (ID-code). However, some registries are not sufficiently technically advanced to use it; in these cases, data are collected in parallel on paper or electronically (e.g., Medical Pregnancy Information System, Cancer Register, Tuberculosis Register).

All health care providers and registries use the ICD-10. In fact, a law requires that submission of data to medical registries, the EHIF databases, the e-HIS and the NIHD must be done according

to the ICD-10 [98]. Problems with data quality suggest that regular trainings for health care professionals are needed (e.g. for those providing data to the Cancer Register). The diagnostic-related group and Nordic Medico-Statistical Committee (NOMESCO) classifications are also used in Estonia [98].

All national registries exchange data with other national databases (mostly with the Population Register and other HIS databases e.g. Causes of Death Register) based on ID-codes through the X-Road data exchange platform. In addition to the previously mentioned health-related registries, other national non-health registries are used in order to enrich health data: the Population Register [99], Commercial Register [100], Social Security Information System [101], Traffic Register [102], Work Environment Database [103] and Education Information System [104].

Generally, data coverage and the quality of registries can be considered as high. Based on the WHO assessment in 2014 [105] of the Causes of Death Register, (2011–2012) data usability was 94%, the range of completeness was 100% and the range of garbage fraction was 5–8%. Other registers validate their data daily (Cancer Screening Register) by using automatic checks and controls. Quality assessments on cancer-related registries performed by scientists, for example on the Cancer Register [106] or as part of master's theses (two on the Cancer Register and one on the Cancer Screening Register), have also confirmed their high quality. Benchmarking and comparing register data with that from other databases, for example EHIF or health care provider information systems, also takes place but rather irregularly. Estonia's small population, as well as the small volume of data, makes it possible to also ensure data volume and quality checks with data providers through personal contacts and on a case-by-case basis (e.g. Medical Pregnancy Information System, Tuberculosis Register) [107]. The CeHWIS and the NIHD [83,84] constantly analyse the data quality of the e-HIS. However, automatic data controls used in the e-HIS are not specific enough to ensure sufficient data quality but are rather general and relate to logical algorithms. Functionality was added to the e-HIS statistical module so health care providers can see a summary of the errors and mistakes that their institution made while submitting data to the e-HIS. Unfortunately, this quality check option is not widely used [82].

4.2.2 SURVEYS

In addition to registries, surveys are also an important source of health-related data.

The NIHD carries out a number of regular and irregular population-based health surveys, which are financed from research funds and/or the state budget. These include: the Estonian Health Interview Survey; the Health Behaviour among Estonian Adult Population Survey; Health Behaviour in School-aged Children; European School Survey Project on Alcohol and Other Drugs; and the WHO European Childhood Obesity Surveillance Initiative, etc. [108].

The Ministry of Social Affairs also conducts surveys, mainly in order to receive input for the policy-making process. Since 2000, the Ministry of Social Affairs and the EHIF have jointly conducted a population-based survey "Residents satisfaction with health and health care services". Annual reports of the Estonian alcohol market, consumption and policy are also compiled in collaboration with the Ministry of Social Affairs, the NIHD and the Estonian Institute of Economic Research. Similar reports on the tobacco market and use are also compiled after every second year [109].

Statistics Estonia is responsible for conducting a population and housing census and several other population surveys, for example the Estonian Health Interview Survey (in cooperation with the NIHD) and population-based surveys: the Household Budget Survey, the (EU-SILC) and the European Working Conditions Survey. Statistics Estonia has a publicly available, fee-free user-friendly database and publishes statistics about the population (including vital events and life expectancy), social life (including health status, healthy life years, access to health care and number of disabled people), sustainable development, economy, environment, integration, etc. [110].

4.3 Dissemination and monitoring

4.3.1 DISSEMINATION

Currently, there is no integrated data warehouse that contains health and other sector-related data (e.g. social or labour, etc.). However, there is a plan to develop a state-level tool in order to secure data storage, integration, access and analysis to enhance the use of large and detailed health and lifecycle datasets. The aim of the tool is to stipulate the creation of new solutions and interventions that will help to prolong healthy life years. This tool is expected to provide a data analysis environment for governmental employees and researchers by allowing access to aggregated data from different sources (governmental and nongovernmental), which will consist of partly encrypted data with encryption/decryption tools and methodology, and that data will flow from runtime information systems to the data warehouse [111].

The Health Statistics and Health Research Database [112] is a widely used, user-friendly dissemination tool that contains Estonia's largest set of health-related data. It contains data collected by the NIHD and other institutions (SAM, EHIF, HB, Myocardial Infarction Register, etc.) [113]. For example, it includes data collected by the SAM on the pharmaceutical market (e.g. number of pharmacies, including hospital pharmacies, expenditure on medicines per inhabitant, etc.), drug consumption (defined daily dose/1000 inhabitants/day, by the Anatomical Therapeutic Chemical classification groups) and cells and organs. It also contains HB data on infectious diseases cases as well as information on immunization coverage [112]. It is publicly available and free of charge. The EHIF recently introduced a user-friendly, publicly available and fee-free database [114]. It has a similar design as the Statistics Estonia and the NIHD databases. In addition, the EHIF also publishes visualizations of clinical care quality and care integration indicators in its publicly accessible indicators module [68].

Other institutions (HB and SAM) disseminate health information on their websites, but the information is not published in a user-friendly format; the HB publishes data tables in a PDF format [82]. Other ways to disseminate health information are also used – reports, infographics, visualizations and press releases – and the NIHD also organizes health statistics information days [107].

The National Patient Portal, which is part of the e-HIS, provides access to personal health data. Everyone with a national personal ID-code and identification card may access the portal. In the portal, patients can view their health records that have been submitted to the e-HIS. They can also view the total cost of treatment paid by the EHIF, appoint representatives for different activities (e.g. purchasing prescription medicine), make declarations of intent and register for doctor appointments. In addition, they can see who has viewed their health data and when. Additional functionality and information will be added to the portal [81].

4.3.2 INDICATORS AND MONITORING

The national minimum core indicators are listed in the NHP [52], which has five strategic areas, each with its own subobjectives (for more information about the NHP, see section 3.1.1). NHP performance is assessed by tracking 61 indicators that cover: demographic and socioeconomic characteristics (four indicators); health status (23 indicators); health determinants (15 indicators); and health interventions (health services and health promotion; 19 indicators). The indicators are monitored annually and reported in the NHP activity report, which also covers information about activities implemented in the previous year. A separate performance report for the NHP is composed biennially. This is a more detailed report where indicators include socioeconomic dimensions and the situation is described more in depth. Both of the reports are discussed by the NHP Steering Committee and submitted to the Government [52].

Most NHP indicators are based on mortality and morbidity data. Indicators, which are based on survey data, can be disaggregated by demographic characteristics (e.g. sex, age), socioeconomic status (income, occupation, education) and locality (e.g. urban/rural, major geographical or administrative region). However, there are shortcomings related to data disaggregation by socioeconomic group in the registries. Disaggregation of registry data can only be performed by linking data with other databases or census data [82], but it is not often performed as the process is rather bureaucratic and time-consuming due to the Data Protection Inspectorate permission that must be obtained [87,88]. As the process of data linking is rather difficult, it makes sense to do it over a longer time interval, for example after every 5 years [107]. At the same time, considering the policy-making process, this is too long of a time period [115].

Performance metrics (e.g. average length of stay, bed occupancy rates, number of beds, etc.) and other indicators are calculated based on data collected by the NIHD. The NIHD takes part in the OECD quality indicators programme and has been reporting data on health care service quality indicators to it since 2016 [60]. The EHIF established the Advisory Board for the Development of Quality Indicators, and since 2012 the EHIF has calculated and published a selection of clinical care quality indicators of the Hospital Network Development Plan hospitals using the EHIF indicators module [68]. Additionally, the EHIF also publishes care integration indicators. The WB developed these indicators in 2015 and they are calculated based on claims data [17]. In order to increase family doctors' performance, a quality bonus system has been developed, which includes three domains: disease prevention, chronic disease management and additional activities. The EHIF annually calculates and publishes quality bonus system indicators on its website [17].

The NIHD in cooperation with the Ministry of Social Affairs has developed Health and Welfare Profiles for counties and local governments. The profiles aim to raise awareness in municipalities and counties about their population health situation and health determinants. They were created in order to help professionals, decision-makers and politicians from different fields to better understand health issues and to enhance cross-sectorial cooperation in order to improve health. They include more than 90 indicators [116], which are similar to those in the NHP or available in public databases (NIHD and Statistics Estonia) at the county and local government levels. Since 2018, the compilation of profiles for a county or region has been obligatory [92].

The Ministry of Social Affairs has been taking the lead in developing cancer care quality indicators as part of its work on the Cancer Care Quality Advisory Board, but this activity is currently on hold as, among other things, the Cancer Registry reporting form has yet to be digitized [17].

As described above, the development of quality and performance monitoring indicators is fragmented between different institutions while some activities are overlapping [17]. Therefore, there is a clear need to agree on a systematized list of health system monitoring indicators and objectives. The list of NHP indicators is not enough to monitor the quality and performance of the health system, but it is sufficient to monitor generally the NHP [82,107]. The systematized list could also include indicators that need to be developed and would contribute to the development of databases [82,107]. In order to improve the current situation, it is necessary to centralize different activities under one management to avoid duplication [82]. Furthermore, there is a clear need to incentivize the use of e-health and health care provider information systems in a way that will boost the development of indicators based on e-health data as the EHIF's invoicing data covers limited clinical information, which is essential for quality monitoring [17].

4.4 Limitations of HIS

4.4.1 GOVERNANCE

According to the Official Statistics Act [117], the two producers of official statistics are Statistics Estonia [69] and the Bank of Estonia (*Eesti Pank*) [118]. Their role is to provide demographic, social, economic and environmental data to inform knowledge-based development plans and data for forecasts, policies, and scientific and applied research [117]. The NIHD, one of the main producers of health statistics, is not mentioned in the Official Statistics Act.

In 2015, the Government approved the Estonian eHealth vision until year 2025 and the Estonian eHealth Strategic Development Plan 2020 [119]. However, no written comprehensive HIS strategic plan exists. Over the years, under the leadership of the Ministry of Social Affairs, there have been two attempts to develop a HIS strategic plan. The first attempt [120] was submitted to the Government for approval but did not receive it. This document gave a brief overview of the current state of health statistics, its problems, goals for the coming years and actions that need to be taken. The second attempt was in 2012–2013, when only a draft document of the health information vision [121] was prepared. It provided an overview of the sources that collect health statistics data and health statistics issues, the aims of health information and how these overlap with other data sources, and an overview of the short- and long-term goals of the vision. This attempt was also unsuccessful. As a result, the Estonian HIS lacks a clear direction and management, and institutions involved in health data collection act according to their own objectives. A stronger leadership role is needed as the HIS is currently poorly organized and fragmented [107], which not only causes duplication of activities and hampers the exchange of data and knowledge sharing, but also causes lost opportunities for research and policy support [82].

Based on the Eurostat report on health care non-expenditure statistics (2018), dissemination of Estonian data is quite good and Estonia is one of six countries that have achieved the highest rate (87%) in the physical resources module of availability of recent data [122]. The NIHD mainly provides data to international organizations: WHO, Eurostat and the OECD. The HB provides data on infectious diseases to the European Centre for Disease Prevention and Control [47]. Cooperation is essential for data submission and analysis. International cooperation can be considered as good, but local cooperation is lagging behind and needs further improvements. Cooperation is ongoing in the area of data publishing, for example

in the NIHD Health Statistics and Health Research Database. Some data analyses are also carried out in cooperation with different institutions, but they vary depending on the working process/culture of institutions, departments and/or people involved. However, conducting evaluations and providing analyses in collaboration with different organizations are not very common and that causes overlap [107].

4.4.2 DATA USE AND DISSEMINATION

While health data are generally widely available, policy-makers found that they are published after a long delay, in particular the Cancer Register and health care expenditure data. In addition, more detailed and specific data are needed [107], for example, nutrition data, environmental health-related survey data, etc. Policy-makers also stressed that data analysis or survey reports are more descriptive than analytical and do not give policy recommendations, making it difficult to act on them. User-friendliness is another concern raised by policy-makers; reports are too long and an executive overview is often not provided (e.g. a one pager) [82,115]. In order to promote the use of data, one option is to compose prediction models, for example in the way that the EHIF models sustainability of health care financing and the demand for health care services; however, this approach is not widely used [82,115]. In addition, policy-makers need integrated health reports, which also describe population health combined with socioeconomic status data (e.g. income, occupation, education, etc.). Therefore, this is certainly one direction where people who compile reports and analyses should aspire [115]. This can be done by linking data from multiple data sources, as described in previous subsections, which is currently time-consuming and bureaucratic [87,88].

Box 4 summarizes key opportunities and challenges for EIP considering the HIS.

Box 4. Summary of key opportunities and challenges for future EIP efforts considering the HIS

Challenges

- » The HIS lacks centralized management and a decision-making body (often found in a comprehensive HIS) and a comprehensive written HIS strategic plan.
- » The development of quality and performance indicators is currently fragmented causing overlap between different institutions.
- » Data capture and quality need further improvement (e-HIS data and trainings on the use of ICD-10 are required).
- » Data are published after a long delay, in particular the Cancer Register and health care expenditure data.
- » Data protection regulation makes linking and using different data sources complicated and time consuming.
- » Over the years, policy-makers' needs for health information have changed from descriptive to more analytical reports, for example, analysis of causes and relationships, evaluations/assessments, predictions, etc.
- » Reports are not in a user-friendly format and need to more clearly, easily and concisely explain data analysis results.

Box 4. Contd.

Opportunities

- » Several institutions or departments inside and outside the government structure contribute to the HIS.
- » Regular communication between HIS stakeholders could reduce miscommunication and overlapping activities.
- » Health data are generally disseminated fee-free in databases and in a user-friendly format.
- » Collected and analysed health data mainly cover the needs of policy-makers.
- » Creating a convenient data linkage system that combines data from different sources could help to improve the use of data and offer more opportunities to support EIP by producing analytical reports that explore relations, causalities, etc.

5. THE NATIONAL HEALTH RESEARCH SYSTEM

This section describes key actors, policy frameworks, available resources and the environment of health research in Estonia.

5.1 Stewardship

The goals of Estonian research are guided by the Estonian Research and Development and Innovation Strategy 2014–2020 [123] whose main goal is integrating science with specific economic and societal challenges in order to move efficiently towards a knowledge-based society. The general governance of the Estonian research system is the responsibility of the Research Policy Committee [124] whose work is led and coordinated by the Ministry of Education and Research [125] and the Research and Development Council [126], housed within the Government Office. The Research Policy Committee advises the Ministry of Education and Research in its research-related political decisions, for example, general principles of research funding and, based on evaluation or research excellence, funding decisions for research institutions; the Research and Development Council provides advice to the State Government on research-related topics and suggests priorities for research and development (R&D) activities in the country. The recommendations by these two commissions are put into practice by the ERC. However, neither of these bodies and agencies deals specifically with health-related research.

A vision for health research and innovation (R&I) activities in the form of the Research, Development and Innovation Strategy for the Estonian Health System 2015–2020 [127] was developed in 2015 by request of the Ministry of Social Affairs. This Strategy highlights the misalignment between the current knowledge base and the needs of the national health system, due to the Estonian R&D system's focus on basic research and the inability of the health system to define R&D needs. It sets out a series of key actions that are prerequisites for successful health R&D activities. These key actions are: increasing the research and innovation capacity of health care providers, organizing research based on the needs of the health system and testing innovative solutions, developing an exemplary health data infrastructure and efficient organization of research and innovation in the health field.

Despite the Strategy being in place, no detailed action plan was developed. The NHP [52] includes some activities that support the Strategy (for more information, see sections 3.1.1 and 4.3.2). However, due to a lack of funds, most of the Strategy's broad activities have not been realized and no current implementation plan exists. The general vision of the Ministry of Social Affairs is that health-related R&D activities have to be integrated into and directly support the goals of the NHP [52]: to increase social cohesion and reduce inequality in health, decrease mortality and primary morbidity in mental and behavioural disorders among children and young people, reduce the health risks from the surrounding environment, increase the physical activity of the population, ensure balanced nutrition and decrease the level of lifestyle-related risk behaviours, and ensure equal access to high-quality health care services through optimal

use of resources. However, as no specific national health R&D implementation plan has been put in place, health researchers have difficulty understanding the needs of the Government and the Ministry of Social Affairs [128].

Instead, the nature and direction of health research – carried out primarily at public universities (e.g. UT, Tallinn University of Technology (TalTech), Tallinn University (TLU)), in competence centres [129] such as the Competence Centre on Health Technologies [130], in health care colleges and in the government-owned NIHD – has been and is currently driven by past activities of these institutions and by research interests of leading researchers as well as by the topics of financed research projects. This has led to relatively poor links between general health research carried out in the country and governmental needs, as also concluded by an evaluation report of Estonian R&D institutions in 2017 [131] and highlighted by interviews with policy-makers [132]. As a result, it is highly likely that policy-makers have a relatively modest interest in research carried out at universities and research institutions, and that researchers are not motivated to work on socially important issues. The most likely reasons leading to these poor links and, thus, hindering KT and knowledge utilization, as well as recent efforts to improve the communication and KT process, are discussed in section 5.3.

5.2 Financial and human resources

5.2.1 FINANCIAL RESOURCES

In general, R&D spending in Estonia (0.6% of public funding plus 0.7% of private funding in 2017 [133]) is lower than the average in EU countries (the EU28⁶ average spending for research was 0.7% public funding and 1.3% private funding). This may have severe impacts on KT but as crucially, on knowledge production. Fortunately, in December 2018, leading political parties in Estonia signed a political agreement increasing public funding for R&D to 1% of GDP by 2022 [134]. As of May 2019, it has become evident that this financing goal may not be achieved by the timeframe that was agreed initially.

Statistics show that both public (156 million euros) and private sources (148 million euros) funded research in 2017 [133], but medical and health-oriented research is mainly carried out using public money. This can be concluded from the fact that 96% of researchers active in health or the medical sciences work in the public sector (in 2015, 609 researchers compared with 27 in the private sector) [135] and that 95% of public sector research is supported by public sources.⁷ As basic and applied research is mainly conducted in public R&D institutions (i.e., the private sector is mainly focusing on product development), the fact that the private sector is essentially not financing publicly conducted research is a reflection of its relatively low interest in collaborating with researchers and research in general.

The ERC is the main funding body for public research [136] primarily funding projects through open calls (i.e., not thematically ordered) in all areas. In 2018, the ERC invested around 40 million

⁶ EU28: the European Union Member States as of 1 July 2013.

⁷ According to the Estonian Board of Statistics, only 5.5% of R&D expenditure, i.e., 8 million of 148 million euros of total private R&D expenditure in 2017 was invested in the public sector, including public R&D institutions.

euros in research projects through open calls, and from this 15% (around 6 million euros)⁸ was used for health research. The ERC provides additional funds for health researchers in the form of baseline funding to institutions on the basis of their research excellence to be used for R&D or supporting activities that are agreed with the specific institution. Funds to researchers are also provided through the European Structural Funds, for example, in the form of centres of excellence, national research infrastructures, networks, collaborative projects, etc. The use of European Structural Funds for general R&D purposes in Estonia has been successful. Almost 15% of the nearly 4.4 billion euros of the European Structural Funds in 2014–2020 was used for R&D purposes [137]. Although the fraction of funds used for health research is not reported in detail, one may assume that a similar proportion of the European Structural Funds was also used for R&D in the health sector. This high use of foreign money for R&D may seriously threaten future work, creating unsustainable research and insecurity among researchers.

Health research that is driven by policy needs is directly ordered by the Ministry of Social Affairs and as discussed above (for more information, see sections 3.1 and 4.2.2), is based on the agenda and priorities of the NHP [52]. A large part of these directed R&D activities is partially (up to 50%) financed by the European Structural Funds and the ERC managed programme (2016–2020) RITA that aims to increase the role of the state in the strategic managing of research and the capabilities of R&D institutions in carrying out socially relevant research [138]. Research funded by the RITA programme supports strategic R&D activities for knowledge-based policy formulation, monitors the achievement of objectives of implemented policies and provides recommendations on the formulation of new policies [138].

The total yearly R&D&I spending of the Ministry of Social Affairs in 2018 was between 7 and 8 million euros [139] but R&D spending for health was estimated at 1.2 million euros [140]. This amount is significantly lower than that given by the ERC for health research through open calls and is likely insufficient to achieve full R&D support for policy-making. It is worth mentioning that governmental funding for health R&D activities in Finland in 2017 was 69 million euros [141], around 10 times higher than that in Estonia. Another current problem with health research policy is the lack of central focus. As discussed previously, although the Estonian Research and Development and Innovation Strategy for the health system is in place, it is not supported by an implementation plan and thus, the strategic management of health research is lacking. For better coordination, the Board of Medical Sciences of the UT has suggested initiating a national clinical research programme aimed at integrating medical research and clinical practice [142]. Also, the Ministry of Social Affairs has named a Health Research and Innovation Council [143] as an advisory body to steer health research. However, setting up the research programme has been held back by a lack of funds, and the greatest challenge of the Health Research and Innovation Council has been to involve in a timely fashion its high-level members who have limited availability (time) in the Ministry's R&D planning process.

⁸ According to the ERC (<https://www.etag.ee/tegevused/uuringud-ja-statistika/statistika/konkurentsipohised-uurimistoetused/>), the share of funds used for health research has been more or less steady at 19%, 11%, 14%, 16%, 20% and 15% of the total investments in research projects in 2013, 2014, 2015, 2016, 2017 and 2018, respectively.

5.2.2 HUMAN RESOURCES

Health researchers are mainly trained at the UT, which offers degrees in medicine and health sciences (dentistry, pharmacy, physiotherapy, physical education, nursing, public health and medical science, neuroscience) at the Bachelor of Science, Master of Science and Doctor of Philosophy (PhD) levels. Additionally, health researchers are also trained at two other universities –TalTech and TLU – although in limited areas. TalTech offers a Master of Science in Health Care Technology, which is largely focused on digital health technology and e-health, biomedical technology and medical physics. TLU offers the Health Behaviour and Wellbeing PhD programme.

The career path for trained health researchers may include working as a researcher at the UT or the NIHD; a combination of clinical research and medical practice is also possible and encouraged considering the high level of competition for research grants (e.g., the success rate of project applications in the only call announced in 2018 by the ERC was 13.8% [144]). In addition, the salary of researchers, which has always been slightly higher than the country's average salary (125% in 2007 and 109% in 2016) may not be high enough to attract new talent considering the long training period. Thus, unfortunately many trained (health) researchers move abroad or (partially) leave research, for example, to work in health care, or take an adviser or consultant position, for better job security and a higher income. For example, a recent study on the career paths of PhDs revealed that the percentage of PhDs who continue in an academic career is lowest in the medical and health sector at just 35% while 45% continue with a combined career path and 20% leave academia [145].

According to Statistics Estonia [135] in 2016, just 11.8% (600 researchers) of the 5063 total researchers in the country work in non-profit organizations (higher education organizations, government sector, non-profit private sector) in the area of medical sciences (health was not reported separately in this statistical analysis). Among the 600 health researchers, 31% had obtained a Master of Science degree or its equivalent and the remaining (69%) possessed a PhD degree or its equivalent. The highest proportion of health and medicine-related researchers are associated with the UT and many of them are linked with Tartu University Hospital. Significantly, fewer health researchers are active in the private sector than in the non-profit sector, with only 27 researchers (1.02% of the total 2657 researchers in the private sector) in 2016.

5.3 Production and use

5.3.1 ENVIRONMENT AND THE CAPACITY TO PRODUCE RESEARCH

The UT, TalTech, TLU, two health care colleges (one in Tartu, the other in Tallinn) and the NIHD undertake the bulk of health research in Estonia. The UT hosts the Estonian Genome Center within the Institute of Genomics, which collects and analyses population-based genomic data and is partly financed by the Ministry of Social Affairs according to the Human Genes Research Act [146].

Regular evaluation of Estonian R&D in 2017 [147] showed that in general, Estonian researchers, including health researchers, are well equipped with access to various research infrastructures as well as international research databases. Health researchers also have access to various national registries (for more information, see section 4.2.1) with a permit from an ethics

committee and the Estonian Data Protection Inspectorate as set out by the Public Health Act [92]. Although accessing health data from national databases and registries by researchers is feasible, efforts to link all the databases may still encounter incompatibility issues (for more information, see section 4.3.2) [127].

The Estonian research environment is generally very open to international partners (through the ERC, a number of EU partnerships and the European Strategy Forum on Research Infrastructures roadmap projects are available to researchers) but also to national players; Estonian researchers and their projects are well connected and searchable in the Estonian Research Information System that currently shows 109 projects using the search term “health” and 46 projects using “medicine” within the ERC-funded projects.

5.3.2 REGULATION AND OUTPUTS

Health research, which often involves a series of ethical aspects, is efficiently coordinated in Estonia and a well-coordinated political framework regarding research involving human subjects is in place. All studies involving human subjects, especially testing and research on drug candidates, are regulated by legal acts [148,149] that are based on good clinical practices and the declaration of the World Medical Assembly [150]. In 2010, the National Centre of Translational and Clinical Research was set up (and added to the Estonian Research Infrastructures Roadmap) with the goal to advise medical researchers on good clinical practice and ethical issues [151].

Scientific outputs of Estonian researchers have steadily increased. While the number of researchers between 2001 and 2014 has remained constant, the number of Institute for Scientific Information Web of Science indexed research papers has increased from 914 to 2391 (i.e. from 15% to 26% of all publications) and the influence of articles from Estonian authors has steadily risen [152] demonstrating an increase in the quality of published research papers. Estonian health researchers may also publish articles in Estonian in the national medical peer-reviewed journal *Eesti Arst (Estonian Physician)* [153], a monthly journal of the Estonian Medical Association (for more information, see section 3.2), financially supported by the Ministry of Social Affairs.

Despite an increasing publication rate and higher quality publications, few studies find their way to policy-makers. The reasons for this could be the high number of fundamental and specific studies/basic research, the highly complex representation of research results, a low level of awareness of research results among state officials and poor dissemination of research results to policy-makers.

Even though research projects exist that theoretically could contribute to policy-making, their funding resources and, thus, foci and requirements are diverse, and there is a high risk that their outcomes will not be incorporated into policy-making and that their collective potential to increase the efficacy of the current health system will be low. Moreover, very few studies focus on health systems, i.e., implementation research [154] and health policy and only a few researchers are interested in that topic. Most of such analyses, if ordered by the Ministry of Social Affairs, are performed on a case-by-case basis by consulting companies [109].

“We don’t have researchers who would assess the health system in a dynamic way and who would pilot new ideas in certain settings before they are applied nationwide.” (Policy-maker)

5.3.3 ACCESS AND USE

In addition to a low awareness level of research results among policy-makers, access to health research is another obvious factor hindering the spread of research results to the policy-making process. First, research results are poorly accessible. Currently, only two publicly accessible research databases exist in Estonia: the Centre of Medical Information (Medinfokeskus) [155] and the UT Public Health Library [156]. The former provides information on electronic journals and e-books ordered by the UT and the latter collects open access full-text publications on various different health-related topics. Other full-text scientific papers from other databases are usually not fee-free, for example, to employees of the Ministry of Social Affairs and, thus, even if interested, policy-makers have difficulties accessing research. Currently, the ERC encourages the publishing of research results with an open access licence in order to increase accessibility among researchers as well as a wider audience.

“We don’t know about the research that has been done and we don’t have access to it.” (Policy-maker)

Second, accessibility of research results also depends on the way the results are presented. Research outputs that are not presented in a clear and easy-to-understand way are still meant to be used by policy-makers and the general public. For example, the lack of easy-to-understand research results was highlighted as one of the main issues hindering the use of research by policy-makers [132,157].

“Our research is too scientific and not usable in policy-making processes.” (Policy-maker)

The exchange of clearly presented research data can only happen if a platform or network is in place. Currently, the exchange of messages from researchers to policy-makers is mostly based on personal contacts. For example, studies by Estonian researchers on genetic risks for certain diseases have been well communicated to policy-makers so that today the clinical significance of genetic risk scores is being validated, and preparations are ongoing to include (personalized) genetic risk prediction to the health care system.

“We should have formal ways on how we can work together with researchers. Person-to-person communication that we use today is not sustainable – when the person leaves, contact and collaboration will also disappear with it.” (Policy-maker)

From the researchers’ point of view, the reasons why research results do not reach policy- and decision-makers are likely two-fold. First, researchers are under pressure to publish high-level research papers that leave them little time for dissemination and popularization activities. Second, researchers do not usually see the merit in KT and KB because they do not have a clear understanding of the use of their results [157]. Improving the current situation would require efforts from both decision-makers (i.e., knowledge users) and researchers (i.e., knowledge producers). Simplifying research results may also be achieved through the actions of specialized translational scientists. Given the position of the NIHD and its close relationship with the Ministry of Social Affairs, it is the best suited institutional actor for this role, to provide KT services and by that, help to improve EIP in the future. Since 2016, all Estonian ministries and the Government Office could employ research advisers to act as translators between scientists and policy-makers [158]. The system of scientific advisers was introduced as part of the ERC-managed RITA programme mentioned before. The Ministry of Social Affairs hired a research adviser

for health in 2018 whose main tasks are to advise the Ministry on health R&D issues, plan national and international cooperation on health R&D, develop plans for health R&D needs, organize collaboration with networks of researchers and represent Estonia in international R&D activities/partnerships [159]. The Ministry of Social Affairs has also started other activities to improve the KB process; for example, information days incorporating presentations on policy-relevant research projects from health researchers have been planned since 2019. The Board of Research and Innovation in Health Policy is also expected to contribute to KB and its tasks include, among others, keeping the Ministry of Social Affairs informed on health R&D activities in the country [143].

Box 5 summarizes key opportunities and challenges for EIP considering the national health research system.

Box 5. Summary of key opportunities and challenges for future EIP efforts considering the national health research system

Challenges

- » Estonian national public funding for research (0.6% in 2017) is lower than the average of EU countries and the funding is unsecured being largely project-based.
- » Estonian research, including that of health, is too dependent on foreign (EU) funds and that may seriously threaten future work, creating insecurity among researchers and unsustainable research.
- » No specific national health R&D implementation plan exists and health researchers have difficulties understanding the needs of policy-makers.
- » Current research funding does not support implementation research and other activities that are essential for EIP; thus, very few studies focus on health systems and too few researchers are interested in this topic.
- » Few research studies find their way to policy-makers and to the process of policy making due to:
 - the lack of knowledge about studies by policy-makers;
 - the lack of access to research databases;
 - research results presented in a highly complex way and a lack of easy-to-understand research results;
 - a lack of information sharing platforms, discussion and collaboration between policy-makers and researchers; and
 - researchers who do not usually see the merit in KT and KB because they do not have a clear understanding of the use of their results.

Opportunities

- » Health research in Estonia is of high quality and researchers are active in international networks.
- » There is strong public support for research evidence.
- » The Ministry of Social Affairs has employed a research adviser for health policy, to improve communication between researchers and policy-makers.
- » The Ministry of Social Affairs has set up a Board of Research and Innovation in Health Policy, whose mandate is to participate in health R&D priority setting and KT; its greatest challenge has been limited capability and (e.g., time) resources to contribute actively.

6. EIP PROCESS

This section on EIP processes describes already established EIP efforts and gives insight on how the health system, the HIS and the health research system interface within these. The use of research knowledge and evidence has played a role in the policy-making process, however, frequently through ad hoc processes, for example by ad hoc consulting (research) experts, the occasional referencing of scientific papers in policy proposals or by preparing policy briefs. These types of efforts are a starting point on which to build further EIP efforts. To date, more systemic efforts in bridging the gap between research and policy have been observed in the areas of HTA, clinical guidelines development and in public health, with the process of developing green papers and implementation plans. The major actors in EIP processes in Estonia have all been mentioned in the preceding sections. These include the Ministry of Social Affairs, the NIHD, the HB, the SAM, the EHIF, the CeHWIS, WHO, universities and other nongovernmental organizations (for more information, see section 3.1 and section 4.1).

6.1 Current EIP processes and practices

In Estonia, a few systems promoting the continuous use of evidence in policy processes are already in place. For example, **the Centre for HTA** (part of the Institute of Family Medicine and Public Health at the UT) provides evidence that is mainly used by the EHIF to make health care-related decisions about adding new diagnostic and treatment options to the list of health care services, and by the Ministry of Social Affairs to make decisions on the reimbursement of pharmaceuticals and on public health interventions. The HTA advisory board consists of members from the Ministry of Social Affairs, the EHIF, the SAM, the NIHD, the UT, the Estonian Medical Association and the Estonian Family Doctors' Association [160]. The advisory board's tasks are to submit and select topics for reports, to approve the experts who are engaged in the HTA process, and to observe and ensure the quality of reports. In addition, it also gives advice on competence development and supporting institutional structures related to the HTA, and approves the annual action plan (including trainings) and budget for the Centre for HTA [161]. The Centre is financed from the state budget through the Ministry of Social Affairs, and the recommendations and conclusions arising from the HTA are used to adjust medical practice and clinical guidelines according to emerging evidence.

When developing a report, a team usually comprises 2–3 members of the Centre for HTA and 2–3 clinical specialists or health care experts (based on contracts). As a first step, an overview of research literature is compiled, followed by data analysis and the formulation of conclusions and recommendations. All of the work is carried out in close collaboration with the Centre for HTA and engaged specialists and experts. The methodology and different guidelines that are used (for experts, for searching the literature, for the content of the report, etc.) are all publicly available on the Centre for HTA website [160]. The reports have been well received by different health care parties and the results have been used in order to solve multiple problems that are important in Estonia [162].

To define its benefit package, the EHIF conducts an extensive **evaluation process** for including, or excluding, any intervention to, or from, the benefits package [163]. The Health Insurance Act [51] sets out four criteria for changing the benefits package:

- » medical efficacy
- » cost-effectiveness
- » appropriateness and compliance with national health policy
- » the availability of financial resources.

An application for the inclusion of a new intervention or a price change must be supported by documentation for each of the four criteria from specialists' associations and the providers making the application. Based on the application, the supporting documentation, the budget impact and the advice of the advisory committee on the list of health-care services, the EHIF Supervisory Board makes a recommendation to the Ministry of Social Affairs and the Ministry in turn makes a recommendation to the government [164]. In the case of medicines, a separate advisory committee on medicines [164] makes recommendations to the Ministry of Social Affairs [165]. The advisory committee on the list of health-care services consists of 13 members, three state and 10 medical speciality or provider and patient representatives [164]. The advisory committee on medicines has at least eight members: three state, two medical specialities or providers, one university and two patient representatives [165]. The EHIF ensures that the services and medicine covered from the state budget and financed through the EHIF are evidence-based.

In recent years, Estonia has made substantial progress in the area of evidence-based practices. This includes establishing adequate evidence-based **health care standards as well as improving and harmonizing the procedures for clinical guideline development**. The EHIF coordinates the development of clinical guidelines. An advisory board, established and financed by the EHIF, leads guideline development and is responsible for improving and ensuring the quality of services by managing the development of cost-effective and evidence-based guidelines in Estonia. Led by the UT Dean of the Faculty of Medicine or a substitute, the advisory board comprises 12 members appointed for three years. The current members of the board are from the Ministry of Social Affairs, the SAM, the EHIF, the NIHD, the UT (two members), the Tartu Health Care College and different professional organizations in the field of health (five members) [61]. A panel of experts is formed for every guideline that is developed [166]. Guideline development is done in collaboration with a panel of experts and a permanent secretariat of medical guidelines [167]. The permanent secretariat is responsible to ensure that the guideline development process uses the methodology outlined in the handbook [168], the quality of guidelines and that they are consistent with evidence-based medicine [167].

With regard to public health topics, evidence has been used in policy-making processes in different ways. One example is the **green papers** on alcohol [169] and tobacco [170] policy that have been approved and are being implemented. The Green Paper on Nutrition and Physical Activity [171] is still under development. Another is the Ministry of Social Affairs' specific **implementation plans** (e.g. HIV [172]) that have been developed. The NHP Steering Committee agrees on the topics for green papers and implementation plans and monitors their progress (for more information, see section 3.1.1). For every green paper or implementation plan, a working group is formed, usually led by a representative of the Ministry of Social Affairs. The working group consists of members from research, governmental and nongovernmental organizations. The development process of a green paper or implementation plan starts by

defining the problem and its magnitude, followed by collecting evidence on best practices and policy options. The Ministry of Social Affairs Analysis and Statistics Department's role in the process is to provide an overview of the current situation and the problems based on available data. Gathering research evidence is mostly done by specialists from the Ministry of Social Affairs and the NIHD usually with WHO support (for more information, see section 3.1.1). Throughout the process, PDs take place with a wide range of stakeholders (e.g. policy-makers, researchers, service providers, industry, health care providers, etc.) to discuss problems and possible solutions and to reach agreement. While the development process of green papers and implementation plans is somewhat well-defined, implementation remains a challenge as it is largely dependent on political choices and preferences [132].

To summarize the above-mentioned processes (e.g. HTA, EHIF benefit package evaluation, clinical guidelines development), it can be said that they are rather well received by different stakeholders. All of them have developed guidance or a handbook defining work procedures, and they have permanent functioning bodies in order to support the everyday work in a sustainable and transparent way (e.g. Centre for HTA, EHIF advisory committees, permanent secretariat of medical guidelines). In addition, they all engage experts and specialists according to need and have good interlinkages with stakeholders (e.g. HTA advisory board, EHIF Supervisory Board, clinical guidelines advisory board) who direct the work. This ensures that the products are relevant to policy and used by policy- and decision-makers or in the case of clinical guidelines, by health-care practitioners. As the before-mentioned boards consist of a wide range of different parties (policy-makers and representatives of research, health care and patient representatives), they can be considered as balanced, neutral and free of political influence.

No developed standards and guidelines exist for green papers and implementation plans. So far, the main work of gathering data and evidence has been done in collaboration with the Ministry of Social Affairs and the NIHD with WHO support. WHO works with the Ministry of Social Affairs and the NIHD during the preparatory phase to gather and assess research evidence, in part to address a lack of access and skills in this area. International organizations often have access to evidence reports synthesizing the best available evidence. National researchers have played a smaller role in the process, mostly taking part in working group discussions. In some cases, the neutrality of those gathering evidence is called into question: industry has claimed that evidence contradictory to the recommended policy options has been neglected. There have also been cases where neutral stakeholders have started to support industry (not evidence-based) proposals during the PD. This is probably due to a lack of knowledge and trust in the presented research evidence but also to the persuasiveness of industry compared with other stakeholders during the PD.

6.2 Examples of research use

While no systematic process for research use exists in Estonia, two recent examples of research-to-policy translation are: the Green Paper on Nutrition and Physical Activity that focuses on the sugar-sweetened beverages tax and widening health insurance coverage by moving towards universal health coverage.

Two members of EVIPNet Chile gathered and appraised research evidence for the EBP on reducing the consumption of sugar-sweetened beverages and their negative health impact in Estonia [7], as the team from Estonia, comprising members from the Ministry of Social Affairs,

the NIHD and the UT, did not have access to research databases (except the UT) and the proper skills to do it. The WHO EBP guideline was used and web-based trainings for the Estonian team members were provided. Web-based trainings concentrated on the EBP guideline and tools that can be used during the work process and were conducted using a step-by-step approach. An employee from the Ministry of Social Affairs Analysis and Statistics Department led the team, with guidance and support from WHO EVIPNet Europe and EVIPNet Chile; the latter had the secretariat role, which was needed during the process. EVIPNet Chile also reviewed, guided and gave advice during the entire EBP development process. The EBP was well received by stakeholders (except industry) and led to the development of the draft act to tax sugar-sweetened beverages [173]. Parliament approved the act but in the end, it did not come into force [174]. Nonetheless it showed that systematic use of evidence can strongly guide and support EIP processes [8,174] (Box 6).

“The evidence use process (EBP, modelling study) that was in place is something we should opt in the future as well. It gives a solid scientific background and argumentative facts to deal with the topic among stakeholders and the public.” (Policy-maker)

Box 6. The sugar-sweetened beverages tax

The idea to introduce a sugar-sweetened beverages tax was raised during the development process of the Green Paper on Nutrition and Physical Activity [171]. A multisectoral working group was formed for the Green Paper, led by the Ministry of Social Affairs and comprised industry, different specialized organizations, parents’ association, other ministries, TLU, the UT, the NIHD and the EHIF. The same working group was also used to further explore the idea of a sugar-sweetened beverages tax. The EBP [7] was developed in collaboration with EVIPNet Chile and supported by WHO.

The role of evidence in the form of the EBP was present during the entire process but had much more influence in the beginning (problem definition, defining policy options). When the acceptance from the Government to move forward with the tax was received and the legislation change went into practical implementation details, the evidence did not play much of a role. With the help of WHO, estimates of the potential impact of the tax on certain diseases and the obesity rate were made in order to inform decision makers and the public [175]. The evidence used to develop the EBP was gathered and appraised based on the EVIPNet EBP guidelines with the help of EVIPNet Chile, and the EBP was very well received by stakeholders.

In order to make informed decisions on widening the coverage of health insurance, the Ministry of Social Affairs ordered an evaluation from PRAXIS [58]. The purpose was to identify the uninsured and to give advice on policy measures to widen health care coverage [58]. As the analysis did not go too much in detail and in order to move forward with the policy options and to prepare concise plans, an expert group was formed. The Ministry of Social Affairs leads the group, which consists of members from the Ministry of Finance and the EHIF. The expert group is supported on the data side by the Ministry of Social Affairs Analysis and Statistics Department and on the evidence-gathering side by the WHO Country Office. The latter because the Ministry of Social Affairs does not have access to research databases. In addition, other countries’ health care experts have been contacted in order to gather information about their practices and systems (Box 7). The collected information will be used to convene a PD with

stakeholders. After which a memorandum of collaboration with WHO health care financing advisers will be drafted in order to get the government's input. WHO advisers will be used as they have experience with other countries and in order to minimize potential errors.

Box 7. Widening the coverage of health insurance

The problem first came into focus when the financial sustainability of the Estonian health care system was evaluated [176]. The analyses mentioned above and the ones that follow highlighted that emergency care costs are probably more expensive than allowing at least primary care access to the uninsured [177]. The latest work ordered by the Ministry of Social Affairs was the evaluation conducted by PRAXIS to identify who is uninsured and to suggest policy measures on best practices in order to widen health coverage [58]. Currently a working group is analysing other countries' experiences, and the advantages and disadvantages of other systems in order to prepare a recommendation on whether and how to implement universal health care in Estonia.

Based on the previous examples, it can be said that evidence is regularly used in policy processes but that no regular EIP processes are in place to support the systematic use of evidence. Attempts at using research evidence usually face different challenges, such as the lack of access to evidence and a lack of skills and guidelines to appraise its quality. In addition, no regular collaboration exists between researchers and policy-makers in the area of EIP. The latter is needed at least in order to access and appraise the evidence but also to get trainings and guidance. In addition, it can be said that ad hoc working groups comprising experts and researchers can be a valuable source to create EBPs, taking into account the limited number of health system researchers and experts in related fields in Estonia. The above-mentioned examples also illustrate that the transparent and systematic use of evidence can play an important role in getting political support in order to move forward with solutions. The lack of or change in political commitment to EIP, non-evidence-based opinions of stakeholders and lobbying (for more information, see section 2.2) can be barriers to evidence-based policy-making, but regular and systematic use of research evidence will strengthen and lead to more evidence-based decisions.

Box 8. Summary of key opportunities and challenges for future EIP efforts considering current EIP processes

Challenges

- » There is no structure or person in place who is responsible for evidence-informed health policy.
- » There are no skills and guidelines on the types of evidence that should be used and how to use them in the EIP process and therefore the quality and practice among policy-makers varies.
- » Policy-makers in the Ministry of Social Affairs lack time and skills to find and interpret evidence.
- » The lack of or change in political commitment and lobbying might hinder the use of evidence in policy-making.

Box 8. Contd.

Opportunities

- » Research use is a natural part of the policy-making process and policy-makers want to use it in a more systematic way.
- » Some successful structures and processes are already in place that show how policy is supported by evidence (the Centre for HTA, EHIF processes related to the benefits package, clinical guidelines development). These experiences can be used to guide future EIP efforts.
- » Some successful ad hoc experiences (EBP, green papers) demonstrate how researchers and experts have been involved in EIP processes, which can guide future EIP efforts.

7. CONCLUSIONS, RECOMMENDATIONS AND NEXT STEPS

By looking at existing health policy processes and practice examples, it is clear that the use of research knowledge and evidence can play a role in the policy-making process in Estonia, for example, through ad hoc consultations of (research) experts, the referencing of scientific papers in policy proposals (green papers) or preparing an EBP. There are also existing processes where evidence is regularly used, for example, in the Centre for HTA and clinical guidelines development. These are a starting point on which to build further EIP efforts in order to obtain good population health outcomes by using the available resources in the best possible ways. Estonia's decision to engage in EVIPNet may be interpreted as an expression of willingness to further develop EIP capacity and processes. Yet policy decisions in the country – which often need to be made at short notice – are not always supported by rigorous scientific input, demonstrating the gap between stated intentions and actual practice.

7.1 Current factors that support EIP

The overall climate in Estonia can be considered as favourable towards the use of evidence in policy and practice. The population of Estonia generally supports the use of research in policy-making [22]. In addition, the media has started to promote the use of evidence and make it more user-friendly for the general population. One example is the science portal named *Novaator* that is a collaboration between Estonian National Broadcasting and the UT [35]. Also, the ERC has supported an initiative that concentrates on evidence-based argumentation named “How do you know?” where politicians have to explain publicly the bases of their claims [36].

The legal framework in Estonia also requires the use of evidence in the policy process (intention to elaborate a draft act, impact assessments) [29,30]. Impact assessments and stakeholder engagement are an obligatory part of all legal changes, development plans and decisions made by the minister or other important decisions made by the government [30]. There are also guidelines for engagement [37] and impact assessment processes [178]. In addition, the Government Office organizes centralized trainings in order to build capacity among policy-makers on topics, such as impact assessments, stakeholder engagement and evidence-based policy, and supports the creation of taskforces [31]. Moreover, generally there is a will to increase the transparency of policies and to give feedback to stakeholders.

Evidence is increasingly being used in Estonia when health reforms are initiated and when different stakeholders are involved in these policy processes. An umbrella document, the NHP, identifies health priorities in Estonia [52]. The selection of priorities is agreed upon and monitored through engagement with stakeholders by the intersectoral NHP Steering Committee. Regarding EIP, two departments in the Ministry of Social Affairs are responsible to create the bases for evidence-informed health policy-making in the Ministry [67]. Also, based on statutes, the main activities of the NIHD regarding health policy are to provide health-related assessments and implementation analysis and to develop health-promoting programmes and action plans [45].

The main providers of health data in Estonia are the NIHD, the EHIF, the CeHWIS, the HB and the SAM. Data are regularly used in health policy processes and in organizing health care. Generally, data are of high quality and disseminated free of charge in a user-friendly format. The Ministry of Social Affairs and other national organizations – namely the NIHD, the SAM, the HB but also the National Audit Office and the Government Office – conduct and commission studies and assessments in the field of health, in order to use the findings in policy processes or to guide them.

Health research in Estonia is of high quality and the number of scientific outputs of Estonian researchers has steadily increased [152]. Estonia has two publicly accessible research databases [155,156]: one provides information on electrical journals and e-books ordered by the UT, and the other references a variety of published health-related information about Estonia. Researchers are generally well equipped with access to various research infrastructures and international research databases. The country has developed a vision for health research and innovation activities [127] and the Ministry of Social Affairs has named a Health Research and Innovation Council as an advisory body to steer health research [143]. In addition, the Ministry of Social Affairs has employed a research adviser for health policy, to improve communication between researchers and policy-makers.

Some successful evidence-supported systems are already in place such as the Centre for HTA [160], the clinical guideline development process [166] and the process EHIF uses to define the health benefits package [163]. The country has developed organizational infrastructures (permanent secretariats, steering committees and advisory boards) and guidelines in order to facilitate these previously mentioned existing systems. Ad hoc working groups are formed – usually in collaboration with the Ministry of Social Affairs, the NIHD and WHO – to incorporate evidence into green papers and implementation plans. The Ministry of Social Affairs Analysis and Statistics Department usually supports policy processes with regard to situation overviews needed for policy development but also has experience in leading teams in order to develop evidence briefs for policy. Based on these examples, it can be said that the use of evidence is common in everyday policy-making processes and that international organizations often support the EIP process. In particular, WHO is a great support to the Ministry of Social Affairs in fostering EIP and sharing expertise, normative guidance, studies, trainings and networks. The Estonian experience in relation to the EBP and HTA reports illustrates that the systematic use of evidence can play an important role in getting political support in order to move forward with solutions.

7.2 Current factors that challenge EIP

The business–politics linkages are very strong in Estonia [33]. Therefore, it can be said that the political culture in general does not always support EIP (politicians’ and stakeholders’ interests might be financial and contradictory to the evidence). What also makes stakeholder engagement challenging is the multiplicity; many interest groups are focused on very specific problems [33].

Even though legal mechanisms that foster the use of evidence in policy-making are in place, practical experience among policy-makers revealed that there are no specific guidelines on how and where to gather evidence. In addition, the quality of the evidence used varies among policy-makers as they lack time, skills or access. The timeframe of policy-making itself is short and some decisions have to be made fast; therefore, EIP is not always possible because of the

lack of time among policy-makers. The window of opportunity passes quickly and there is little time for policy-makers to gather evidence and no evidence synthesis available for use. Moreover, the relatively high voluntary turnover of employees in ministries also hinders the sustainability and capacity of EIP and its culture [23].

Evidence is often used in health policy processes and in health reforms but not in a systematic way and there are no guidelines developed. There is an umbrella health policy document, the NHP [52], used to plan activities and define measurable targets, but not used consistently to hold stakeholders accountable [17]. Every public organization has its own development plan or strategy and the consistency between them and the NHP needs improvement in order to achieve the main strategic health goals in Estonia. Professional health (including patient) organizations regularly take part in policy processes. However, there is room for improvement in terms of patient empowerment, capacities and influence on health policies [17]. There is also a need to ensure stable resources for already existing activities in relation to quality improvements (e.g. HTAs, clinical guidelines).

Activities that monitor some aspects of the health system and its performance are in place [68], but they are fragmented and not systematically conducted (e.g. NHP, EHIF quality indicators). National health system performance assessments that guide policy decisions need to be conducted regularly; the last one was conducted in 2009 with WHO support [64].

The Estonian HIS lacks a clear direction and management; therefore, a stronger leadership role is needed in order to minimize the current fragmentation [107]. It currently causes duplication of activities while leaving gaps (indicator development, making predictions, data collection and analyses), hampering the exchange of data and knowledge sharing, and creating lost opportunities for research and policy support. Further improvements are needed in order to facilitate EIP to address general problems, such as modernizing certain registries (that are still paper based e.g. the Medical Pregnancy Information System, Cancer Register, Tuberculosis Register), the lack of data quality (e.g. e-HIS [48,83], ICD-10-related problems) and capture (e.g. e-HIS [83,84]), lack of user-friendly ways (strict data protection regulations) and tools to help to link data from different data sources and limited health data that include socioeconomic status. More timely (e.g. cancer and health care expenditures data), analytical (e.g. analysis of causes and relationships, evaluations/assessments, forecasts, etc.) and user-friendly reports (e.g. easy to read one pager) that include policy recommendations are needed to disseminate health information. Further improvement is also needed in the availability of user-friendly data (e.g. HB, SAM).

Despite developing the Research, Development and Innovation Strategy for the Estonian Health System 2015–2020 [127] and creating the Health Research and Innovation Council [143], no specific activities have been planned due to the lack of financial resources. Thus, the strategic management of health research is lacking. Most health research is not aligned with health system priorities and needs [131], which can partially be explained by the lack of financial levers to make health research useful and used in the EIP process. As a result, few studies find their way to policy-makers and researchers are not motivated to work on socially important issues. Other factors include the lack of access to research publications, the lack of easy-to-understand research results for policy-makers, generally poor dissemination of research results to policy-makers (that currently relies on personal relationships) and the lack of networks among policy-makers and researchers. Moreover, very few research studies focus on health systems, i.e., implementation research and health policy and few researchers are interested in this topic.

It can be said that no organization or person responsible for evidence-informed health policy is in place. Neither are there regular mechanisms that would support the systematic use of research evidence in health policy. Attempts to use research evidence among policy-makers usually face different challenges, such as a lack of access, skills and guidelines appraising the quality of evidence, etc. There are no user-friendly, easy-to-understand, unbiased evidence synthesis reports that could be used by policy-makers in order to support EIP. There is also no regular collaboration between researchers and policy-makers in the area of EIP. This hinders the use of research results and prevents collaboration on projects and activities in the area of EIP.

7.3 Strengthening and supporting EIP in a systematic way

Policy decisions are always influenced by factors other than evidence. These include institutional constraints, interests, ideas (including values) and external factors like recessions. Nonetheless, strengthening the use of research evidence, and the ability of policy-makers to make appropriate judgements about its relevance and quality, are critical challenges that hold the promise of helping to achieve significant health gains and better use of resources. EIP will also enable policy-makers to manage better the misuse of research evidence by lobbyists and to acknowledge that policies may be informed by imperfect information. Systematic and transparent use of research will also help to protect against errors and biases, and reduces the risk of being misled by change or by biased selection and appraisal of evidence [10].

Table 1 summarizes the findings of the SA and possible measures that could help to strengthen EIP in Estonia.

Table 1. Summary of current challenges of EIP in Estonia and measures for improvement

Current challenges in relation to EIP	Measures for improvement
1. General country context	
1.1 Voluntary turnover of employees in the ministries might represent a challenge to the sustainability and capacity of EIP and its culture.	Implement centralized trainings about the importance of EIP and tools that can be used (EBP, PD, RRS, etc.) and measures to decrease the voluntary turnover of employees.
1.2 A wide range of different interest groups with varying degrees of capabilities and empowerment in relation to EIP makes their engagement somewhat challenging. In the field of health, civil society and patient organizations are less organized and therefore not very active in policy-making processes.	Continue centralized support in empowering civil society and improving its capabilities to take part in policy processes. Strengthen patient and other stakeholder engagement in order to get a better balance between business interests and that of the general public in PDs.

Table 1. (Contd)

Current challenges in relation to EIP	Measures for improvement
1.3 Strong business–politics linkages might hinder the use of evidence in policy-making.	<p>Continue to move towards evidence use in policy-making and to highlight its importance to support EIP.</p> <p>Use EIP tools systematically in policy-making processes (EBP, PD, RRS, etc.) to help to balance the strong business–politics linkages.</p> <p>Support public initiatives that demand or assist KT to guide policy to be more evidence-informed.</p> <p>Strengthen collaboration between different government structures in relation to EIP (e.g. the Ministry of Social Affairs, Legal and Research Department of Parliament, Strategy Unit of the Government Office, the National Audit Office).</p>
2. The health system	
2.1 Funding is uncertain for quality improvement activities (HTAs, clinical guidelines, pathways, patient safety, etc.).	Ensure continued funding for quality improvement activities.
2.2 Inconsistencies exist between health system-related goals in the NHP and different development plans.	Align the goals in different health-related national development plans to those in the NHP in order to achieve them.
2.3 NHP is not always the strategic document that plans activities, defines measurable targets and holds stakeholders accountable.	Ensure that the new NHP includes ways to hold stakeholders accountable. This requires making the new NHP the strategic health document that guides the work of all the different organizations and stakeholders.
2.4 Performance evaluation is fragmented and no health system performance framework exists to guide policy decisions.	Regularly perform a health system performance analysis (last conducted in 2009) and agree on the process, roles, timeframe, frequency, etc.

Table 1. (Contd)

Current challenges in relation to EIP	Measures for improvement
3. The national HIS	
3.1 There is no central comprehensive HIS structure (management or decision-making body) in place to ensure regular communication among stakeholders. This causes fragmentation of the system, duplication of activities and lost opportunities for research and policy support, and hampers the exchange of data and knowledge sharing.	Foster regular communication between different HIS stakeholders to achieve a less fragmented system, to lessen duplication and to facilitate better opportunities for research and policy support.
3.2 Strict data protection regulation makes linking and using different data sources complicated and time-consuming.	Provide continuous support for the work on a state-level tool for secure data storage, integration, access and analysis in order to enhance the country's ability to analyse large and detailed sets of health and lifecycle data.
3.3 There is no convenient system to link different data sources and create more opportunities to use data in support of EIP in the form of more analytical reports, such as analysis of causes and relationships, etc.	
3.4 Registries lack data that include socioeconomic status, which is needed in order to support EIP.	
3.5 The quality of health data needs improvement and shows that health care professionals need regular trainings on the use of ICD.	Organize trainings on ICD in order to improve the quality of data used in analyses that support EIP.
3.6 e-HIS data are not widely in use, due to low data quality and data capture problems.	Provide continuous support to improve e-HIS data quality and capture in order to make data available for health system analysis needed to identify problems, causes, etc. in the system.
3.7 The HB and the SAM data are not widely published in a user-friendly format.	Have the HB and the SAM continue to work towards publishing their data in the NIHD database.

Table 1. (Contd)

Current challenges in relation to EIP	Measures for improvement
3.8 Health data are published with a long delay, in particular the Cancer Register and health care expenditure data.	The move towards electronic data in the future will potentially help to publish data faster.
3.9 Data analysis or survey reports are more descriptive than analytical and therefore do not support EIP.	In policy processes, continue to advocate for reports and analysis that are more analytical and practical, for example, analysis of causes and relationships, evaluations/assessments, forecasts and policy recommendations.
3.10 Reports are too long and therefore not user-friendly.	Have report writers take into account the different types of users and include a one pager with an easy-to-understand overview as part of the report.
3.11 Development of quality and performance monitoring indicators is fragmented between different institutions and some activities overlap.	Have institutions agree on a list of health system monitoring indicators with objectives to advise policy-makers about the current status, changes and problems in the health system, and use the data in support of EIP.
4. The national health research system	
4.1 Generally, there is a lack of finances for R&D activities.	Consider increasing public funding for R&D activities.
4.2 The high use of foreign money for R&D may seriously threaten future work creating insecurity among researchers and unsustainable research.	
4.3 Health- and medicine-related research projects and governmental needs are not aligned.	Develop and implement a national clinical and research programme that integrates medical research into clinical practice to better guide researchers on topics that support EIP.
4.4 There is no specific national health R&D implementation plan; therefore, health researchers have difficulty understanding the needs of the Government and the Ministry of Social Affairs, which prevents KT.	Create additional funds and levers to make health research more useful and used in the EIP process.

Table 1. (Contd)

Current challenges in relation to EIP	Measures for improvement
<p>4.5 Very few studies focus on health systems, i.e., implementation research and health policy (dynamic health system evaluation), and few researchers are interested in this topic.</p>	<p>Create financial incentives to encourage health systems research.</p> <p>Conduct additional trainings for researchers or train a new generation of researchers, analysts, etc. to help to fill this gap.</p>
<p>4.6 The Health Research and Innovation Council`s greatest challenges are its timely involvement in the Ministry of Social Affairs` R&D planning process and the limited capability and (e.g., time) resources of its members to contribute actively.</p>	<p>Scale up the work of the Health Research and Innovation Council in order to give timely and relevant advice to the Ministry of Social Affairs.</p>
<p>4.7 Few research studies find their way to policy-makers and to the policy-making process due to the lack of knowledge about studies that have been conducted and the lack of access to research databases.</p>	<p>Improve policy-maker access to research databases.</p> <p>Improve information sharing about research and its results that are beneficial to EIP.</p> <p>Information days incorporating presentations on policy-relevant research projects from health researchers have been planned since 2019 in order to improve the situation.</p>
<p>4.8 Research results are presented in a highly complex way and there is a lack of easy-to-understand research results.</p>	<p>Use specialized translational scientists to simplify research results.</p>
<p>4.9 Researchers do not usually see the merit in KT and KB because they do not have a clear understanding of the use of their results.</p>	<p>Raise awareness on EIP and its importance among researchers.</p> <p>Consider using networks or events to help researchers and policy-makers understand each other`s work and to help to build partnerships.</p>
<p>4.10 The KT process greatly depends on researchers and their contacts outside their own institution. There are no formal ways for policy-makers to communicate with researchers or experts in their field of work, which is currently based on personal relationships.</p>	<p>Information days incorporating presentations on policy-relevant research projects from health researchers have been planned since 2019 in order to improve the situation.</p>

Table 1. (Contd)

Current challenges in relation to EIP	Measures for improvement
5. EIP process	
5.1 There is no structure or person who is responsible for evidence-informed health policy.	Identify a person or structure responsible for evidence-informed health policy in order to ensure systematic use of evidence in health policy processes, determine its weaknesses and develop it further (organize specific trainings, etc.).
5.2 There are no guidelines on the types of evidence that should be used and how to use them in the EIP process; therefore, the quality and practice among policy-makers varies.	Organize centralized trainings on EIP and its tools (EBP, PD) for policy-makers. Organize general trainings on the available research databases, where to find research results and how to assess research results.
5.3 Policy-makers in the Ministry of Social Affairs lack time and skills to find and interpret evidence.	Implement regular systematic support from researchers in order to search, assess and use evidence in the short- and long-term timeframes using EIP tools such as RRS, EBP and PD. This will be needed once the KTP is implemented.
5.4 Lack of or change in political commitment might hinder the use of evidence in policy-making.	Strengthen EIP by creating a RRS and using EBP and PD to help to use evidence in policy processes and reach desired outcomes.

Based on the findings that hinder EIP in Estonia, there is a clear need to establish a regular systematic way to support policy-making processes with research evidence. In the international arena, systematic EIP support in the form of a network, unit or organization is called KTP. It is a national-level entity designed to create and nurture links among researchers, policy-makers and other research users [4]. These links draw the research and policy communities closer together to ultimately create cycles of policy-informed evidence and EIP [9]. KTP facilitates the utilization of the best available local and international evidence to improve policy and its implementation and it refines national health research agendas [9].

Creating a KTP in Estonia will help to solve previously identified problems related to the lack of:

- » general knowledge about the importance of EIP and tools that can be used;
- » knowledge of and access to research results relevant for health policy;
- » user-friendly research synthesis that can be used in EIP processes;
- » formal ways that policy-makers and researchers can use to communicate with each other;
- » a structure or person who is responsible for evidence-informed health policy; and
- » time, skills and guidelines (where and how to look for evidence, how to appraise it) and practical tools (EBP, PD, RRS) that can be used in EIP processes.

The following elements are essential for EIP in Estonia:

- » a change in political culture and attitudes towards EIP;
- » longer-term and more systematic use of evidence in policy-making processes;
- » an increase in resources directed to policy-oriented research, evaluations and analysis;
- » improved knowledge about health among policy-makers and the general population with more analytical, practical and user-friendly reports; and
- » research projects aligned with health policy needs.

However, systemic problems, cultural issues or long-term processes beyond the control of a KTP need to be addressed, which may need more time to take effect. However, a well-functioning KTP can facilitate changes in these areas too.

7.4 Next steps

7.4.1 ACTIVITIES, BASIC FEATURES AND STRUCTURE OF A KTP

The KTP in Estonia would need to support already existing practices in health policy-making with good quality evidence and implementation considerations. This means that the KTP would be actively used in the preparatory phase of policy-making when policy problems and options are formulated, in the PD phase involving stakeholders and in the communication phase with policy-makers. The KTP would support the work of the Ministry of Social Affairs in order to guide topics. It would focus on KT that will help to make evidence available in the policy process, but it would not reduce the freedom of choice among decision-makers, as evidence is only one element in the decision-making process. The KTP would focus on policy problems assigned by policy-makers. Ideally, these topics would have flexibility in terms of the policy options available that could be used in order to solve the problems. The main tasks of a KTP are to synthesize and appraise already existing evidence and to support PD among stakeholders.

The **activities** that the KTP should perform in order to support EIP are:

- » building capacity on topics related to EIP and tools that can be used among policy-makers, researchers and research users;
- » organizing networks of policy-makers, researchers and other research users;
- » supporting policy-makers in order to identify the topics and gaps where KTP help is needed;
- » synthesizing and packaging evidence in response to stated policy needs – conducting high-quality EBPs relevant for policy-makers where there is six or more months' time to create them, and using RRS for ad hoc tasks when the timeframe to prepare the evidence is short (24 hours up to a couple of weeks or months).
- » facilitating PD and collaboration between policy-makers, researchers and other research users;
- » contributing to efforts to shape the research agenda (priority setting or gap analysis); and
- » taking part in national and international cooperation on EIP (EVIPNet).

KTPs are ideally led by trustworthy, highly connected and credible experts, intermediaries who excel in various different fields, including evidence gathering, critical appraisal, facilitation, communication and networking [9]. They almost certainly require experience – and command respect – in the worlds of both research and policy [9]. Based on other countries' experiences

and in order to address the above mentioned challenges in EIP in Estonia and to fulfil the role of a KTP, the **basic features** needed are:

- » policy relevance as policy-makers must be able to express their needs and these needs need to be handled as a priority;
- » independence in order to ensure its separation from politics, lobbyists, etc. and its reliability;
- » feasibility as financial and human resources are needed in order to obtain feasibility in the long run;
- » authority in order to be able to influence policy decisions and to engage different stakeholders;
- » professionalism as the methods and tools used need to be of high quality and acceptable nationally and internationally; and
- » transparency as different stakeholders of EIP processes need to be involved and the methods used need to be transparent.

Based on other countries' experiences, KTPs can have different organizational shapes and locations. It may function as a network that forms around a particular issue or an event or it might be a permanent unit or organization [4]. It can also be located in different places: in the government (The Ministry of Social Affairs), in a university, in a research institution, or work as a member of civil society [4]. Promising examples of organizational models in the international arena are the Norwegian Knowledge Centre for the Health Services [179], the King's Fund [180], the McMaster Health Forum [181], the Knowledge to Policy Center in the American University of Beirut [182], and the European Observatory on Health Systems and Policies [183]. Among EVIPNet countries, characteristics of KTPs differ widely. There are examples where a KTP has operated successfully located at the government/municipality level (Brazil and Peru), or at a university (Uganda). Pros and cons for a KTP differ based on its organizational shape and location.

Based on the Estonian experience in relation to the Centre for HTA, clinical guidelines development and the EHIF benefit package evaluation process, certain kinds of structures are needed to ensure that the KTP will be a success; an ICT platform is also needed to share in a user-friendly way the products created by the KTP. In addition, in order to provide its primary mission, channelling evidence and tacit knowledge transparently to the policy process, the KTP needs to have at least the following **structures** in place:

- » an advisory board that gives general directions to the KTP (can be directed from outside the KTP, has to be closely related to policy-makers);
- » a permanent secretariat that deals with evidence gathering, assessment and the methodological quality and sustainability of the evidence synthesis (manages and develops EIP tools, e.g., EBP, PD, RRS);
- » permanent communication person/unit that deals with stakeholder engagement, evidence dissemination and EIP-related trainings;
- » a network of researchers and experts who will contribute expert knowledge and input to the different activities conducted by the KTP (e.g. contract-based researchers and experts); and
- » a public and respected figure who will present and promote KTP and its activities.

There are different options on where to place the KTP in Estonia based on the skills and knowledge that already exist among different organizations and units. In order to initiate discussions, two different options are described below.

The **first option** is to have the Ministry of Social Affairs take the lead in the process by developing with WHO support the skills needed to function as a permanent secretariat and communication unit and make case-by-case contracts with experts and researchers depending on the policy needs. In order to function as a permanent secretariat, the Ministry of Social Affairs would need to get access to research databases or buy services related to research gathering and appraisal. The latter could probably come from the already well-functioning clinical guideline secretariat or from the Centre for HTA at UT. The NHP Steering Committee, the Health Research and Innovation Council or the HTA advisory board could be used to advise on the topics and type of KTP support needed. At least three employees of the Ministry of Social Affairs would need to be trained on KTP tools, probably with WHO support. In this scenario, the Ministry of Social Affairs would also take the role of central coordinator of EIP by distributing the results and organizing EIP-related trainings in collaboration with WHO. As a public figure, the health research adviser for health policy in the Ministry of Social Affairs could advocate for the KTP and its activities and facilitate the PD with stakeholders.

The **pros** of the first options are that it:

- » requires no separate structure for EIP to be created;
- » can take effect rather soon as it does not need a lot of extra funding;
- » stokes demand for evidence among policy-makers;
- » strengthens the capacity of policy-makers to use evidence; and
- » helps to adapt and apply research evidence because of its proximity to the policy-making process.

The **cons** of the first option are that:

- » funding is unstable (will depend on the Ministry of Social Affairs' funds);
- » the Ministry of Social Affairs as a central public figure for EIP might not be accepted as neutral;
- » the work process may be slow because employees of the Ministry of Social Affairs are busy doing their other work;
- » it is subject to political pressure; and
- » the quality of work might suffer if KTP activities are not routinely performed (e.g. based on demand).

The **second option** is to form the KTP within already existing and well-working structures (permanent secretariat and communication unit with public figures) and to provide stable funding for it. It could be either part of the Centre for HTA or a unit within the NIHD. The NHP Steering Committee, the Health Research and Innovation Council or the HTA advisory board could be used to provide advice on topics that need KTP support. Trainings for employees of the UT or the NIHD would be needed to fulfil this role. The Ministry of Social Affairs could organize trainings with WHO support. In this scenario, the KTP would also take the role as a general EIP promoter and with WHO support, organize general trainings for policy-makers and other research users in relation to EIP.

The **pros** of the second options are that it:

- » is feasible and has fixed funding;
- » is independent of political pressure;
- » would likely be neutral and respected from the point of view of stakeholders; and
- » is expected to produce high-quality work as already existing expertise would be used.

The **cons** of the second options are that it:

- » needs constant extra funding and therefore might take a longer time to create;
- » probably requires additional employees to be hired by the NIHD or the UT in order to carry out the tasks; and
- » might hamper the influence of the implementing entities (NIHD, UT) on policy processes due to their proximity to the policy-making process.

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