European Commission
Structural Reform Support Service
NºSRSS/C2019/046

Deliverable 2

Methodological report:

The development of the Irish Health System Performance Assessment Framework & its relation to the Health Information System

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February 2021

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Chapter 1: Introduction

1.1 Reform of the Irish healthcare system

The Irish health system is under strain because of demographic growth and ageing of its population, and relatively high health expenditures. In the past years, Ireland has struggled to maintain levels of health services outputs throughout, also linked to the financial crisis. Budget cuts and shortcomings in fiscal governance caused overruns, which have continued to grow in recent years. It has been widely recognised by the government there is a need to reform the health system to better respond to the needs of the population and to put a stronger focus on prevention and primary care. Moving care to its appropriate setting could assist in improving efficiency. Such a transformation would be conducive to the effectiveness, accessibility, resilience and fiscal sustainability of the Irish health system.

As part of the Irish 10-year reform programme (Sláintecare), the Department of Health and the Health Service Executive (HSE) set out to improve the governance, performance and accountability of health services, and universal health coverage. This is supported by the HSE Governance Bill 2018. This would require a strong, reliable framework for assessing the performance of the health system, measuring achievements against the objectives of Sláintecare in alignment to other implemented frameworks, and its fit with the broader policy cycle. Such a performance measurement and management system was in 2019 lacking in the Irish health system, starting with the limited availability of system performance metrics. Advancing a comprehensive view of the performance of the Irish health system can feed into improvements in the management of the system itself, policies, strategies and other health system functions.

1.2 Objectives of the project

The goal of the project was to enable the Department of Health of Ireland and the Health Service Executive (HSE) to design and run a framework to assess the performance of the health system to complement and support the ongoing reform programme underway as part of Sláintecare.

The project therefore specifically aimed:

- To provide a framework for health system performance assessment with a method for the collection, collation and analysis of robust health outcomes data around key performance indicators in the Irish health system;
- To provide modules within the health system performance assessment framework with measurable and quantifiable outcome-based indictors that are linked to relevant health policies and strategies, enabling the integration of policy and reforms into a broader view of performance; and,
- To enhance the capacity of the Irish authorities to produce the first HSPA report.

1.3 Steps and Timeline of the project

The project was performed from September 2019 till March 2021. Table 1 provides the key phases of the project, the inputs per phase and the corresponding timeline.

Table 1: Steps and timeline of the project

Phases	Input from	Timing
1. Developing the focus of HSPA framework and performance reporting	- Kick-off meeting	September 2019
2. Identify domains (and indicators) of the Health System Performance Assessment Framework	- Policy document review - Review of HSPA Frameworks - Review of HSPA literature - Citizen Panel - Internal Stakeholder meeting - External Stakeholder meeting	Sept – Dec 2019 Sept – Dec 2019 Sept – Dec 2019 Sept – Dec 2019 December 2019 January 2020 January 2020
3. Graphically display the HSPA Framework (drafting 3 versions)	- International Advisory Board	Febr - March 2020
4. Assessment of the Health Information Systems in Ireland	- Desk research - Key informant interviews - 6 Workshops with stakeholders - Written feedback by stakeholders	Febr – May 2020 May – Sept 2020 October – Dec 2020 Oct 2020 – Jan 2021
5. Indicator mapping	- Assessment of the currently used performance framework and indicators - Review of HSPA Frameworks - Review of HSPA literature - 6 Workshops with stakeholders - Written feedback by stakeholders - International Advisory Board & EU Expert Group on HSPA	March – August 2020 Sept – Dec 2019 Sept – Dec 2019 October – Dec 2020 Oct 2020 – Jan 2021 October 2020

1.4 Project coordination

The project required an interactive process to optimise quality of the work. The structure for the interactive process was formed by a multidisciplinary academic R&D group based at Amsterdam University Medical Centers, location AMC, of the University of Amsterdam consisting of two senior HSPA experts, a junior HSPA expert and three HSPA PhD candidates.

The R&D group received advise at all key moments in the project of a strategic coordination group at HSE and DoH (focal points of the beneficiary authorities); a project working group chaired by the DoH including key internal (intradepartmental) and external stakeholders nominated by the HSE and DoH; and a steering board consisting of heads of relevant departments of DoH and HSE; and an international

Advisory Board consisting HSPA experts from different European countries. Moreover, the project was in close contact with the EU Expert Group on HSPA, to align its activities to international experiences. Due to the COVID-19 pandemic and the corresponding measures, all meetings were held virtually from February 2020 onwards.

1.5 Structure of the Methodological Report

This report describes how the Irish Health System Performance Framework is developed and the approach taken to define domains and identify indicators (Chapter 2).
Chapter 2 is supported with supplementary files 1a (a pdf) and 1b (an Excel file) that contain:

- the HSPA Framework (Supplementary file 1a),
- the database of indicators also indicating domains and related area of the Irish health system (Supplementary file 1b), and
- the indicator passports which are the technical specifications for each indicator including for instance recommended data sources (Supplementary File 1b).

In Chapter 3, the approach and results of the assessment of the Irish Health Information System in place is described, and advice is provided for further improvement.

Chapter 2: Development of the Irish Health System Performance Assessment Framework

2.1 Developing the focus of HSPA framework and performance reporting

To discuss the goals of the development of a Health System Performance Assessment (HSPA) framework for the Irish health system, a kick-off meeting was arranged on **18 September 2019** in Dublin. Participants included representatives of the Department of Health (DoH) of Ireland, the Health Service Executive (HSE), the Structural Reform Support Service (SRSS) and the R&D group from the Academic Medical Centre of the University of Amsterdam. The main goals of HSPA and the scope of domains that can be included were discussed during the meeting and are summarised in this section. The agenda of the meeting and the list of participants is provided in Appendix 1.

The meeting's purpose was to exchange updates and plans on nine areas:

1) Recalling the Action's overall aims, lines of activities and outputs to align expectations;
2) Updating on the context of current reforms, governmental and organizational structures of the Irish health system;
3) Discussing the approach to the development of the HSPA framework;
4) Discussing the policy and management roles of the HSE and DoH in relation to national stakeholders;
5) Identify key stakeholders to be involved in the development process of the HSPA framework and selection of indicators, and discussing what a sustainable HSPA structure could look like;
6) Determine key objectives and functions of the performance framework in the Irish governance;
7) Exploring the scope and depth of the performance framework especially in relation to the system boundaries;
8) Exploring the current health information landscape and discussing the proposed approach to assessing the current Health Information System in place; and
9) Planning key dates, assigning roles, and defining working arrangements.

Aims of the Health System Performance Assessment (HSPA) Framework

The development of the Irish Health System Performance Assessment (HSPA) framework was preceded by determining its key objectives and functions, to enable selection of appropriate domains and indicators. The primary purpose of the HSPA determines the balance between the information required by DoH as guardian of the whole system and by HSE as manager of the system. The boundaries of the system, in many countries related to legislation, limit the domains that are included, e.g. healthcare, social care, health policies, public health. Moreover, the monitoring could include the whole system or elements of the system such as regions, hospital groups, or individual providers.

Another actor of interest is the target audience of the reporting on HSPA. The required indicators differ according to whether the reporting involves a public report for parliament, a report to create trust among the public, to support the DOH identifying strategic topics for agenda setting, or to evaluate current policies. The objectives and functions of the HSPA may change over time and the HSPA can be adapted accordingly.

Three functions of the HSPA framework

At the time of executing the project (2019-2021), a performance system to monitor the progress of the Sláintecare reform was lacking. To enable evaluation of the priority areas of the reform and to ensure that the health system was more responsive to the needs of the population, a HSPA framework was to be developed. The HSPA is envisaged to inform the performance of the health system through key domains and indicators, include modules linked to relevant policies, and to allow for international benchmarking. In addition, a national health information strategy is to be developed.

In many countries HSPA is used as accountability tool, but different countries apply different HSPA frameworks, depending on their goals and availability of data. Generally, the operationalization of health shifts from mortality statistics to data on wellbeing. The HSPA can be used to assess the status quo or to review reforms and the direction the reforms should be directed to. For instance, by reviewing how technology and innovation are taken up by the system.

The overall aim of the HSPA was to provide information regarding the effectiveness of policies and strategies of the DoH and HSE on overall population health, while the HSPA should enable performance measurement of the delivery system as well. The level of measurement should include the national level and should eventually be disaggregated on regional level as well. At this point, regional accountability structures were work in progress, whereas standardisation should be maintained as well. In first instance, the focus should be on the national level and could drive conversations at regional level.

The HSPA should inform different levels and audiences. It was agreed that the three functions of the HSPA framework were:

1. To measure the overall performance of the system (incl. public reporting). This should be outcome-oriented. Target audience is the general public to be informed about the trend in population health, the improvements resulting from policies, and the trends that are expected for the future.
2. To monitor progress and impact of strategic system reforms (e.g. integrativeness, regional governance, public/private, strengthening of the data infrastructure). Target audience is the DoH to evaluate whether the focus is on the right policies.
3. To inform components of the delivery system (services, such as hospitals, long-term care, primary care, etc.). Target audience is the HSE, to ascertain whether the intended services are delivered and whether these are of good quality, albeit value for money is delivered.

In short, the framework needed to support accountability of the system and the constituting services, evaluation of policies and strategies, the consideration whether value for money is delivered, and to support and identify change.

Scope and depth of the HSPA framework

When the goals and objectives of HSPA were determined, the development of a HSPA framework continued with definitions of the key concepts and determining the system boundaries. First of all, a definition should be formulated what health exactly entails and how health could be steered. Most

statistics are about deaths and diseases, but to what extent are data operationalised and available that can be used in performance measurement?

Secondly, the definition of the health system determined the scope of the HSPA framework. A health system may include all public health policies or all organised services. It was decided that the HSPA for Ireland will include health and social care policies.

Thirdly, it will need to be determined what performance areas should be included: system, services, or delivery systems, in different areas? It was decided that the Irish HSPA framework will include the system and services levels. Policy and management roles of HSE and DOH
The policy and management roles of DoH and HSE in relation to national stakeholders, professional and institutional providers, financiers, patients, and regulators such as the inspectorate of health were discussed.

2.2 Identify domains (and indicators) of the Health System Performance Framework

Policy document review

We conducted an expedited mapping exercise (see Appendix 2a), linking action items present in strategic and policy documents in Ireland to known HSPA domains but also - more importantly - recognising and eliciting information on additional domains that are of special importance and focus to the Irish health system.

Based on the input from the Irish colleagues and following desk research, we mapped 19 strategic, planning and policy documents present and publicly available in/on the Irish health system (see Appendix 2b). Following an internal consultation and prioritisation exercise, we decided to analyse eight of these documents in a two-phase manner. First, we extracted all the strategic domains, areas, themes and goals, as well as policies, mentioned in these documents as action items. Based on this, we came up with a list of almost 400 action items. Secondly, we classified these action items into system performance assessment domains, with a single item often cutting across multiple domains. The list of domains was based on three criteria and - importantly - it also developed during the exercise:

1. Commonly used domains in HSPA Frameworks internationally,
2. Domains discussed and prioritised during the three (stakeholder) panels in Ireland in the course of our project, and
3. The domains that presented themselves as important through the analysis of action items but were not mentioned (explicitly) previously.

The exercise confirmed the focus on and importance of prioritised domains in Ireland as well as the merit of internationally established and used domains. More importantly, it allowed us to come up with the third category of domains, which proved to be especially valuable in our drafting of the first version of the proposed Irish HSPA Framework. Domains recognised in this manner, provided ample input for the Framework, especially the system capacity domains, linked to governance & accountability, financing, health workforce, health information systems and medical technology (drugs, vaccines and products). In Deliverable 3 of the project, we have defined a subset of indicators that can be applied for assessing policies and reforms.

Citizen and stakeholder panels

To inform the development of a performance framework, input was gathered from both citizens and stakeholders. Therefore, three panels were convened in Dublin, Ireland. Preceding the panels, the participants of the panels were informed by a brief that detailed the purpose of the panel and the background of HSPA development.

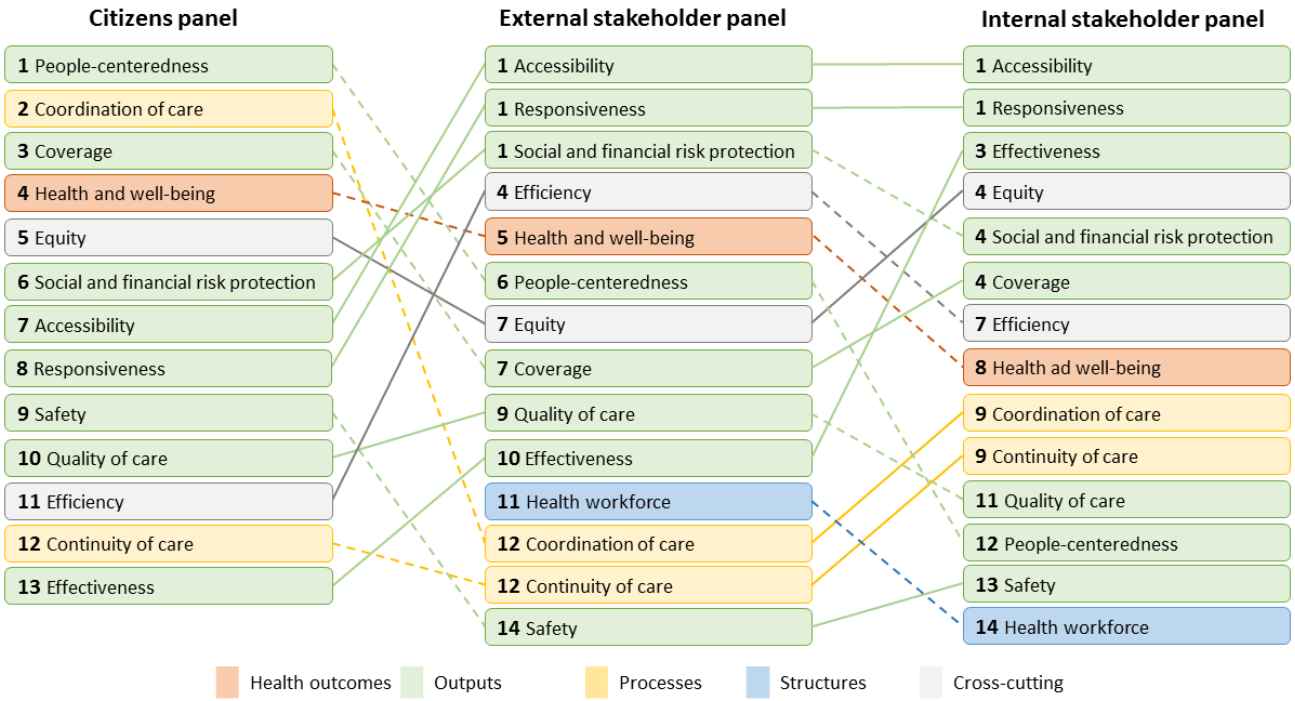
The Citizen panel was convened and moderated by the research group on the 7th of December 2019. The participants were recruited by a third-party Dublin-based company with years of expertise in the recruitment of citizens for similar meetings. A definition of a citizen eligible to participate in the panel was that of a lay person, citizen of Ireland, who is not directly professionally involved with the health care system and is not a public official. The selection strategy aimed to achieve a reasonable diversity of citizens considering sociodemographic characteristics of the population of Ireland. Diversity factors taken into consideration were, for example, sex, age group, highest level of education attained, nationality, ethnic/cultural background and health status. Participants were compensated for their travel and a small stipend for their time. Fifteen citizens attended, of whom 7 males and 8 females, diversity in age-groups and educational level, 13 of Irish nationality, 4 with a persistent or permanent health condition.

The stakeholder panels took place on the 31st of January 2020 and were facilitated by the DoH and moderated by the research group. Two panels were convened, one with attendees from the DoH and HSE, and one with external stakeholders including representatives from health services, patient organisations, and academic institutes. Each panel was attended by about 30 stakeholders.

All three panels started off with a synthesis of the background of the project, reasons to convene the panel and to measure and report on the healthcare system's performance. During the Citizen panel, the emphasis was on people's experiences with the healthcare system and prioritizing the preferences on what information should be measured. These preferences were grouped into high-level performance domains by the research group. During a walk-through of the most frequent domains featured in health care system performance assessment frameworks, citizens manifested their interest on specific topics/measures using a coloured scheme of sticky notes which reflected the degree of importance of that topic/measure. The heat mapping produced with the three coloured sticky notes to identify topics/measures that were important to the citizens, was discussed in terms of clarifying priorities and identifying how those measures should be reported on to citizens and by which channels. The stakeholder panels followed a similar procedure, although immediately focussing on the high-level domains of healthcare system performance measurement and the indicators to measure performance in these domains.

The output of the panels resulted in a listing of domains according to the frequency they were mentioned in Table 2. These panels yielded similar domains, that were prioritised somewhat differently across the panels. The 'external stakeholder' column shows the outputs from the external stakeholder panel in which medical councils, professional associations, academia and other special interest groups participated.

Table 2. High level domains from each panel, ordered by priority and colour coded for overlapping domains



Review of the HSPA literature

Two reviews evaluated the structure and use of HSPA frameworks across a number of countries and identified what domains and indicators were used and how these were selected[1] [2]. Although the selection for indicators was quite detailed, the choice and justification for domains was not very extensive. The reviews both listed the performance domains in order of frequency according to the high-level domains of the WHO health system performance framework[3] (Figure 1).

[1] Fekri, O., Macarayan, E.R. & Klazinga, N. (2018). Health system performance assessment in the WHO European Region: which domains and indicators have been used by Member States for its measurement? WHO Health Evidence Network synthesis report 55. Copenhagen: WHO Regional Office for Europe.

[2] O'Nolan, G., Lee, C., O'Brien, D. & Long, J. (2018). Health System Performance Assessment Frameworks. Evidence Brief. Dublin: Health Research Board.

[3] World Health Organization (2007). Everybody's business: strengthening health systems to improve health outcomes: WHO's framework for action. Geneva: WHO.

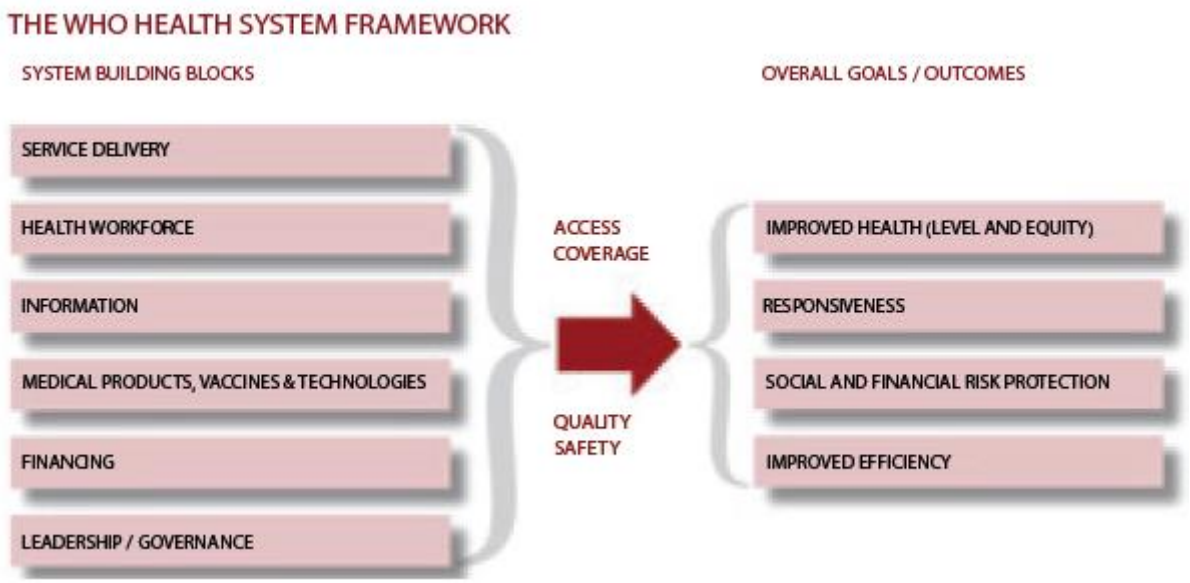


Figure 1. WHO Health System Performance Framework[4]

Fekri et al. (2018)[5] group domains in a process structure (Table 3): input, throughput, and outcomes, according to the 2007 WHO framework[6]. 30 WHO Europe Member States had HSPA reports published in English and from each state, the latest publication for was taken and used for the analysis of domains and indicators.

Table 3. Number of countries assessing WHO domain (Fekri et al., 2018)

Place in health system	Domains	Total number of member states assessing the domain
Input	Service delivery	30
	Financing	26
	Health workforce	25
	Medical products, vaccines, technology	14
	Leadership & governance	12
	Information	10
Throughput	Access	13
	Quality	11
	Safety	7

[4] World Health Organization (2007). Everybody's business: strengthening health systems to improve health outcomes: WHO's framework for action. Geneva: WHO.

[5] Fekri, O., Macarayan, E.R. & Klazinga, N. (2018). Health system performance assessment in the WHO European Region: which domains and indicators have been used by Member States for its measurement? WHO Health Evidence Network synthesis report 55. Copenhagen: WHO Regional Office for Europe.

[6] World Health Organization (2007). Everybody's business: strengthening health systems to improve health outcomes: WHO's framework for action. Geneva: WHO.

	Coverage	7
Outcome	Improved health, including level and equity	29
	Social and financial risk protection	10
	Responsiveness	7
	Improved efficiency	7

O'Nolan et al. (2018)[7] reviewed health system frameworks similarly to Fekri et al. (2018)[8] and included countries with a socioeconomic situation similar to Ireland: Australia, Canada, England, Germany, the Netherlands, Northern Ireland, Scotland, Sweden, the United States of America (USA), and Wales. Some countries used more than one framework, thus the number of domains counted for some indicators exceed the number of countries (Table 4).

Table 4. Frequency of domain use in HSPA framework (O'Nolan et al., 2018)

Domains	Frequency
Improved health (including equity)	23
Service delivery	22
Quality	18
Safety	14
Financing	13
Access	13
Responsiveness	10
Medical products, vaccines, and technologies	7
Social and financial risk protection	7
Improved efficiency	7
Health workforce	6
Coverage	6
Leadership/governance	5
Information	0

The broad perspective on health and wellbeing in the Slaíntecare reform should be acknowledged in the healthcare system performance framework for Ireland. Therefore, the non-healthcare determinants of health need to be addressed, for which the OECD framework provides an example[9] (Figure 2).

In observations of international frameworks, most frameworks, at least partly, resembled either the WHO or the OECD performance frameworks. Both regarding the domains (as was indicated by Fekri et al., 2018 and O'Nolan et al., 2018) and the process structure and interrelations of the domains.

[7] O'Nolan, G., Lee, C., O'Brien, D. & Long, J. (2018). Health System Performance Assessment Frameworks. Evidence Brief. Dublin: Health Research Board.

[8] Fekri, O., Macarayan, E.R. & Klazinga, N. (2018). Health system performance assessment in the WHO European Region: which domains and indicators have been used by Member States for its measurement? WHO Health Evidence Network synthesis report 55. Copenhagen: WHO Regional Office for Europe.

[9] Carinci, F., Van Gool, K., Mainz, J., Veillard, J., Pichora, E.C., Januel, J.M. et al. (2015). Towards actionable international comparisons of health system performance: expert revision of the OECD framework and quality indicators. International Journal of Quality Health Care. 27, (Suppl 2):137–46.

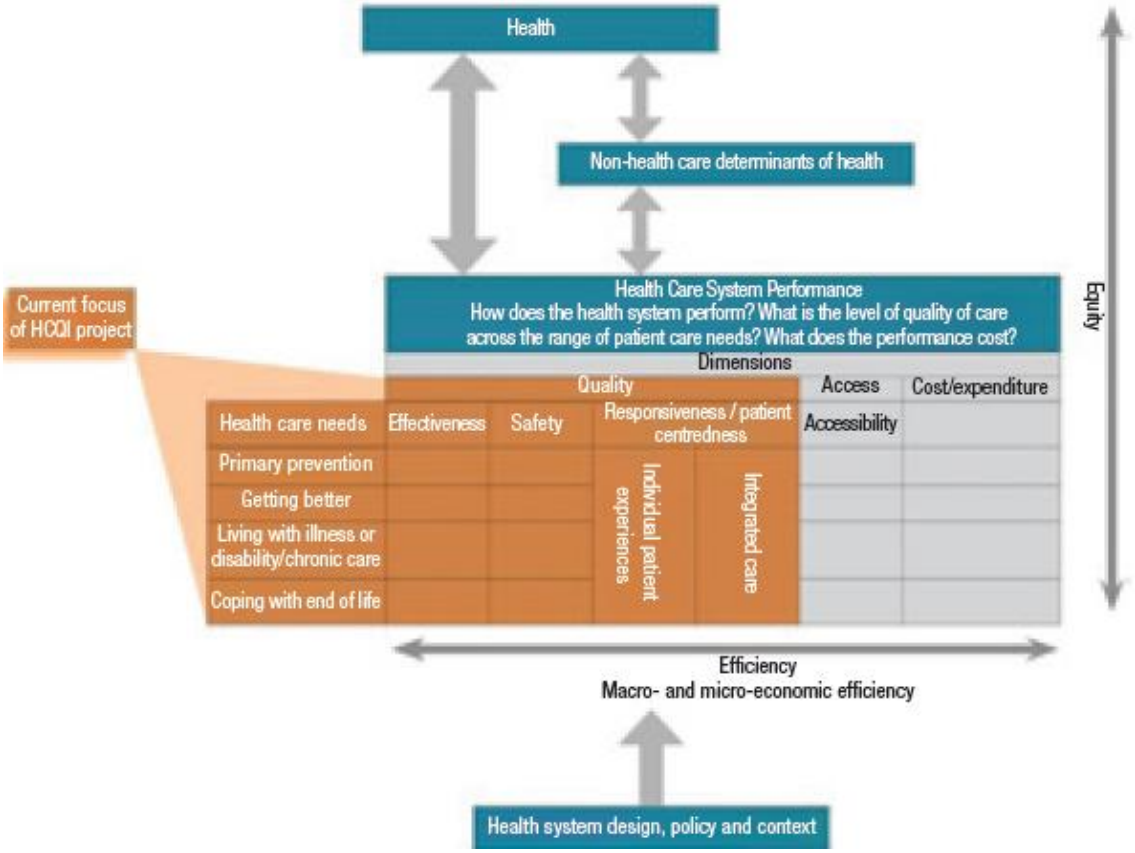


Figure 2. OECD framework for health system performance measurement[10]

2.3 Graphically display the HSPA framework

Drafting the first version of the framework and selection of domains

The outputs from the citizen and stakeholder panels were synthesised with the findings from the policy document review and literature regarding HSPA framework development. In the selection of domains, the panels and the aims of health system performance measurement, as detailed by the DoH and HSE, were leading. The reviews of frameworks used in other countries were used for reference.

In the first version of the framework, all domains that were mentioned in the panels were included. The framework does not prioritise any of the domains, however the domains that got a lot of attention in the panels were accentuated by positioning these in the core of the framework. In a later stage, prioritisation of domains is possible at the indicator level.

The first draft version of the framework depicts the performance domains and their interrelations of the HSPA for Ireland and is displayed in two modes: a basic version (Appendix 3a) and a graphically displayed version (Appendix 3b). To address the need for a comprehendible framework that is easy to

[10] Carinci, F., Van Gool, K., Mainz, J., Veillard, J., Pichora, E.C., Januel, J.M. et al. (2015). Towards actionable international comparisons of health system performance: expert revision of the OECD framework and quality indicators. International Journal of Quality Health Care. 27, (Suppl 2):137–46.

convey to the public, the metaphor of a house was used. The 'House of Health & Well-being' shows the high-level domains as storeys and walls of a house.

There are multiple options to graphically display a health system performance framework and each option has its advantages and shortcomings. The house metaphor was chosen for the strong graphical message it conveys: the healthcare system as a structure of performance building blocks that relate to one another. However, a house suggests that the performance domains are static parts of performance measurement and that some building blocks come before the others. The foundation of system capacity domains suggest that their performance is prerequisite for system delivery. Although the relations between the building blocks do reflect a sequence in the delivery of healthcare, the measurement of its system's performance is much more dynamic.

The positioning of the domains in the draft framework represents the priorities and the sequential process they represent in the healthcare system. The framework is conceptualised to represent a multiple-storey house and reads from fundament to roof as a bottom-up process:

- The soil, the house is built on, represents the **healthcare needs** of the population as input to determine what resources are allocated to what services.
- The fundament of the house consists of the system capacity and includes **governance & accountability**, **financing**, **health workforce**, **health information systems**, **medical technology** (drugs, vaccines, products.
- The capacity of the system feeds in to the **delivery of services** on the ground floor. Service delivery encompasses the domains coordination, integration, and continuity of care.
- On the first floor the **access** to services represents four sub-domains encompassing both the demand and the supply side of access: ability to perceive (health literacy) (demand) and approachability (supply), ability to seek (demand) and acceptability (supply), ability to reach (demand) and availability (supply), ability to pay (demand) and affordability (supply).
- The second floor is the domain of **quality**, which encompasses the sub-domains (clinical) effectiveness and safety. In the process sequence of healthcare performance, quality is arranged after access. Surely, quality is of interest only if access is ascertained.
- A pillar connecting the first and second floor represents **person-centeredness** as cross-cutting domain for access and quality. Person-centeredness entails the patient, carers, and healthcare staff experiences as sub-domains related to quality. The sub-domains ability to engage from the demand perspective and appropriateness on the supply side relate to person-centeredness in the access domain.
- **Efficiency** is the supporting wall, of interest for all floor domains.
- **Equity** is an all-encompassing domain.
- The attic of the house presents the healthcare's contribution to the **health & wellbeing** of the population.

The house is located in a street of houses that each represent non-healthcare determinants of health and well-being, such as education, housing, environment. These other houses affect the health and well-being, represented by the sky above the houses, of the population as well.

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International Advisory Board and Internal Review meetings

Consultation of the DoH and International Advisory Board was convened on 11 March 2020 to discuss the draft HSPA framework and domains. Due to restrictions regarding in-person meetings following from the Covid-19 virus, a video conference was held on March 11, 2020 (see Appendix 4 for the Agenda and Participants). Four members of the International Advisory Board attended the video conference, some of whom additionally provided written feedback. The members who were not able to attend the conference were contacted seperately to obtain and discuss their inputs. The DoH had also shared during this meeting their feedback.

Main points raised:

- All relevant domains are in the framework, the definitions and boundaries should be clarified. Making actionable and concrete should be done at indicator level.
- The link between Sláintecare aims and framework should be clarified, go back to the intentions of the framework/performance accountability.
- One high-level generic model that feeds three distinct frameworks, each serving a different user purpose. All three are different but complementary. Will have the same domains, but different visualisation (if needed) and populated with different indicators (could have different colours for each purpose).
    - For public concerning system as a whole.
    - For DoH, strategic: where are we heading, linked to current policies, monitor policies and identify gaps (e.g. in workforce: enough nurses?).
    - For HSE: more granulated and disaggregated for day to day monitoring of service delivery.
- Show the interrelations between the domains.
- The metaphor should reflect the dynamics in the health system, the draft framework suggests things are static. Should reflect the complexity of systems and natural development of organisations.
- Visualisation as blocks floating and interacting in space as opposed to brick constructs.
- Quality should be positioned next to access, the wording of the sub-domains of access need to be considered.
- Quality could be part of resilience, which entails how well the system deals with and adapts to external changes. Is characteristic of governance structure and providers/supply side. Generic characteristic rather than a domain and has to do with the interactions of components of the system.
- Sustainability is not a domain.
- Should costs be included, as part of efficiency? Are costs deliberately left out, or does it need to be part of the framework?

Amended HSPA Framework (version 2.0)

The proposed (amended) framework (version 2.0) was intended to reflect the dynamic nature of the health system, and therefore is visualised in an 'open' circular form (see Appendix 4). As opposed to a closed circle, other modules could be added. Each band represents a (structure, process or output layer in the health system that contributes to the central health outcomes (the core of the framework), each consisting of performance domains or modules. The bands can be turned to align the outer band with the process band (including service delivery), and the inner band of outputs (e.g. access, quality). The arrows between the bands represent the interrelations between the modules.

The process band of service delivery could be broken down into the HSE's modules of service delivery (or other grouping if preferred). These include: everyday care, care when you need it, community and social care, and specialist care. The module apply & register may be outside the scope of service delivery, though benefits and schemes may be included. The domains 'coordination, integration and continuity of care could be sub-domains of the services delivery module.

Overarching the circular modules, system level overview modules include efficiency, equity and resilience of the healthcare system. On the aggregate level, non-healthcare determinants are positioned.

The framework could have a different emphasis for each of its three purposes of use. For each of these purposes, the emphasis is on different modules that are populated with different indicators.

The linkage between the strategic actions from the Sláintecare reform were evaluated and translated to the choice of domains in the HSPA framework (see Deliverable 3 of the project, which is available as a separate document).

Final amended version of the HSPA Framework (version 3.0)

Following the next steps of the project, the Framework was again graphically improved, domains were further tweaked, and the final (third) version of the HSPA framework that was delivered to the Irish is shown below (consisting of a basic version (Figure 3a), and a graphically displayed version (Figure 3b)). Supplementary File 1a provides the HSPA framework incl clusters, domains, sub-domains, features and data sources, and an overview of total number of indicators and their link to the three functions of the framework.

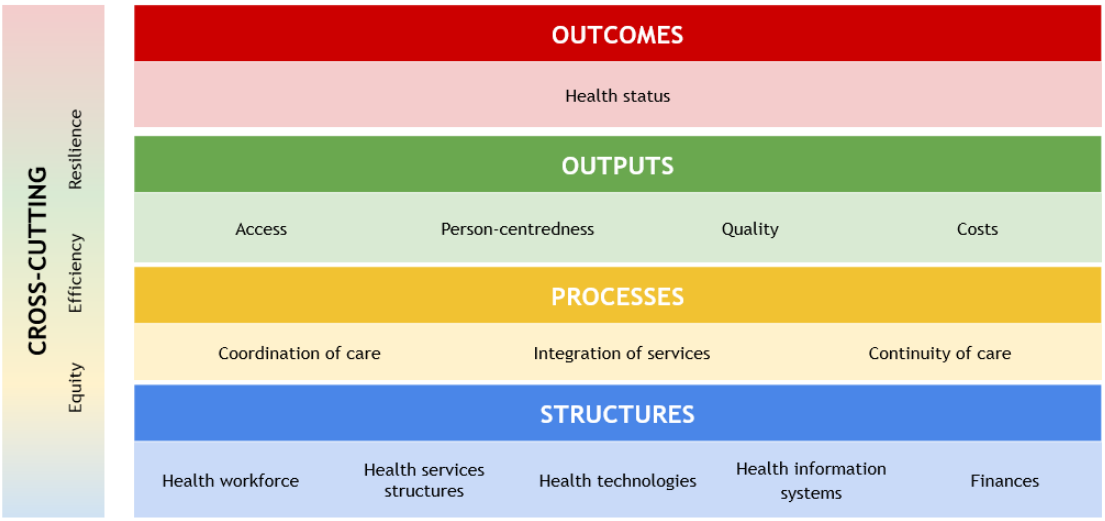


Figure 3a Basic (3rd, project final) version of the Irish HSPA Framework

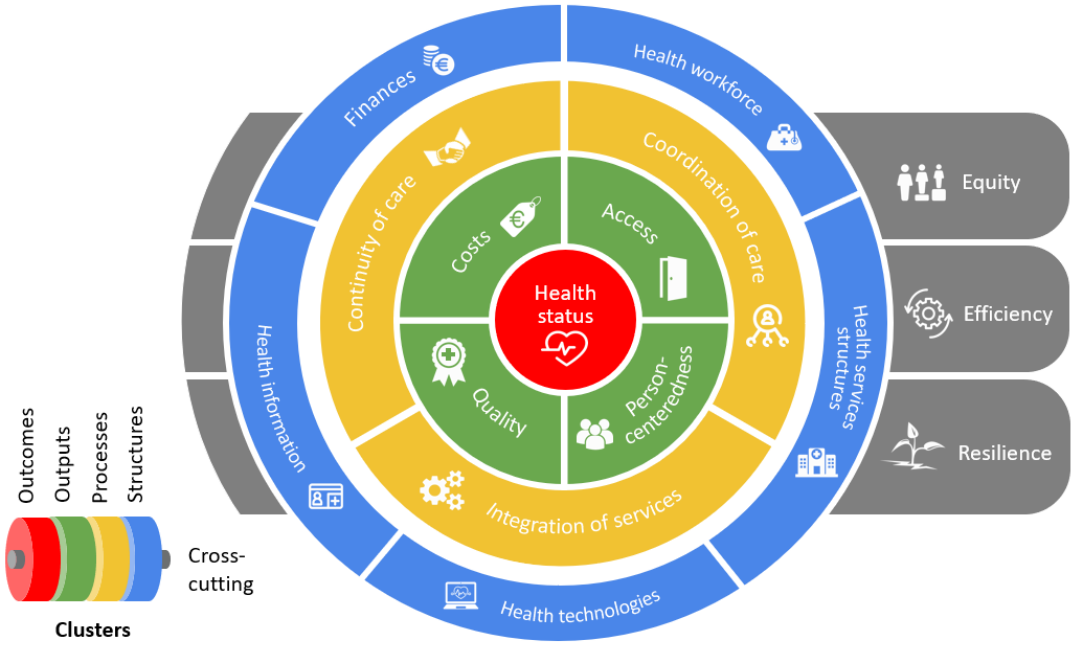


Figure 3b Graphical display of the 3rd (project final) version of the Irish HSPA Framework

2.4 Health Information System Assessment: brief description of the approach

The assessment of the Health Information System (of which the detailed approach and results are reported in Chapter 3 of this report) in Ireland involved a collation of previously conducted HIS assessments (WHO, OECD), policy document review, and inputs from stakeholder consultation. This task was conducted in parallel with indicator mapping (section 2.5) due to the interdependencies between data availability and indicator measurement. The data infrastructure in Ireland was rapidly adapting during the COVID-19 pandemic, to enable timely data flows required for monitoring the

development of the outbreak. To adequately capture these changes in the Irish HIS, the HIS assessment was amended accordingly.

Health information referred to data collected on an ongoing basis to feed into the delivery of health and social care services. It is important to point out that the health information system (HIS) collects data from health (care) sector but also from other related sectors. HIS should also be set up and equipped to assure data quality, throughout a multitude of its attributes, including availability (incl. timeliness), usability, reliability (incl. accuracy and completeness) and relevance by design.

Work within this task aimed at providing a description of the Irish HIS, through a customised and country-specific assessment approach, developed for this purpose. Goal is to answer the overarching question: "Can the Irish HIS deliver information needed for the new HSPA framework under development and what could be improved?" Work on this task was conducted in parallel with the work on identifying domains and indicators based on best practices and priorities in Ireland.

We specifically looked into:

1/ What is already known about the Irish HIS? What is the technical and data landscape of the HIS? What data, from which sources and with which characteristics, are available? What is the governance, regulatory and legal environment in which the HIS is operating and which resources are available?

2/ Is the current HIS fit for populating the HSPA framework being developed for Ireland? What could and should be improved for this use? Besides the assessment results, we provided a set of specific suggestions on how to align existing HIS in Ireland with the needs of the HSPA framework.

Stakeholder consultations through interviews

Consultation of Project Working Group members and additional external stakeholders should inform the prioritisation of indicators that should populate the HSPA framework, for each of the three functions.

Subsequent to priority setting of the indicators that should populate the framework, the availability and feasibility of the required data sources and related issues will have to be settled with the data custodians and other involved stakeholders. Data sources include, among others, registries (for instance condition and mortality registries), administrative databases, electronic health records, audit data of the health inspectorate, surveys (for instance administered among patients, staff, and carers, possibly as module of an annual household survey). The possibility of data linkage will be one of the issues to discuss.

Chapter 3 provides further details on the approach and outcomes of the undertaken Health Information Assessment.

2.5 Indicator mapping

An assessment of the currently used performance framework and indicators used for international benchmarking was conducted to determine what existing indicators are available in the current accountability infrastructure that could be used to populate the proposed HSPA framework. In addition, the assessment depicts the gaps in the framework that need to be populated with additional indicators.

The indicators identified from a range of instruments currently or previously in use for accountability reporting concerning the Irish health system, were mapped according to their coverage of health and social services, and their fitness for each of the three framework's purposes.

In addition, best practices of indicator use in HSPA frameworks in international use (e.g. OECD) and other countries were identified for possible usage in the Irish context. Together with indicators proposed by stakeholders, these indicators are balanced against the Health Information System to assess their fitness for use and data availability issues.

Alignment Sláintecare reform

The Sláintecare reform is predominantly envisaged to improve access, eligibility, and integration of health and social care, to ultimately improve health outcomes. A distinct suite of indicators should particularly enable the monitoring of the reform to indicate Sláintecare's progress. The HSPA framework therefore should "encompass the objectives of Sláintecare in addition to other frameworks in operation such as the Healthy Ireland Outcomes Framework and policy and strategy initiatives" (Sláintecare evaluation, Q1 2020).

During the kick-off meeting of the HSPA project in September 2019, the indicators to populate the framework were discussed:
"The indicators to include in the framework could be based on the current health information system and could also reflect aspirations for the future, to identify gaps an ambitions to work on. The present monitoring is mainly focussed on short-term activity KPI's, whereas there is a need for long-term monitoring of policy outcomes on strategic areas. That is, more differentiation on short- and long-term indicators is required to monitor the direction of the system and the shift of responsibilities between the DoH and HSE."

Indicators currently used to measure performance

An assessment of the currently used performance framework and indicators used for international benchmarking (OECD) was conducted to determine what existing indicators are available in the current accountability infrastructure that could be used to populate the proposed HSPA framework. In addition, the assessment depicts the gaps in the framework that need to be populated with additional indicators.

Gap analysis

The indicators identified from a range of instruments currently or previously in use for accountability reporting concerning the Irish health system, were mapped according to their coverage of health and social services, and their fitness for each of the three framework's purposes.

The emphasis of current performance measurement is on the monitoring of HSE performance, and predominantly in the public services. The domain Access and particularly the subdomain Ability to reach and availability (including timeliness), is strongly represented. Indicators mainly include waiting times for services. Several indicators are used to measure healthcare use. Safety as subdomain of Quality is represented by a suite of indicators, as are Financing (expenditure) and Health workforce (number of health professionals, working times).

On the strategic level, emphasis is on Access reflected in waiting times as well, mainly using aggregated numbers and rates in time trends. An extensive set of indicators is used to measure health care expenditure, few on Health workforce. Efficiency is measured using service outputs (e.g. discharges per bed). Moreover, health & wellbeing indicators are well represented.

Public reporting predominantly involves health & wellbeing indicators, e.g. life expectancy, mortality, morbidity, and non-healthcare related determinants such as health (jeopardizing) behaviours (e.g. alcohol consumption and smoking). Moreover, waiting times (self-reported and real time trolley waiting for admission), and patient experiences regarding hospital services are reported. The OECD reporting in Health at a Glance involves a wide range of indicators, for which Ireland is represented in the larger part.

Regarding the domains of the proposed HSPA framework, the gaps are mainly in the 'softer' and less tangible domains (e.g. person-centeredness and service delivery; see table 5).

Whereas the majority of the domains can be populated, looking into more detail reveals that the subdomains could only be partly populated, for instance:

- Access is largely reported in terms of waiting times for services (unrelated to, health, outcomes) and insurance coverage.
- Person-centeredness could not be populated for carer experiences, and for patient experience merely related to acute public hospitals.

The current reporting is least fit for purpose for the goal of strategic reporting on progress of Sláintecare (with the focus on integration, eligibility, and changing health outcomes)

Table 5. Heat map: overview of data availability by domain

Appendix 6 provides an overview of the:

- Gap analysis heat map currently used indicators and their fitness for purpose for HSPA goals, populated health services by domain
- Performance reporting and their fitness for purpose for HSPA goals
- Proposed indicators from the 3 panels by domain.

The stakeholder and citizen's consultation rounds brought about an extensive list of indicators, that give an overview of the attendees' priorities. The indicators that were mentioned in the Citizen Panel largely align with the Sláintecare reform aims, covering access and integrated care.

Appendix 6 also shows a number of indicators from a note of the Sláintecare Evaluation Frameworks grouped according to a number of domains. These domains align with domains included in the tentative HSPA framework.

An *indicator review of existing HSPA frameworks* was performed. Appendix 6 provides examples of indicators from literature and existing HSPA frameworks according to fitness for purpose for HSPA goals.

International Advisory Board and the EU Expert Group on Health System Performance Assessment

On October 26th 2020 the second version of the HSPA Framework was presented at the meeting of the EU Expert Group on HSPA, which was followed by a meeting of the International Advisory Board (see Appendix 7 for the agenda and participant list). Both meetings were used to consult experts on the HSPA Framework and Indicators for Ireland.

Five steps to populate the framework with indicators

The previous steps resulted in a working total of 550+ indicators. The identified indicators have been consolidated in an excel file, used to filter indicators to relevant domains and work through 5-steps defined, applying the following indicator selection criteria (see figure 4):

1) The indicator corresponds to one of the three functions for trends and changes that respond to specific managerial functions;
2) The indicators van be sourced from an existing data source or can feasibly be collected;
3) The indicator meets methodological considerations relevant for end-users.

Criteria		Described	Considerations	Reflection questions
Fit for purpose	**1 Alignment to HSPA functions**	The indicator corresponds to one of the three functions for trends and changes that respond to specific managerial functions	**i) overall performance** (signals performance of the system of the whole); target user=public	How is my health care system doing? How does it compare with others? What changes are needed in a long-term horizon?
			ii) strategic reforms (signals performance related to priority areas e.g. integration of services, PPP, regionalization); target user=DOH	Have I chosen the right areas to prioritize? What is the impact of the strategies that are in place? What changes are needed in a mid-term horizon?
			iii) services delivery (signals performance for short-term planning and priority setting across delivery platforms e.g. primary care, mental health services, social care); target user=HSE	How can planning, contracting and other government mechanisms be used to achieve short-term improvements based on the system's performance?
Fit for use	**2 Measurable**	The indicators can be sources from an existing data source or can feasibly be collected	Ongoing reporting by Ireland; international reporting obligation; reporting by other European countries	Is the data already collected? Is there a means (tool, modification) to collect the data if it is not currently available?
	3 Methodologically robust	The indicator meets methodological considerations relevant to end-users	Measures what matters; easily interpreted; sensitive to change; timely data collection; etc.	Is the indicator sufficiently sensitive to change? Does it signal clear actions? Does it matter to target decision-makers?

Figure 4: Indicator selection criteria

Figure 5 shows the five steps taken to populate the framework with indicators, which was characterised by a co-development process.

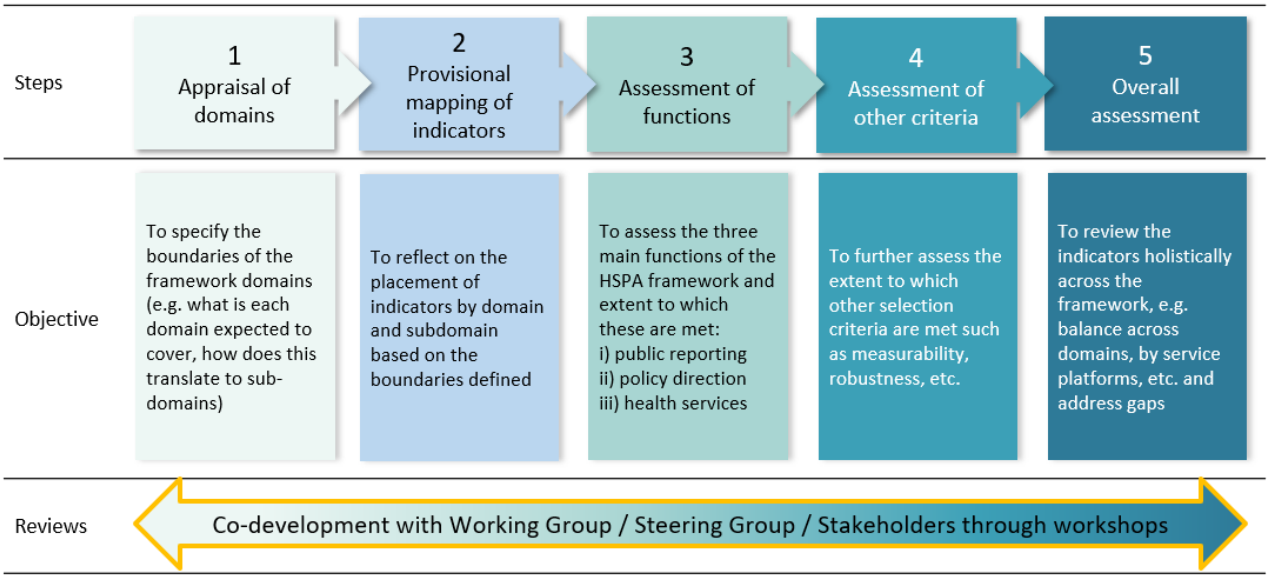


Figure 5: Five steps to populate the framework with indicators

Stakeholder Consultations: 6 workshops

To inform both the Assessment of the Health Information System and the Selection of Indicators to populate the HSPA Framework, close involvement of stakeholders of the Irish Health System was arranged by means of interviews and a series of 6 workshops. The stakeholders were involved in close collaboration with the DoH and the Performance Management Unit.

A series of six workshops were held; one workshop per framework cluster and an additional one on remaining topics: Outcomes, Outputs, Processes, Structures, Cross-cutting.

The order of the workshops was determined based on the availability of relevant participants (e.g. outcomes, structures, processes, etc). The 2-hour workshops were held in the morning or afternoon in the period October – December 2020.

List of workshops held:

- Workshop 1: 27 October 2020 on Outcomes
- Workshop 2: 5 November 2020 on Outputs
- Workshop 3: 10 November 2020 on Process
- Workshop 4: 24 November 2020 on Structure
- Workshop 5: 26 November 2020 on Cross-sectional
- Workshop 6: 1 December 2020 on Slaintecare, process and cross-sectional

The DoH prepared the participant lists, and the Amsterdam team was responsible for sending out the invitations. We aimed as target of approx 10 persons (+/-) per workshop. Participants could attend more than one workshop if there was interest to do so/relevant expertise for more than one area. At each workshop, ideally, there was representation among the participants of the frameworks 3 different uses (Overall performance, Strategic reforms, Services delivery).
In preparation for each workshop, the participants received two files in advance:

1. Workshop task: An Excel worksheet of longlisted indicators for relevant cluster to be scored (incl. an instructions tab)
2. Framework overview: Summary slide deck of full framework (process, all the clusters, domains and sub-domains, for reference)

Each participant was invited to perform a pre-workshop task (framework) asking:
Based on your area of expertise, consider for each of the domains/sub-domains:
Main task
Scoring indicators (red/yellow/green): each indicator to be assessed against the selection criteria (alignment to the HSPA framework, measurability, methodologically robustness)
Optional tasks

- Comments on the indicators in the cluster (e.g. adjustments to the indicator, suggestions of alternative data sources, etc.)
- Proposal of additional indicators (e.g. other indicators not within the current set but of interest can be noted)

Example of workshop task:

Cluster	Domain	Sub domain	Indicator title	Original indicator source	Purpose of use **Is this indicator useful to you?**	Measurability **Can it be measured?**	Methodological quality **Is it meaningful?**
Outcomes	Health	Morbidity	Chronic disease morbidity, two or more chronic diseases (by age, education level)	OECD			
			Estimated prevalence of dementia	OECD			
Processes	Person-centredness	Patient experience	Patients reporting having had the opportunity to ask questions or raise concerns to their regular doctor	OECD			
		Carer experience	Carers reporting they felt involved in designing the care and support plan for the person that they care for	National Health and Wellbeing outcomes (NHWO) Scotland			

Workshop structure

Logistics

Zoom meetings with optional breakout rooms

Overview and sequence of topics

1. Quick recap of project and current process (series of workshops) including an overview of the framework
2. Presenting back the scoring of indicators based on the work in advance of the workshop (most agreement to least) and summary of new indicators raised
3. Roundtable by sub-domains to discuss the set of indicators within each against the criteria and new indicators together with other considerations of importance (e.g. service coverage)
4. Targeted discussions using breakout sessions based on need only in instances such as:
    - Limited indicators meriting further brainstorming
    - Resolving disagreement
    - Focused discussion around larger sub-domains

Deadlines

- **1-week before the workshop**: Participants to receive preparatory materials and task descriptions to be returned latest one day before the workshop
- **48-hours before the workshop**: Reminder email from the AMC team - on the *homework*
- **24-day before workshop**: Excel files returned to be assessed by AMC team and preparations of workshop slides

Key dates

- Mock-up scoring sheet and workshop materials to be discussed at Steering Group meeting Oct 15th
- Based on the above timing, soonest workshop likely Oct 27th to ensure participants have time to complete the task and for this material to be first discussed with Steering group

Practical

- Invites to be sent by AMC; reminders and submissions of preparatory task to be sent directly to AMC

2.6 Final version of the Irish HSPA Framework: cluster, domains, features and indicators

The preceding step have resulted in a consolidated HSPA framework of Ireland (as depicted in figure 3b. The framework was ordered by the five clusters of outcomes, outputs, process, structures, and a cross-cutting cluster. Each cluster was populated by 1 to 5 domains which were in turn divided by 5 to 8 sub-domains. The sub-subdomains were structured by approximately 5 to 13 features, which were populated with in total 260 indicators for all three purposes (uses) of the framework (see tables 6a and 6b). The complete framework is displayed in Supplementary File 1a which highlights for each cluster the data sources by feature. The indicator passports are provided in a manageable excel file (Supplementary File 1b). They provide a complete overview of the indicators mapped to the health system performance framework developed. Each tab refers to a specific cluster of the framework. For each indicator, where available, details are reported on:

- ***Indicator title:*** The specific indicator or question
- ***Numerator/denominator:*** For quantitative measures, this field lists the details of the numerator/denominator or refers to the source with details defined. For categorical questions. this field lists the specific answering categories.
- ***Dissagregations:*** Relevant disaggregations for purposes of analysis
- ***Indicator source/suggestion:*** The original source for the indicator (where it draws from). The source may also be one of the workshops conducted and is noted as such.
- ***Primary use:*** Of the framework's main purposes of use (public reporting, strategy development and services planning), this field refers to the main purpose of use as signalled by workshops participants.
- ***Secondary use:*** An alternative or secondary use of the indicator.
- ***Available data:*** The identified sources that are known or expected to report on the indicator.
- ***Alternative data:*** An alternative or secondary use of the indicator. This may include where the indicator is available for international comparisons.
- ***Other comments*:** Any additional comments from workshop participants, including possible limitations or considerations for analysis.

Table 6a Overview of current HSPA Framework for Ireland

Clusters	Outcomes	Outputs	Process	Structures	Cross-cutting	Totals*
Domain	1	4	3	5	3	16
Sub-domain	5	9	6	8	8	36
Approx. features	13	19	5	6	6	49
Approx. indicators	35	95	30	70	30	260

*Note totals are for all three purposes (uses) of the framework

Table 6b Overview of clusters, domains, sub-domains and features

Cluster	Domain	Sub-domain	Feature
Outcomes	**Health status**	Self-reported health	Self-reported health status
		Disability	Self-reported disability
			Types of disability
		Morbidity	Burden of disease
			Select types of morbidity
			Multi-morbidity
		Mortality	Life expectancy
			Avoidable mortality
			Causes of mortality
			Healthy life expectancy
		Risk factors	Overvweight/obesity
			Lifestyle/environment
			Health literacy
Outputs	**Access**	Affordability	Social protection
		Availability	Availability
	Person-centredness	Patient-reported experiences	PREMs
			Satisfaction
		Patient-reported outcomes	PROMs
		Carer experiences	Experience
		Staff experiences	Experience
	Quality	Clinical effectiveness	Cardiovascular and diabetes
			Cancer
			Chronic conditions and ambulatory/primary care sensitive conditions
			Mental health
			Infectious diseases
			Prescribing
		Safety	Medication
			Patient accidents
			Clinical process/procedure
			Health care associated infection
			Resources/Organizational management
	Costs	Costs	Expenditure
Process	**Coordination**	Self-reported health	Patient
			Carers
			Staff
		Transition management	Follow-up
			Discharge
	Integration	Care delivery	
		Readmission	
	Continuity	Informational	
		Relational	
Structures	**Health workforce**	Workforce capacity planning	Capacity
			Migration
	Health services structures	Infrastructure	Facilities
			Beds
	Health technologies	Use and uptake of technologies	Technology capacity
			Technology accessibility
			technology diffusion
	Health information	Registries	
		Digitalization	
	Finances	Expenditure	
		Reimbursement mechanisms	
		Investment in R&D	
Cross-cutting	**Equity**	Population groups	
		Geographic	
	Efficiency	Short-term	Waiting times
		Mid-term	Out of hours care
		Long-term	
	Resilience	Motivated and well-supported workforce	
		Health worker absenteeism	
		Capacity to scale-up/down	

Chapter 3: Assessment of the Health Information Systems in Ireland

3.1. Introduction

Sound and reliable information is the foundation of decision-making across all health system building blocks and is essential for health system policy development and implementation, governance and regulation, health research, human resources development, health education and training, service delivery and financing.[11]

Health information refers to data collected (and analysed) on an ongoing basis to feed into the delivery of health and social care services. Definitions of health information systems (HIS) vary between countries, organisations and academics as well as between different implementation and/or research efforts. It is important to point out, however, that HIS collects data from the health (care) sector but also from other related sectors. A HIS should also be set up and equipped to assure data quality, throughout a multitude of its attributes, including availability (incl. timeliness), usability, reliability (incl. accuracy and completeness) and relevance by design. OECD recognises two important features and areas of strengthening national HIS data, following its collection: linkage capability and the suitability for secondary data use.[12] The latter cannot be over-emphasised as the whole concept of health system performance assessment, which we will introduce in a paragraph or two, is dependant of already-collected data.

The Health Metrics Network's "Framework and Standards for Country Health Information Systems" describe HIS through its six main components[13], as shown in Table 7.

Table 7: **Six components of a HIS, adapted from World Health Organisation Health Metrics Network's "Framework and Standards for Country Health Information Systems"**

Component	Description
Resources	These consist of the legislative, regulatory, and planning frameworks required to ensure a fully functioning health information system, and the resources that are prerequisites for such a system to be functional. Such resources involve personnel, financing, logistics support, information and communications technology (ICT), and coordinating mechanisms within and among the six components.
Indicators	A core set of indicators and related targets for the domains of health information is the basis for a plan and strategy for a health information system. Indicators need to encompass determinants of health; health system inputs, outputs, and outcomes; and health status.
Data sources	Can be divided into two main categories: (1) population-based approaches (censuses, civil registration, and population surveys) and (2) institution-based data (individual records, service records, and resource records). Several other data-collection approaches and sources—occasional health surveys, research, and information produced by community-based organizations—do not fit neatly into

[11] https://www.who.int/healthinfo/systems/WHO_MBHSS_2010_section3_web.pdf
[12] https://www.oecd.org/health/health-systems/Health-Data-Governance-Policy-Brief.pdf
[13] https://www.hrhresourcecenter.org/node/5927.html

	either of the two main categories but can provide important information that may not be available elsewhere.
Data management	This covers all aspects of data handling: collection, storage, quality-assurance, flow, processing, compilation, and analysis. Specific requirements for periodicity and timeliness are defined where critical—as in the case of disease surveillance.
Information products	Data must be transformed into information that will become the basis for evidence and knowledge to shape health action.
Dissemination and use	The value of health information can be enhanced by making it readily accessible to decision makers (giving due attention to behavioural and organizational constraints) and by providing incentives for information use.

Based on international best practice, Ireland's Health Information and Quality Authority (HIQA), identified four key overarching objectives relating to health information[14], in order to *"maximise health gain for the individual and the population"*:

1. Health information is used to deliver and monitor safe and high-quality care for everyone.

2. Health information should be of the highest quality and, where appropriate, collected as close as possible to the point of care.

3. Health information should be collected once and used many times.

4. Data collection should be *fit for purpose* and cost-effective.

For the purpose of this tailor-made HIS assessment, within the scope of the Irish health system, we have conceptualised the health data collected, used and reused for the purpose of populating an HSPA framework according to the following main categories of data sources, described in more detail in the methods: population-level health data, individual-level clinical data, administrative data, survey data, third-party assessment data and non-health data. These should cover the health system data landscape, from prevention and primary care services, through acute hospital and long-term care to social care.

Health information is an integral part of a functioning health system. Having identified its components, objectives and data sources involved, we can define HIS as a system that collects, stores, processes, shares, manages, reports and uses health(-related) data and turns it into information which is then used to manage health system and its services. This includes primary (for a specific aim) and secondary (for purposes different than initial collection reasons) use of collected data. The information, created from the data, can and should then be used to inform and drive policy- and decision-making, research, and ultimately individual, as well as population-based, health outcomes. One of the paths how health information feeds into policy- and decision-making mechanisms is through health system performance assessment (HSPA).

[14] https://www.higa.ie/sites/default/files/2018-10/HIPE-report.pdf

HSPA is the process of monitoring, evaluating and communicating to what extent various aspects of a health system meet key objectives. The central purpose of HSPA is to assess whether progress is being made towards desired goals and whether appropriate activities are undertaken to promote achievement of those goals.[15] Key features of HSPA are presented in Textbox 1 and the five key characteristics for adequately applying the concept of HSPA are presented in Table 8.

Textbox 1: Key features of HSPA, adapted from World Health Organization, The European health report 2009. Health and health systems, 2009, Copenhagen: World Health Organization Regional Office for Europe, p141.

HSPA is regular, systematic and transparent. Reporting mechanisms are defined beforehand and cover the whole assessment. It is not bound in time by a reform agenda or national health plan endpoint, although it might be revised at regular intervals better to reflect emerging priorities and to revise targets with the aim of achieving them.
HSPA is comprehensive and balanced in scope, covers the whole health system and is not limited to specific programmes, objectives or levels of care. The performance of the system as a whole is more than the sum of the performance of each of its constituents.
HSPA is analytical and uses complementary sources of information to assess performance. Performance indicators are supported in their interpretation by policy analysis, complementary information (qualitative assessments) and reference points: trends over time, local, regional or international comparisons or comparisons to standards, targets or benchmarks.
In meeting these criteria, health system performance assessment needs to be transparent and promote the accountability of the health system steward.

Table 8: Key characteristics for adequately applying the concept of HSPA (adapted from [16])

Characteristic	Description
Regular	Assessing the performance of a health system is a continuous and iterative process.
Systematic	The approach should be structured and consistent.
Transparent	The assessment must be clear, unambiguous and understandable for others.
Comprehensive	The whole system should be covered. Furthermore, we must be aware that the performance of a system does not simply equal the sum of the performance of its various components.
Analytical	Complementary sources of information should be consulted to obtain a comprehensive and well-founded overview of the health system's performance. Quantitative indicators should be supported by qualitative insights, just like performance indicators should be supported by a policy analysis. HSPA is in essence a comparative evaluation, and the reference points for comparison must be chosen wisely. Some relevant reference points for comparison could be: developments over time; local, regional, national or international differences; differences between population groups (e.g. based on

[15] http://www.europeanpublichealth.com/health-systems/health-system-performance-assessment/
[16] http://www.europeanpublichealth.com/health-systems/health-system-performance-assessment/

	age, gender, income, SES etc.); and comparisons to certain targets or benchmarks.

A research team from the University of Amsterdam (UvA) and the Amsterdam University Medical Centre (Amsterdam UMC) was commissioned, through European Commission's SRSS reform support / funding mechanism, with a task of supporting the Irish Department of Health (DoH) in setting up the first HSPA framework in Ireland. The proposed HSPA framework in Ireland was designed with three main functions in mind:

1. Day-to-day monitoring of the performance of the system (including weekly / monthly monitoring),
2. Enabling strategic planning on the system and service levels, and
3. Informing the public through timely, relevant and comprehensible public reporting system.

The process started with consulting relevant stakeholders that contributed to a collaborative effort in defining overarching clusters, domains and subdomains for the framework in the Irish context. Next steps included populating the domains and subdomains with relevant indicators, and developing their "passports"[17], while simultaneously assessing the readiness of the national HIS to deliver data for the HSPA framework being developed.

As mentioned already, a good quality HIS supports evidence-informed health policymaking and is essential to good governance. The quality of the foreseen HSPA reporting, communication and use in policy and practice in Ireland will depend, to an important extent, on the HIS that is currently in place and potential improvements that could be introduced. It was therefore of paramount importance to assess the status quo of the Irish HIS and map potential areas for improvement, in parallel to developing the HSPA framework. While doing so, we paid special attention to the infrastructure, data sources and data management components. It was also crucial to perform this assessment in parallel and in collaboration with the process of populating the HSPA framework domains with relevant indicators and to do so in an inclusive way, eliciting input from relevant stakeholders in the Irish HIS arena.

This work aims at delivering a description of the Irish HIS, with the goal to provide an HSPA-tailored descriptive assessment and gap analysis of the specific limitations, critical aspects and recommendations for improvement. The country-specific assessment approach has been developed for this purpose. It attempted to answer whether the Irish HIS can deliver needed information for the new HSPA framework under development and what could be improved.

To provide this answer, we have specifically investigated:

- What is the status quo of the Irish HIS (including its infrastructural and governance landscape)?
- Is the current HIS fit for populating the HSPA framework being developed for Ireland?
- Can and should it be improved in general and for this specific use?

[17] https://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-019-4853-z

3.2 Methods

Attempting to answer the three overarching questions and provide an overview of the Irish HIS, we used a variety of resources and methods. Our methodological approach was based on information gathered through a purposeful overview of the available evidence, inclusive involvement of key stakeholders in the Irish HIS and health policy arena, as well as the project team's experience in health information systems, health system and service research and healthcare performance intelligence. We have focused on the components of the national HIS that are essential for the conceptualisation, development and implementation of a national HSPA framework. Desk research and stakeholder consultations, through modalities of interviews and workshops, have been used to elicit relevant information and design and populate the assessment framework, as well as to steer the final set of recommendations on HIS improvements for the HSPA use.

For the purpose of this tailor-made HIS assessment within the scope of the Irish health system, we have conceptualised the health data collected, and reused to populate an HSPA framework according to the following main categories of data sources, as presented in Table 9 below.

Table 9: Categorisation of HIS data (and data sources) used for this assessment. (Adapted from [18])

Type of data	**Data sources**
Population level data	Population-based registries (incl. mortality data) Condition-based registries (incl. cancer, diabetes, infectious disease, rare disease…)
Clinical data	Electronic Health Records (EHRs)
Administrative data	Prescriptions and referrals Infrastructure and health services Human resources / Health workforce Financing and expenditure for health services Equipment, supplies and commodities
Survey data	Household surveys Patient-reported outcome measures (PROMs) Patient-reported experience measures (PREMs)
Third-party assessment data	(incl. accreditation)
Non-health data	(From other, non-health, sectors)

Methodological steps to conducting this assessment included:

1. An overview of available evidence, by reviewing the methods and results of a purposeful samle of previous work assessing the HIS in Ireland,

2. 2. Individual and group key informant interviews, to elicit input from relevant stakeholders in the Irish HIS arena and

[18] https://pubmed.ncbi.nlm.nih.gov/23870099/

3. A series of stakeholder workshops, providing a critical overview of the initial indicator list and discussing availability of health information for the specific purpose of populating an HSPA framework.

Overview of available evidence

We have purposefully mapped previous assessments, which have been conducted on (and in) the Irish HIS, by which assessment bodies, for what use and using which existing or newly developed assessment approaches. Results have been summarised in a table and used a starting point to start developing and populating our own tailored framework for assessing the Irish HIS.

This overview was built on the work of national and international organisations and academics which have recently conducted assessments of the Irish HIS, using different scopes and methods. In total, five HIS assessments, conducted between 2017 and 2019, have been identified, included in the overview and reviewed in detail. Besides HIS-specific assessments, we have also included assessments that have used the "whole system" scope and, within their assessments, contained overview of the HIS (OECD's and Observatory's Country Health Profile reports). The overview additionally included assessments focusing on specific components of the national HIS (HIQA's review of information management practices at the Hospital In-Patient Enquiry Scheme; HIPE). In this overview, we also used an assessment of the Irish HIS which uses a socio-technical approach and focuses on three factors that can impact health information; those of policy, infrastructure and people and which examines how Ireland compares internationally with other countries in relation to these factors. Finally, two relevant international organisations independently conducted HIS assessments in Ireland in 2019, namely the Organisation for Economic Co-operation and Development (OECD) and the World Health Organisation (WHO). These two assessments have also been included in the overview. The overview focuses on a short description of assessments' context, assessment bodies and their mandates, assessment methods, and on a more comprehensive summary of assessment findings relevant to the use of HIS in HSPA.

Key informant interviews

Next, a series of key stakeholder interviews was conducted. Aim of this phase of work was to *consult the views and expertise with regards to performance measurement of the Irish health system's contributors and beneficiaries to identify key performance indicators and the current and required data landscape.* Following recommendations and direct links by the Project Working Group (PWG) members at the Irish Department of Health (DoH), we contacted a total of 29 potential key informants, involved daily with the work on the Irish HIS. These individuals spanned across organisations which were grouped as following: Department of Health (DoH), Health Service Executive (HSE), research, other health data sources, health professionals' bodies, patient organisations and other government departments. Between 29 May and 27 October 2020, we conducted 16 interview sessions with 18 key informants and stakeholders with an average duration of just over one hour per interview session. Prior to each interview, informants were provided with a preparatory document, introducing and summarizing the progress of the "Performance Accountability for the Irish Health System" project and providing guiding questions for the interview itself. Interviews were recorded and, following the

interviews, these were transcribed. An inductive thematic content analysis and a narrative analysis were conducted identifying main characteristics of the Irish HIS, links to the HSPA framework being developed and recommendations on aligning the information infrastructure and governance to the HSPA work.

Invitation letter and an interview preparatory document is shown in Appendix 8. Table 10 summarises the list of key informants interviewed.

Table 10: List of key informants interviewed

Informant	Organisation	Position	Date
Laura Casey	DoH[a]	Slaintecare Programme Implementation Office	29.5.2020
Kevin Meaney	DoH	Slaintecare Programme Implementation Office	29.5.2020
Fionnuala Donohue	HSE[b]	Health Intelligence Strategic Planning and Transformation	3.6.2020
Alan Cahil	DoH	Statistics & Analytics Unit; Senior statistician	15.6.2020
Sean Lyons	ESRI[c]	Research programmes on health services and electronic communications	10.7.2020
Tom McGuirk	HSE	Disability Services; Information Management Centre	22.7.2020
Kenneth Mealy	RCSI[d]	President	22.7.2020
Elena Hamilton	MHC[e]	Senior Regulatory Manager	22.7.2020
David Murphy	DPC[f]	Consultation Section, Public, Health, and Voluntary Sectors; Assistant Commissioner	21.8.2020
Richard Greene	UCC[g]	Professor of Clinical Obstetrics	8.9.2020
Derick Mitchell	IPPOSI[h]	Chief Executive	10.9.2020
Irene O'Byrne Maguire	NTMA[i]	Clinical Risk Adviser	14.9.2020
Deirdre Collins	DPER[j]	Health Vote	16.9.2020
Essene Cassidy and Sheila McClelland	NMBI[k]	President CEO	21.9.2020
Sarah Glavey	DoH, NPSO[l]	Policy and Strategy Division; Principal Officer	13.10.2020
Rosarie Lynch and Deirdre Hyland	DoH, NPSO	Head of Patient Safety Surveillance Patient Safety Surveillance	27.10.2020

Note: aDoH=Department of Health; bHSE=Health Service Executive; cESRI=Economic and Social Research Institute; dRCSI=Royal College of Surgeons in Ireland; eMHC=Mental Health Commission; fDPC=Data Protection Commission; gUCC=University College Cork; hIPPOSI=Irish Platform for Patient Organisations, Science & Industry; iNTMA=National Treasury Management Agency; jDPER=Department of Public Expenditure and Reform; kNMBI=Nursing and Midwifery Board of Ireland; lNPSO=National Patient Safety Office

Stakeholder workshops

A series of five two-hour workshops have been organised between 15 October and 26 November 2020 with one additional policy- and Slaintecare-focused workshop organised on 1 December 2020. In total,

more than 40 stakeholders, from different organisations within the Irish health system, were engaged in these workshops. The workshop series has been organized around the 5 main clusters of the proposed HSPA framework, as shown in Table 11. An overview of the framework's clusters and domains was sent to all the participants in advance of each workshop. Also, an Excel file with the current list of indicators identified pertaining to the workshop's cluster of focus was supplied and participants were asked to review the list of indicators and 1) score the indicators red/yellow/green based on the three considerations listed, 2) note comments, suggestions or modifications where needed and 3) add additional sub-domains and/or indicators they thought merit discussion. Each workshop aimed at closely reviewing a working list of indicators with representatives of its end-users. An example of supporting documents, sent to each participant prior the workshops, in shown in Supplementary File 2.

Table 11: Summary of indicator shortlisting workshops

Workshop cluster	**Domains and subdomains discussed (number of indicators per domain)**	**Number of participants**	**Date**
Outcomes	Health status (34) Subdomains: Mortality, Morbidity, Disability, Self-reported and Risk factors	17	27.10.2020
Outputs	Access (57) Subdomains: Acceptability, Availability, and Affordability Person-centredness (28) Subdomains: Patient experience, Patient-reported outcome, Carer experience and Staff experience Quality (75) Subdomains: Effectiveness and Safety Costs (13) Subdomain: Overall / relative costs	27	5.11.2020
Processes	Coordination (10) Subdomains: Self-reported and Transition management Integration (10) Subdomains: Care delivery and Readmissions Continuity (7) Subdomains: Informational and Relational	26	10.11.2020
Structures	Health workforce (24) Subdomain: Workforce capacity planning Health service structures (14) Subdomain: Infrastructure Health technologies (10) Subdomain: Use and uptake of technologies Health information systems (3) Subdomains: Registries and Digitalisation	17	24.11.2020

	Finances (14) Subdomains: Expenditure, Reimbursement mechanisms and Investment in R&D		
Cross-cutting	Equity (TBD) Subdomains: Population groups and Geographic Efficiency (9) Subdomains: Short-term, Mid-term and Long-term Resilience (7) Subdomains: Motivated and well-supported workforce, Surge capacity and Capacity to scale up/down	19	26.11.2020
Policy/Slaintecare	(Indicators from the processes and cross-cutting clusters re-discussed)	22	1.12.2020

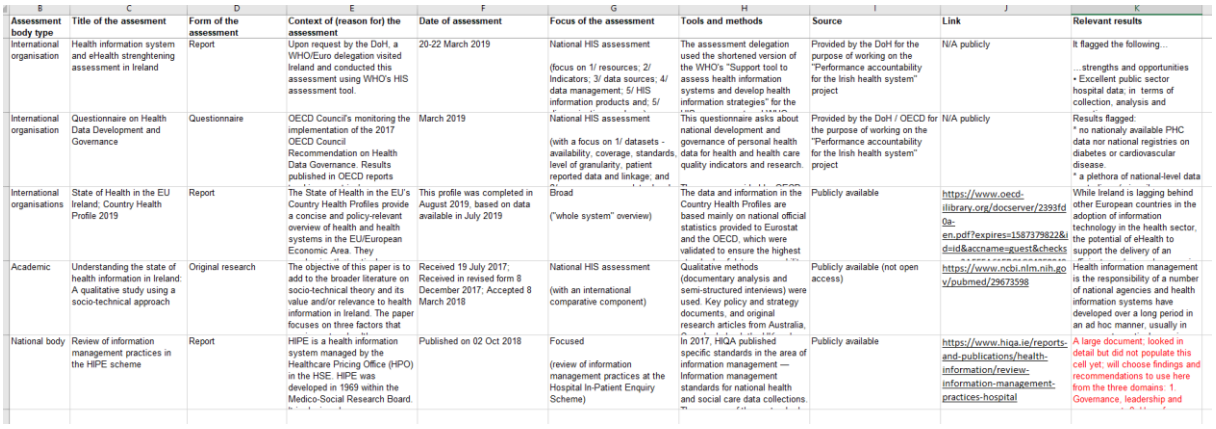
3.3 Results

Based on the methodology described, we attempt to answer the three questions presented in the introduction, setting the scene for an analysis of the Irish HIS landscape, assessing its readiness to feed quality data into the HSPA framework under development and providing recommendations on how to improve national HIS and facilitate provision of safer and higher quality care that is cost-effective.

Status quo of the Irish HIS

What was known before we started this work?

Based on the inclusion and analysis of the five HIS assessment documents identified, an Excel overview table, previewed in Figure 6, focuses on a short description of assessments' context, assessment bodies' mandates and assessment methodologies, and on a more comprehensive summary of assessment findings relevant to the use of HIS in HSPA. A full overview table has been made available to the Irish DoH in a separate document.



B	C	D	E	F	G	H	I	J	K
Assessment body type	**Title of the assesment**	**Form of the assessment**	**Context of (reason for) the assessment**	**Date of assessment**	**Focus of the assessment**	**Tools and methods**	**Source**	**Link**	**Relevant results**
International organisation	Health information system and eHealth strenghtening assessment in Ireland	Report	Upon request by the DoH, a WHO/Euro delegation visited Ireland and conducted this assessment using WHO's HIS assessment tool.	20-22 March 2019	National HIS assessment (focus on 1/ resources; 2/ Indicators; 3/ data sources; 4/ data management; 5/ HIS information products and; 5/	The assessment delegation used the shortened version of the WHO's "Support tool to assess health information systems and develop health information strategies" for the	Provided by the DoH for the purpose of working on the "Performance accountability for the Irish health system" project	N/A publicly	It flagged the following... ...strengths and opportunities • Excellent public sector hospital data; in terms of collection, analysis and
International organisation	Questionnaire on Health Data Development and Governance	Questionnaire	OECD Council's monitoring the implementation of the 2017 OECD Council Recommendation on Health Data Governance. Results published in OECD reports	March 2019	National HIS assessment (with a focus on 1/ datasets - availability, coverage, standards, level of granularity, patient reported data and linkage; and	This questionnaire asks about national development and governance of personal health data for health and health care quality indicators and research.	Provided by the DoH / OECD for the purpose of working on the "Performance accountability for the Irish health system" project	N/A publicly	Results flagged: * no nationaly available PHC data nor national registries on diabetes or cardiovascular disease. * a plethora of national-level data
International organisations	State of Health in the EU Ireland; Country Health Profile 2019	Report	The State of Health in the EU's Country Health Profiles provide a concise and policy-relevant overview of health and health systems in the EU/European Economic Area. They	This profile was completed in August 2019, based on data available in July 2019	Broad ("whole system" overview)	The data and information in the Country Health Profiles are based mainly on national official statistics provided to Eurostat and the OECD, which were validated to ensure the highest	Publicly available	https://www.oecd-ilibrary.org/docserver/2393fd0a-en.pdf?expires=1587379822&id=id&accname=guest&checks	While Ireland is lagging behind other European countries in the adoption of information technology in the health sector, the potential of eHealth to support the delivery of an
Academic	Understanding the state of health information in Ireland: A qualitative study using a socio-technical approach	Original research	The objective of this paper is to add to the broader literature on socio-technical theory and its value and/or relevance to health information in Ireland. The paper focuses on three factors that	Received 19 July 2017; Received in revised form 8 December 2017; Accepted 8 March 2018	National HIS assessment (with an international comparative component)	Qualitative methods (documentary analysis and semi-structured interviews) were used. Key policy and strategy documents, and original research articles from Australia,	Publicly available (not open access)	https://www.ncbi.nlm.nih.gov/pubmed/29673598	Health information management is the responsibility of a number of national agencies and health information systems have developed over a long period in an ad hoc manner, usually in
National body	Review of information management practices in the HIPE scheme	Report	HIPE is a health information system managed by the Healthcare Pricing Office (HPO) in the HSE. HIPE was developed in 1969 within the Medico-Social Research Board.	Published on 02 Oct 2018	Focused (review of information management practices at the Hospital In-Patient Enquiry Scheme)	In 2017, HIQA published specific standards in the area of information management — Information management standards for national health and social care data collections.	Publicly available	https://www.hiqa.ie/reports-and-publications/health-information/review-information-management-practices-hospital	A large document; looked in detail but did not populate this cell yet; will choose findings and recommendations to use here from the three domains: 1. Governance, leadership and

Figure 6: Overview of mapping available recent assessments of the Irish HIS (preview)

Key informant observations on the status quo of the Irish HIS and the planned HSPA

A series of one-to-one and group interviews provided us with a (starting) overview of the Irish HIS landscape, alignment with the planned HSPA framework and interviewees' suggestions for improvements. Below we present several general observations as well as in-depth reflections on three specific topics related to health data management in the Irish health system. Mid-way through the process of conducting interviews with 18 key informants, we reached a saturation of the topics list that was discussed. Nevertheless, conducting the full series of interviews provided additional detailed accounts and various perspectives on common characteristics and issues in the Irish HIS.

During these interviews, it was repeatedly emphasised that the HIS (and health data, in general) in Ireland should be assessed in parallel to developing and populating the framework, which was exactly our methodological approach. Data infrastructure, when available, was generally perceived of good quality (including timeliness, as well as demographic and geographic disaggregation capabilities). However, the data is mostly available for publicly provided acute care services and lacking for most privately provided services (notably, GP and community services). Data infrastructure rarely captures care pathways or patient experiences. Data sources are siloed (and subsequently underused) due to historical development through a number of separate data custodians, few linkage possibilities (due to the slow implementation of the unique patient identifier) and a lack of a dedicated national coordination body as well as a coherent strategic approach (currently under development).

The current work on designing the first Irish HSPA framework was perceived as a positive development through providing a high-level (and cross-cutting) overview of the performance of the whole system, which is currently missing. Work on developing an HSPA framework was also seen beneficial as "it should support high-level agreement on the key priorities in the system" and would provide consistent and standardised tracking of performance results over time. The HSPA framework, in the light of the available HIS, was imagined as focusing on outcomes (and linking outcomes to inputs), as opposed to the "current focus on structures, processes and outputs". Interviewees expressed the strong opinion that the framework, and the underlying data infrastructure, should provide information on the adaptability, resilience and up-/down-scaling capacity of the system (including its infrastructure, services and workforce). The framework itself and the data underlying it should also support regionalisation efforts, hence addressing "regional differences in the uptake of different policies". Thanks to the data used, it should also include case-mix and the risk adjusted indicators.

Conducting a number of interviews on the Irish HIS also provided insights into specific topics of interest, which became somewhat of a theme during this process. Three topics emerged, and are highlighted here: data linkage and its ability to facilitate care pathway management and integration of care, collecting and using patient-reported data as well as the recent developments, related to HIS, as a direct and indirect consequence of the ongoing (at the time of conducting this work) COVID-19 pandemic.

It was noted that "when a patient goes through the system, is it not something that is collected. *Pathways of care* are not captured in data." This was mainly explained by the "historical apathy" for health data to be used and linked. This results in suboptimal data linkages and "instead of actually following patients through the system, inferring care pathways, and subsequent correlations." There

does not seem much data available to measure integration. “Currently proxies are used, such as bed days used by people with primary care sensitive conditions.” It was pointed out that “you cannot have integrated care if you do not have integrated data” but also that “people’s attitudes to data use (and sharing) have changed dramatically” with a “newly found appreciation for data use for policy.” A need for better data in primary care was emphasised repeatedly, with an ideal of “data flowing from the GP, and hospital patient care, to the HSE.” Also, there is no clinical data flow to HSE from the majority of community services. Through different examples, issues of data linkage were presented. “There is a lot of data indeed and they are kept in little islands. Often kept in Excel and manually collected. Linkage is not possible.” Different data standards and technical solutions have been mentioned as one of the reasons for this situation, with “a lot of those independent hospitals having different reporting systems for patient data collection, and these systems are not talking to each other.” Concluding that the Irish system “badly needs a unique patient identifier and an ability to be able to follow a patient, no matter what system they go and into whatever hospital.”

Issues of *patient-reported data* has been another repeatedly discussed topic and there seems to be a lot of interest in the use of PROMs and PREMs, but “apart from an annual survey (for some services) and a few small pilots, these are not structurally collected. Healthy Ireland collects some patient experiences in their surveys, but they do not go into detail.” Reasons were seen in a novel and challenging approach to collecting patient-reported data and an opinion that “this is why they are often done in small, research focused, ways rather than consistently by health care organisations as a way of really gaining and learning from patients.” Focusing these qualitative metrics on issues that matter rather than on “Were you happy with the cleanliness of the hospital?” was another repeated theme as was the lack of patient experience measures in primary care. Person-centeredness was recognised as “a key to your patients and your citizens” with suggestions of joining on-going international initiatives developing this area further, such as “the OECD’s PaRIS indicators initiative, which looks like it has a particularly good way of comparing and contrasting different data under this domain. And, if Ireland were to sign up to this, you could have an international comparison. You would be able to rank yourself and that would be something that you could produce on a regular basis as a performance indicator.”

As the interviews were conducted in the midst of the 2020 COVID-19 pandemic, an issue of health data management in relation to this was often discussed. A lot of developments “in the past few months due to COVID-19 have changed the data landscape”. Interviewees agreed that it was “difficult to say whether these changes will persist after COVID-19” but that “we need to consider the potential new landscape that we have now”. For instance, “a version of the unique patient identifier was rolled out due to COVID-19 to monitor all patients with COVID-19. It is not the official unique patient identifier that was developed earlier, but an emergency version.” Also, an emergency data hub for researchers to access data about COVID-19 was also established in a very short time period, where “data can be linked through the Statistics Bureau.” Due to COVID-19, “people now really want to use the data, and this changed people’s views on how data is used and accessed. The crisis shows what areas we are lacking data on and what we have available.” It was also pointed out that “a lot of that has to do with policy makers finally seeing what can be done with available data and what the possibilities are.” These improvements made “acute care COVID-19 data readily available on a very granular level”, with a note that “no one could really tell anything about non-COVID-19 care now.” An issue of data quality, with such rapid data infrastructure developments was raised with one informant saying that “there are a

lot of data quality issues around this because the process, on the business side of the house, has not been probably as rigid about minimum requirements on data sets." In general, the informants agreed in hoping that these developments will "sustain after the emergency".

It is relevant to point out that data privacy and data security issues were rarely discussed during this series of interviews on the Irish HIS landscape and its role in the HSPA process. This is interesting, as the majority of data use for HSPA purposes is, in fact, secondary (re-)use of data, which provides unique opportunities for data use but also presents a unique set of challenges related to data security and privacy.

HIS' fitness for populating the HSPA framework

Heatmaps of data availability

The three methodological phases, described earlier, provided an opportunity to consolidate the information collected, in a step-wise manner and present it visually. We approached assessing Irish HIS' fitness to populate the HSPA framework by looking at the data availability through data sources, services and clusters of the proposed HSPA framework. Over the course of the three-stage work on assessing the Irish HIS, the collected information was used to populate two "heatmaps" presented below. Table 12 maps data categories (population level data, clinical data, administrative data, survey data, third-party assessment data and non-health data) to health care services. Table 13 uses the same data categories and maps it to the five main clusters of the proposed HSPA framework.

Table 12: Heatmap of data availability by data sources and main categories of health care services

Services / HIS data type		Integration of services	Acute Hospitals	Social Care (incl. long-term care and disability services)	Primary Care	Mental Health (incl. inpatient, outpatient and acute)	Health & Wellbeing
Population level data	Population-based registries (incl. mortality data), linkage options						
	Condition-based registries (incl. cancer, diabetes, infectious disease, rare disease…)	Tba / Na					
Clinical data	EHRs						Tba / Na
Administrative data	Prescription and referral data	Tba / Na					Tba / Na
	Infrastructure and health services	Tba / Na		Tba / Na		Tba / Na	Tba / Na
	Human resources / Health workforce	Tba / Na					Tba / Na
	Financing and expenditure for health services						Tba / Na
	Equipment, supplies and commodities			Tba / Na			Tba / Na
Survey data	Household / staff survey data						
	PROMs and PREMs						
Third-party assessment data	(incl. accreditation)						
Non-health data	(other sectors)						

Note: Red=Not available; Orange=Partly available or technical capacity is (probably) available; Green=Available; Tba/Na=No information (To be assessed) or Not applicable

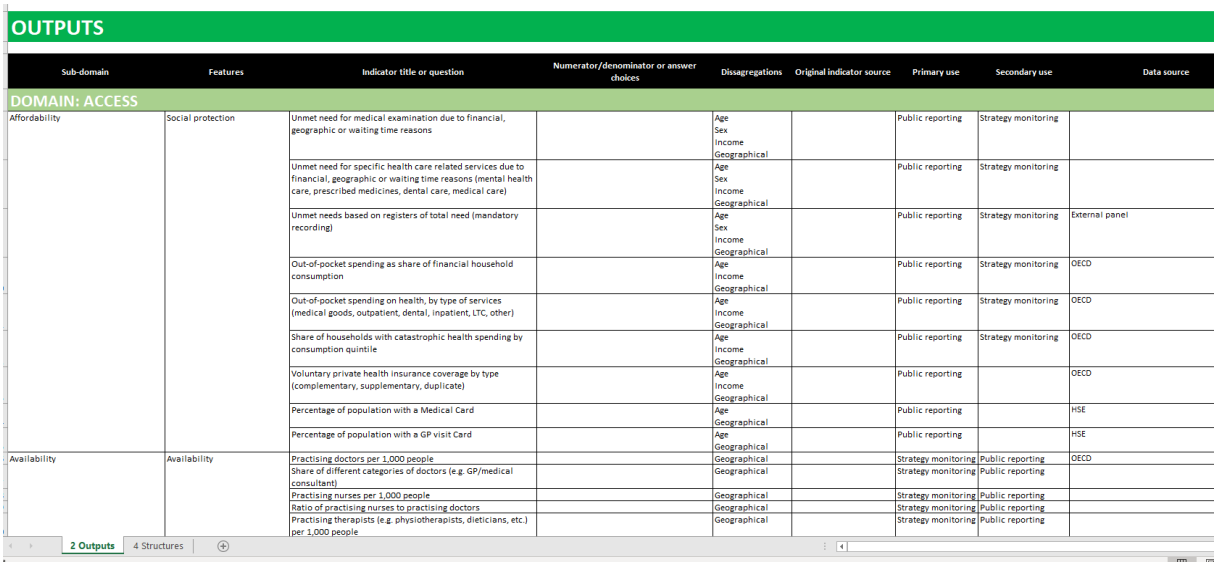
Table 13: Heatmap of data availability by data sources and the five clusters of the proposed HSPA framework

Clusters / HIS data type		Outcomes	Outputs	Processes	Structures	Cross-cutting
Population level data	Population-based registries (incl. mortality data), linkage options			Tba / Na	Tba / Na	Tba / Na
	Condition-based registries (incl. cancer, diabetes, infectious disease, rare disease…)			Tba / Na	Tba / Na	Tba / Na
Clinical data	EHRs				Tba / Na	
Administrative data	Prescription and referral data					
	Infrastructure and health services			Tba / Na		
	Human resources / Health workforce					
	Financing and expenditure for health services			Tba / Na		
	Equipment, supplies and commodities			Tba / Na		
Survey data	Household / staff survey data				Tba / Na	
	PROMs and PREMs					Tba / Na
Third-party assessment data	(incl. accreditation)			Tba / Na		Tba / Na
Non-health data	(other sectors)			Tba / Na	Tba / Na	Tba / Na

Note: Red=Not available; Orange=Partly available or technical capacity is (probably) available; Green=Available; Tba/Na=No information (To be assessed) or Not applicable

Indicator passports

Methodological steps, most notably an above-mentioned series of stakeholder workshops, also provided an opportunity to develop and populate indicator "passports" for each of the indicators proposed for the Irish HSPA framework. "Passports" included definitions of features, data sources and indication of data availability, primary and secondary use (according to the framework's three purposes) and other technical details (numerator/denominator and dissagregations) for each indicator, when possible. The Excel overview table, shown in Figure 7, previews the indicator "passports" spreadsheet. A full overview table has been made available to the Irish DoH as a separate deliverable of the project.



OUTPUTS

Sub-domain	Features	Indicator title or question	Numerator/denominator or answer choices	Dissagregations	Original indicator source	Primary use	Secondary use	Data source
DOMAIN: ACCESS								
Affordability	Social protection	Unmet need for medical examination due to financial, geographic or waiting time reasons		Age Sex Income Geographical		Public reporting	Strategy monitoring	
		Unmet need for specific health care related services due to financial, geographic or waiting time reasons (mental health care, prescribed medicines, dental care, medical care)		Age Sex Income Geographical		Public reporting	Strategy monitoring	
		Unmet needs based on registers of total need (mandatory recording)		Age Sex Income Geographical		Public reporting	Strategy monitoring	External panel
		Out-of-pocket spending as share of financial household consumption		Age Income Geographical		Public reporting	Strategy monitoring	OECD
		Out-of-pocket spending on health, by type of services (medical goods, outpatient, dental, inpatient, LTC, other)		Age Income Geographical		Public reporting	Strategy monitoring	OECD
		Share of households with catastrophic health spending by consumption quintile		Age Income Geographical		Public reporting	Strategy monitoring	OECD
		Voluntary private health insurance coverage by type (complementary, supplementary, duplicate)		Age Income Geographical		Public reporting		OECD
		Percentage of population with a Medical Card		Age Geographical		Public reporting		HSE
		Percentage of population with a GP visit Card		Age Geographical		Public reporting		HSE
Availability	Availability	Practising doctors per 1,000 people		Geographical		Strategy monitoring	Public reporting	OECD
		Share of different categories of doctors (e.g. GP/medical consultant)		Geographical		Strategy monitoring	Public reporting	
		Practising nurses per 1,000 people		Geographical		Strategy monitoring	Public reporting	
		Ratio of practising nurses to practising doctors		Geographical		Strategy monitoring	Public reporting	
		Practising therapists (e.g. physiotherapists, dieticians, etc.) per 1,000 people		Geographical		Strategy monitoring	Public reporting	

2 Outputs | 4 Structures

Figure 7: Overview of indicator passports spreadsheet (preview)

3.4 Recommendations for further development of the Irish HIS

The list of recommendations, provided here, is a result of the three methodological steps described earlier and the experience of the research team, working on similar projects worldwide. The work on assessing the Irish HIS was conducted in parallel to other steps of the 18-month long process to develop, refine and populate a country-specific (but still internationally comparable) HSPA framework for the Irish health system. Recommendations, listed as "general" and "data source-related", are – in a way - acumens from this process.

General recommendations

The general list of recommendations is provided as a high-level overview of possible future steps in improving both governance and infrastructure components of the national HIS in Ireland. The list is by no means an exhaustive one and, as an example *scenario* below the list shows, is not trying propose these are *independent* actions, but rather very much interlinked ones.

- Actively involve, and network, all relevant stakeholders (including data custodians) in future work on developing HIS in Ireland.
- Tackle siloing of data through considering legal, operational, semantic and technical layers of interoperability.
- Fully implement unique patient identifier across the HIS.
- Link data.
- Map care pathways.
- Re-use data.
- Address data availability gaps (private sector, GPs, community care…).
- Standardise semantically and technically. Use internationally comparable standards.
- Disaggregate data (per relevant population breakdowns, including geography and socio-economic status).
- Ensure the legal basis for all HIS work.
- Balance data privacy and security protection with access to data.
- Consider a national HIS coordinating body.
- Use (implementation and research) projects (such as this one!) to assess, align and improve national HIS.

These general recommendations might seem obvious and/but they also might read like a story. Both is probably true. None of these recommendations cannot be understood, applied or tackled separately and are only signposts on a "complex journey to encourage the development and safe use of health data"[19]. Introducing, implementing and using a unique patient identifier requires having a legal basis to do so, involving data custodians and data sources to be linked and a national HIS body to spearhead and coordinate the process, taking care that this work is in line with policy objectives and safeguarding data privacy. In return, it allows for breaking down data silos, facilitates secondary use of (already collected) data, enables relevant disaggregation to be applied, links data from various sources and allows mapping and managing care pathways, individually and on a population level.

Data source-related recommendations

The "story" of general recommendations could be told in many different ways by using most common sources of health data: registries, administrative data, population and patient surveys and clinical records. Before briefly discussing each separately, it is important to re-emphasise the role of links *between* the data and people *behind* the data. No single data source has all the information needed to successfully follow patients through their health and health care events and measure change. In order to link the data, a common set of data standards and a clear unique identifier or set of identifiers are crucial. Also, the people, specifically the *data custodians, play a central role in balancing data privacy protection and use of data for monitoring and research as they are responsible for the collection, processing, analysis and dissemination of (personal) health data.*[20]

Registries in Ireland have long history and tradition, which often means a dedicated and well-established operational and research team, high level of attention to data quality and sustainable funding. Additionally, many registries are successful at internationally collaborating with relevant

[19] http://www.oecd.org/health/health-systems/Health-Data-Governance-Policy-Brief.pdf

[20] https://www.oecd.org/governance/strengthening-health-information-infrastructure-for-health-care-quality-governance-9789264193505-en.htm

networks of related registries. However, this also often means use of proprietary data standards, which hinder linkage capabilities with the rest of the data in the system. Active effort should be made to establish registries' metadata standards (potentially through a continuously updated national metadata repository; HIQA's Catalogue of National Data Collections[21] is an excellent start) and align coding practices.

Health data in Ireland, as is the case elsewhere, is often originally collected for different **administrative** purposes. Unsurprisingly, coverage and timeliness of this data is generally high, especially for the acute care services, but its usefulness for monitoring population-level health and/or individual patient-level outcomes remains limited. Coverage and re-use should be expanded and more should be done in aligning coding practices across providers and levels of service.

The use of **population and patient survey data** has been increasing in prevalence and importance and covers many of the services, as well as clusters and domains conceptualised in the proposed HSPA framework. Efforts should be focused on making some of the ad-hoc data collection efforts more regular and continuous. PROMs and PREMs data collection should be embedded into regular data collection and reporting. Alignment with (comparable) international reporting standards and initiatives should be supported. National oversight and coordination of the Irish PROMS/PREMS architecture seems advisable.

Despite recent localised rollouts of new standardised **(electronic) clinical records** in the acute care services in Ireland, this modality of capturing health data is still very limited in its linkage and re-use capabilities. Legal requirements to adopt electronic health records and adhere to standards should be prioritised, possibly through national coordination. The increasingly important role of software-solution vendors should also be carefully considered and managed. Standards on interoperability of various Electronic Health Record systems should be implemented broadly to enhance further digitalization of health care and facilitate a broader data exchange.

To achieve all the above-mentioned developments a national information strategy seems warranted. The information need that has become evident through the development of the HSPA framework can be an important incentive towards the further development and implementation of such a strategy. Recent plans and investments in strengthening the Irish health data infrastructure seem a great opportunity to realize these goals and ascertain the further implementation of the developed HSPA framework.

[21] https://www.hiqa.ie/reports-and-publications/health-information/catalogue-national-health-and-social-care-data

Appendix 1: agenda and list of participants of the kick-off meeting (18 September 2019)

European Commission Health System Performance Assessment Framework
Kick – Off Meeting

18 September 2019, Room 5.22, Department of Health, Miesian Plaza

10:00-11:00 Meeting with Project Management Team: DoH, EC, AMC.

- Setting the context: overview and update on Irish health system (reforms) – Alessandra Fantini
- Role of the AMC and requirements of an HSPA framework for Ireland - Greg Dempsey
- Logistics / Project Management - AMC and Robert Mooney

11:00-11:30 Coffee break

11:30-12:15 Presentation by AMC to Project Working Group

- Project overview and approach
- International best practices in health system performance assessment
- Function(s) of HSPA and reporting for Ireland

12:15-13:00 Discussion

- Overview of key areas by members of the Project Working Group
- Q&A

13:00-14:00 Lunch

14:00-16:00 Series of one-to-one meetings between AMC/EU and key personnel in the DoH and the HSE

16:00-16:30 Coffee / round up and close

Project working group members from the DoH and HSE

Name	**Unit/Organisation**
Aedín McNeill	Planning Specialist, HSE
Alan Cahill	Statistics & Analytics Unit, DoH
Alan Smith	Deputy Chief Medical Officer, DoH
Alessandra Fantini	Governance & Performance Unit, DoH
Brian Murphy	Strategic Planning and Transformation, HSE
Ciara Whelan	Press & Comms Unit, DoH
David Hayes	Sláintecare Programme Implementation Office, DoH
Deirdre Watters	Press & Comms Unit, DoH
Derek McCormack	BIU/National Services Acutes, HSE
Doireann O'Brien	Research Officer, HRB
Fionnuala Donohue	Specialist Public Health Medicine Health Intelligence Strategic Planning & Transformation, HSE
Grainne Cosgrove	National Quality Improvement Team, HSE
Greg Dempsey	Deputy Secretary Governance & Performance Unit, DoH
Greg Straton	Health & Wellbeing Unit, DoH
Kevin Colman	Finance & Evaluation Unit, DoH
Kevin Meaney	Sláintecare Programme Implementation Office, DoH
Laura Casey	Health Systems & Structures Unit, DoH
Martin Woods	Governance & Performance Unit, DoH
Paul Bolger	Scheduled & Unscheduled Care Unit, DoH
Robert Mooney	Press & Comms Unit, DoH
Robert Murphy	Senior Economic Research Officer, DoH
Rosarie Lynch	National Patient Safety Office, DoH
Sarah Glavey	Policy & Strategy Unit, DoH

European Commission

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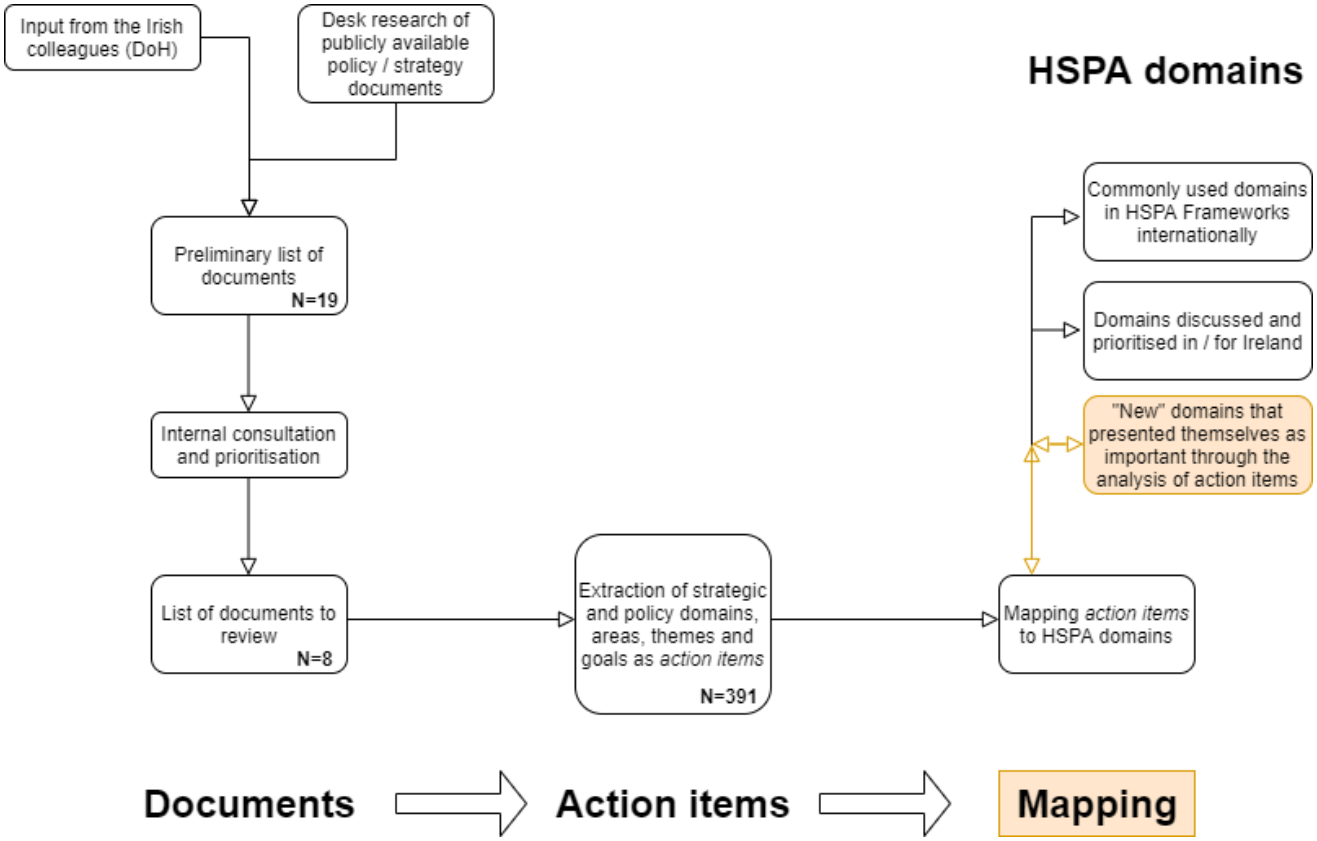
Project manager and senior expert ; Assistant Professor, Amsterdam UMC, location AMC, Department of Public Health; Vice-Director, Amsterdam Public Health research institute
Email: d.s.kringos@amsterdamumc.nl

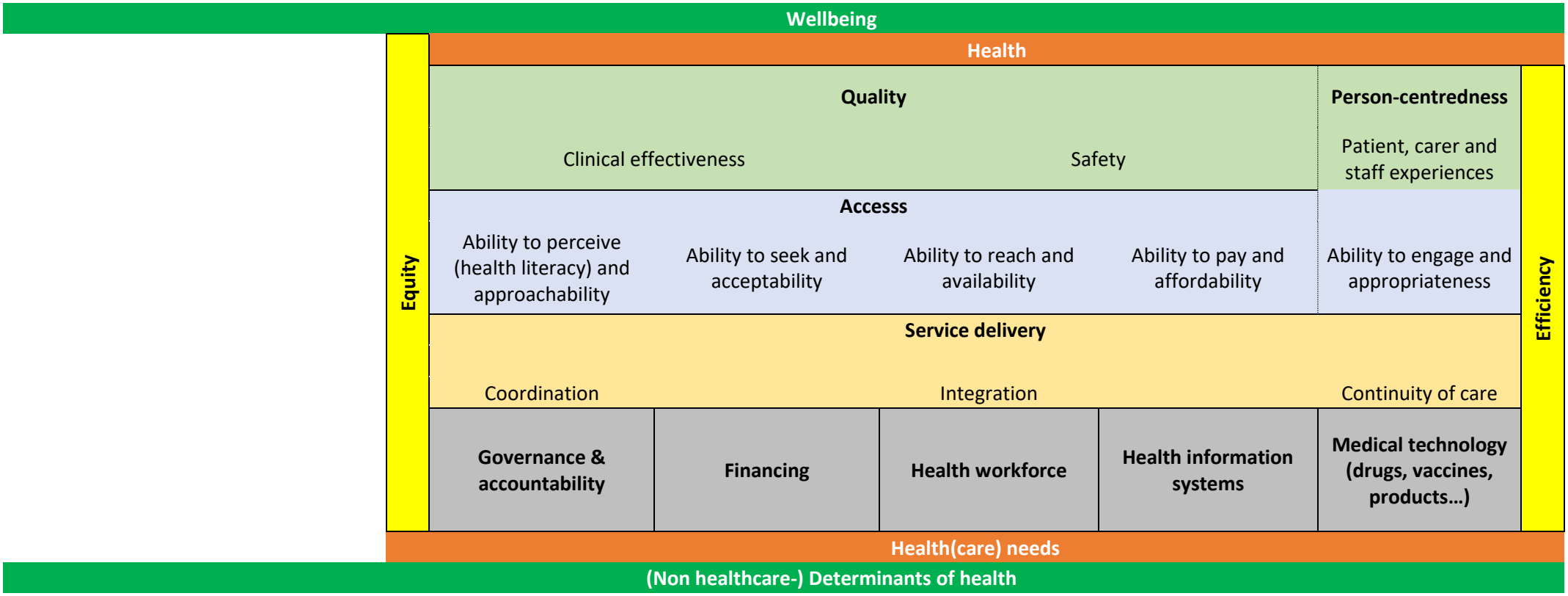
Appendix 2a: Diagram process of action items identification



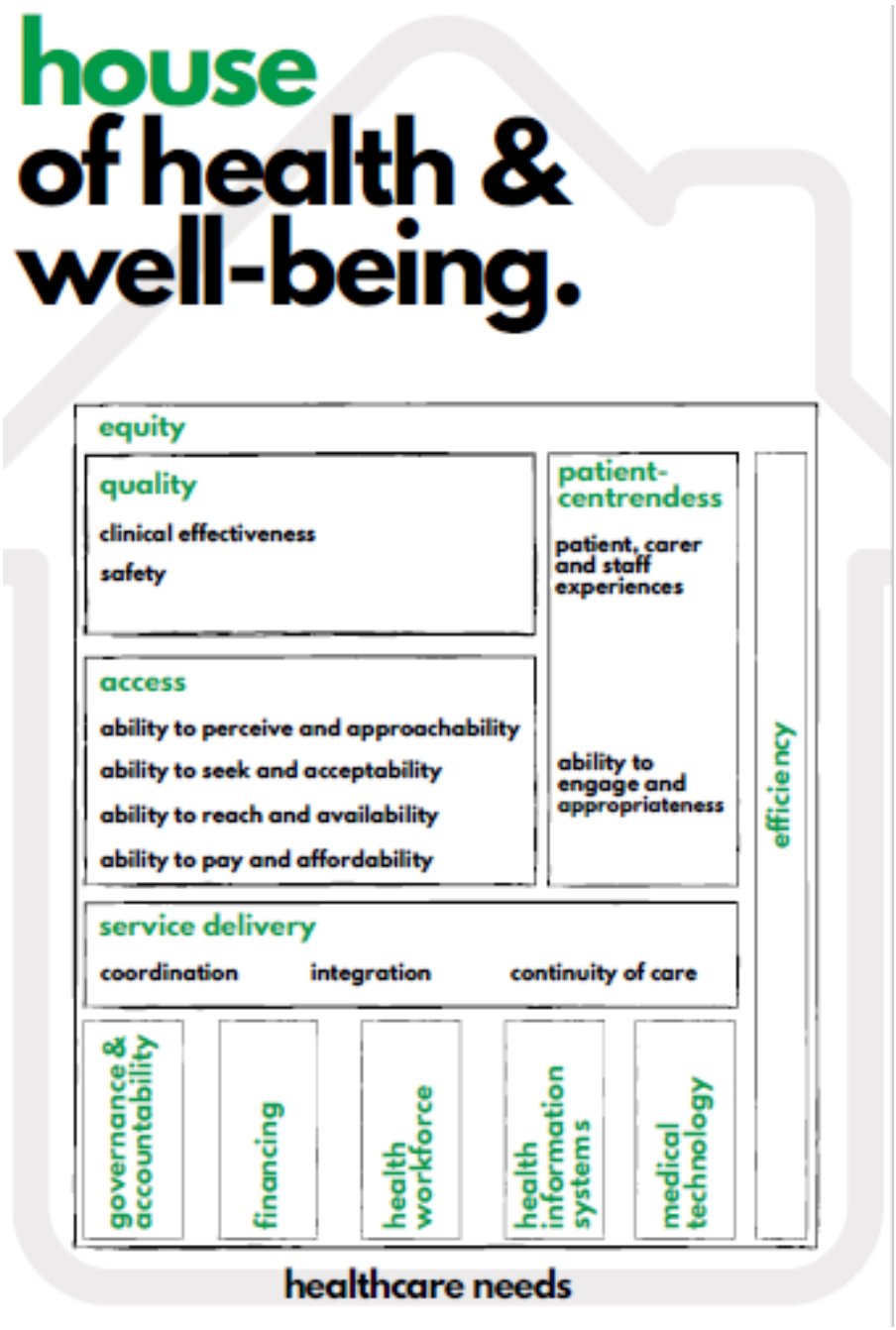
Appendix 2b: Policy document review, included documents

Organisation	Document	Year(s)
Department of Health (DoH)	Statement of Strategy	2016 - 2019
Department of Health (DoH)	Slaintecare Action Plan	2019
Department of Health (DoH)	Slaintecare Implementation Strategy	2018
Department of Health (DoH)	Slaintecare Report	2017
Department of Health (DoH)	Healthy Ireland - A Framework for Improved Health and Wellbeing and the Health Ireland Survey	2013 - 2025
Department of Health (DoH)	Positive Aging Indicators	Yearly starting in 2016
Health Service Executive (HSE)	Corporate Plan	2015 - 2017
Health Service Executive (HSE)	National Service Plan	2019

Appendix 3a: Basic draft display of the first draft version of the HSPA framework



Appendix 3b: Graphical display of the first draft version framework: house of health & well-being



Appendix 4: International Advisory Board: Agenda & participant list video conference

International Advisory Board Meeting on

Draft HSPA Framework for Ireland
Measuring and reporting on
the performance of Ireland's health system
14:00–15:30, Wednesday March 11th 2020
GoToMeeting

Moderators

Niek Klazinga, Dionne Kringos, Tessa Jansen, Oscar Brito Fernandes and Damir Ivankovic of the Academic Medical Centre of the University of Amsterdam (the Netherlands)

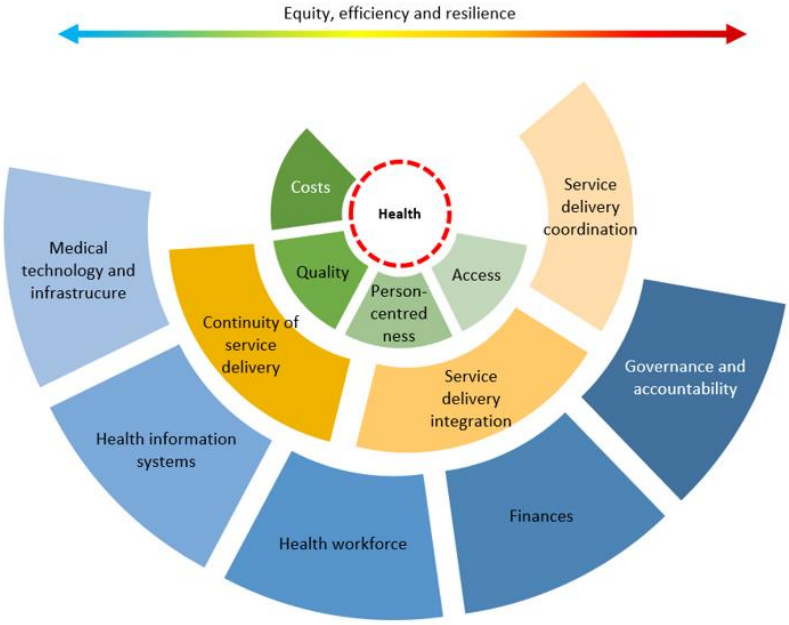
14:00–14.10	**Welcome**
	Moderators will introduce the aims and objectives of the project and the purpose of today's meeting.
14:10–14.15	**Context and challenges**
	Deputy Secretary Governance & Performance Unit from the Irish Department of Health, Greg Dempsey, presents the context of the project in the Sláintecare reform.
14:15–14:25	**Introductory round**
	Participants introduce themselves. There will be time to discuss and ask any questions you may have.
14:25-14:40	**Presentation of the draft HSPA Framework for Ireland**
	The research group presents: • The methods used to inform framework development • The rationale for selection of domains • The graphical display of the draft HSPA framework
14.40-15.15	**Round of input & feedback by Members of the Advisory Board**
	The members of the advisory board will be asked for their input on the contents and graphical display of the draft HSPA framework. **Meeting preparation**: Please prepare these inputs in advance to the meeting by reviewing the draft HSPA framework.
15.15-15.30	**Wrap-up and timeline**
	The meeting will be wrapped up by summarizing the key messages of the meeting and providing a brief overview of the time line of the project.

Title	Name	present	Organisation
	Federico Paoli	present	SRSS
Members of the advisory board			
Director Centre for Health Policy & Management, School Office - Medicine	Steve Thomas	present	Trinity College Dublin
Head of Integration Implementation, Scottish Government Health and Social Care Directorates	Christina Naismith	absent	Scottish Government
Deputy Director: Integration of Health and Social Care	Alison Taylor	absent	Scottish Government
Professor at the Political Science and Public Health Department and Director of Center for Health Economics and Policy (CHEP)	Karsten Vrangbaek	present	University of Copenhagen
Technical Officer, Health Systems Governance Programme, WHO Regional Office for Europe.	Gabriele Pastorino	present	World Health Organisation
Head of Centre for Health Care of the National Institute of Public Health	Tit Albreht	absent	National Institute of Public Health
Director for health systems and products	Andrzej Rys	absent	DG SANTE
National social and health insurance organisation- Head of HSPA	Pascal Meeus	present	National social and health insurance organisation, Belgium
Chair of the EU HSPA expert group	Kenneth Grech	present	EU HSPA expert group
Dean of Sant'Anna University	Sabina Nuti	apologized	Sant'Anna University, Latvia
Department of Health, Ireland			
Deputy Secretary Governance & Performance Unit	Greg Dempsey	present	Department of Health, Ireland
Performance Management Unit	Martin Woods	present	Department of Health, Ireland
Communications Unit	Robert Mooney	present	Department of Health, Ireland
Principal Officer Performance Management Unit	Alessandra Fantini	present	Department of Health, Ireland
Research group			
Professor of Social Medicine	Niek Klazinga	present	Amsterdam UMC/AMC, University of Amsterdam

Assistant professor Health Systems & Services Research	Dionne Kringos	present	Amsterdam UMC/AMC, University of Amsterdam
Post-doc Health Systems & Services Research	Tessa Jansen	present	Amsterdam UMC/AMC, University of Amsterdam
PhD Candidate HealthPros fellow	Damir Ivankovic	present	Amsterdam UMC/AMC, University of Amsterdam
PhD Candidate HealthPros fellow	Óscar Brito Fernandes	present	Amsterdam UMC/AMC, University of Amsterdam

Appendix 5: Amended HSPA Framework (version 2.0)

[please note that the circular modules can turn]



Outcome

Outputs

Processes

Structures

(Non-healthcare) Determinants of health

Modules of service delivery (based on HSE)

Appendix 6 Indicator mapping

Table 6a Gap analysis heat map currently used indicators and their fitness for purpose for HSPA goals, populated health services by domain

Fitness for purpose / Domains	DoH/HSE day-to-day monitoring	Strategic/Sláintecare progress	Public accountability
Access Subdomains • Ability to perceive (health literacy) and approachability • Ability to seek and acceptability • Ability to reach and availability (including timeliness) • Ability to pay and affordability (Access & person centeredness) • Ability to engage and appropriateness	• Ambulance • (Acute public) hospitals • Community health services • Palliative care • Primary care (e.g. physiotherapists) • Cancer care • Screening services • Insurance, medical card coverage Indictors mainly on timeliness (waiting lists) and affordability	• Ambulance • (Acute public) hospitals • Insurance, medical card coverage Indictors mainly on timeliness (waiting lists) and affordability	• Ambulance • (Acute public) hospitals • Health spending, insurance coverage, foregoing care Indictors mainly on timeliness (waiting lists) and affordability
	Other subdomains are not covered	Ability to engage & appropriateness related to patient experiences • Public hospitals, mainly acute Other subdomains are not covered	Ability to engage & appropriateness related to patient experiences • Public hospitals, mainly acute Other subdomains are not covered
Person centeredness Subdomains • Patient experience • Staff experiences • Carer experiences	• General Indicators on staff experience	• Public hospitals, mainly acute Indictors on patient experience	• Public hospitals, mainly acute • Hospitals Indictors on patient experience
	Other subdomains are not covered	Other subdomains are not covered	Other subdomains are not covered

Quality Subdomains • Safety • Clinical effectiveness	• Acute public hospitals • Maternity care • Community care (disability and elderly residential care) • Preventive care, screening services • Public health • Over arching	• Maternity care • Preventive care, screening services	• Hospitals • Cancer care • Long term care • Vaccination / preventive care • Pharmaceuticals • Maternity care • Primary care • Preventive care, screening services
Service delivery Subdomains • Integration • Coordination • Continuity		• Disability care 1 indicator on integration	
Governance & accountability	• Related to financing, all services and providers	• Related to financing, all services and providers	
Financing	• All health services Not related to outcomes	• All health services and financing schemes Not related to outcomes	• Hospitals • Long term care • Ambulatory providers • Curative and rehabilitive • By financing scheme
Health workforce	• General • Acute hospitals • Social care • Mental healthcare • Disability services • Long term care • Public health	• General • Acute hospitals	• Hospitals • Long term care • Informal care • General
Health information systems			
Medical technology and infrastructure		• Private hospitals 1 indicator: beds in private hospitals	• Hospitals • Long term care • Pharmacies • Rehabilitive care • Psychiatry
Efficiency		• Hospitals • Out-of-hours care • Maternity care • Pharmaceuticals	• (Acute public) hospitals
Equity	• Insurance • Medical card coverage	• Insurance • Medical card coverage	• Public health • General practice • Dentist • Preventive care • General, foregoing care, coverage • Long term care
Resilience			

Health & wellbeing Activity/ service use (in framework?)	• Acute public hospitals • Disability services • Elderly care (incl. home services) • Children's mental health services	• Public health • Psychiatry • Long-term care	• Public health • Hospitals • ED in public & private hospitals • Maternity care • Long term care • General practice (including out-of-hours service) • Screening services • Preventive care

Table 6b. Performance reporting and their fitness for purpose for HSPA goals

		Fitness for purpose HSPA	
Data sources/reporting	**DoH/HSE day-to-day monitoring**	**Strategic/Sláintecare progress**	**Public accountability**
HSE Performance Profile January - March Quarterly Report 2019	Current reporting is on activities and inputs. Some against targets. Link with outcomes and process targets are largely lacking, except for safety indicators.	No monitoring of reforms in relation to performance of services. On aggregate level, outcomes in terms of quality (safety) and access (waiting lists) could possibly be linked to reform targets.	In the current mode of reporting, the indicators are not fit for a public reporting purpose. Possible to aggregate some of the outcomes to publicly relevant indicators on Quality (safety) and Access (waiting times).
HSE National Service Plan 2019	Current reporting is on activities and inputs by service, sometimes in time trend and some against targets. Link with outcomes and process targets are largely lacking, except for safety indicators.	No monitoring of reforms in relation to performance of services. On aggregate level, outcomes in terms of quality (safety) and access (waiting lists) could possibly be linked to reform targets.	National scorecard intended for public? These are aggregated measures in terms of percentages, some of which compare with a target; no time trend, no link to policies, expenditure, or health outcomes.
HSE annual report and financial statements 2018	Current reporting is on activities and inputs by service, sometimes in time trend and some against targets. Link with outcomes and process targets are largely lacking, except for safety indicators.	Some linkage to policies, e.g. implementation rates of certain protocols, not linked to outcomes. On aggregate level, outcomes in terms of quality (safety) and access (waiting lists) could possibly be linked to reform targets.	In the current mode of reporting, the indicators appear not to be intended for a public reporting purpose. Possible to aggregate some of the outcomes to publicly relevant indicators on Quality (safety) and Access (waiting times).
National Patient Experience Survey 2018	not for day-to-day monitoring	Survey results will be used to inform quality improvement plans of the HSE.	The results are fit for public reporting on patient experiences for public acute hospitals only.
National Inpatient Experience Survey 2019	not for day-to-day monitoring	The HSE responded to the 2017 and 2018 survey results by producing detailed quality improvement plans at national, hospital group and hospital levels.	The results are fit for public reporting on patient experiences for public acute hospitals only.

Government of Ireland, Health in Ireland. Key trends. 2018	not for day-to-day monitoring	Not immediately related to policies or strategic goals, mainly visualised time trends of aggregated level indicators.	Aggregate level indicators are fit for public reporting.
Healthy Ireland Outcomes Framework	not for day-to-day monitoring	The Outcomes Framework aims to provide a structured approach to collect and report relevant and appropriate data which can be used to build awareness of these social determinants of health, to support assessment of the impact of policies on the agreed outcomes, and to monitor progress on the whole-of-government response needed to improve health and wellbeing.	Fit for public reporting
Healthy Ireland Survey 2018	not for day-to-day monitoring	Survey data play a number of roles, including supporting the Department in ongoing engagement and awareness-raising activities in the various policy areas, as well as supporting better understanding of policy priorities	Fit for public reporting
Central Statistics Office, System of Health Accounts 2017	not for day-to-day monitoring	Aggregate level indicators time trend, possibly useable for strategic purpose	Fit for public reporting
Central Statistics Office, The wellbeing of the nation, Societal wellbeing in Ireland, 2018	not for day-to-day monitoring	In broader perspective of the wellbeing on multiple policy areas of which health is one.	Fit for public reporting
Central Statistics Office, Irish Health Survey, 2015	not for day-to-day monitoring	Survey health outcomes may inform policies	Fit for public reporting
Central Statistics Office, Health status and health service utilisation, Quarterly National Household Survey, 2010	not for day-to-day monitoring	trend in outcomes linked to policies possibly useable for strategic purpose	Fit for public reporting
OECD Health at a Glance 2019	not for day-to-day monitoring	trend in outcomes linked to policies possibly useable for strategic purpose	Fit for public reporting
OECD.stat 2018	not for day-to-day monitoring	trend in outcomes linked to policies possibly useable for strategic purpose	Fit for public reporting
HIPE Activity in Acute public hospitals 2018, Hospital In-Patient Enquiry (HIPE) data dictionary 2019	Possibly useable for day-to-day monitoring as data collection is ongoing.	Used for yearly reporting of discharges (by all kinds of characteristics, patient and Diagnosis-Related-Groups (DRGs). For narrow scope on	Not fit for public reporting.

		few domains, strategic use is possible.	
HSE Irish Maternity Indicator System (2018)	day-to-day monitoring	Provides national comparisons across all maternity units, allowing hospitals to benchmark themselves against national average rates and over time.	Not fit for public reporting.

Table 6c. Proposed indicators from panels by domain

Domains \ Panel	Internal stakeholders	External stakeholders	Citizens
Access (timeliness, financial risk protection)	• GP/medical consultant coverage, compared with EU level • Length of time to access a service • % of people accessing services within x timeframe • % on waiting list x timeframe (according to clinical guideline) • Point of access to health service (e.g. hospital, nursing home) • Range of services available across functions of the system (e.g. prevention, intervention) • % accessing services within specified age bands (relevant to services needs across life cycle) • Proportion of out-of-pocket expenses relative to income • Distance/time to travel to service • ED avoidance • Conversion rates • Access to appropriate services • Delayed discharges • Mapping number of gaps in service provision	• Patient access and ownership of their medical record • Share of eligible population taking up service (e.g. personal care, health screening) • Location should not dictate to access to services or ability to get timely intervention in an emergency situation • Wait times in the context of clinical guidelines • Challenge of balancing access – quality delivery • Proportion/number of people waiting less than four hours for admission or discharge from an ED • Number of people waiting less than three months or primary care team assessment or care, e.g. PHNs, allied health professionals • Waiting times outpatient, inpatient, day case • Conduct of medicine use reviews • Number of patients under age 65 in nursing homes • Number/proportion if people entitled to primary care & social care at no cost (currently with GMS, but this should change under Sláintecare) • Proportion of population registered with a GP/primary care team • Level of defecits in organisational funding • Number and type of vacant posts by discipline, eg. Psychologists, social workers	• Matching availability of support [care] and expectations • Time to access of treatment in public and private • Distance to care • Possibility to access physicians calendar online and online appointment • Possibility of waiting in virtual cue for A&E dept. • Comparison waiting times public and private providers • Difference in waiting times between private insurance holders and those without • Number of deceased while on waiting list for treatment • Cut off drug scheme • Bed availability per hospital/area • Access and speedier [timeliness] in proportion to level of urgency of medical condition • Percentage of private insurance holders using public services • Vaccine take ups • Availability of information on location of/how to get access to primary care services • Access to health care for asylum seekers • Local/rural access (by demographic groups) • Number and location of primary care centres and the services they provide

		• Length and volume of waiting list by service and area, e.g. child and adolescent mental health assessment • Number of primary carers at home, age 60+/70+/80+ • Children on waiting lists for early services, time and number • Number of people waiting for multidisciplinary support, SLT, OT, psychiatry, behavioural support • Number of people waiting for good quality person centred plan • Number of people waiting for residential support, need waiting list + times • Unmet needs based on registers of total need (mandatory recording) • Regional supply corrected for age and gender mix/ population • Unmet need for children's therapy services (number of waiting lists)	• Availability of exercise and nutrition information to the general public • Home care support availability per county • GP home visits (emergency =, elderly patients) • Number of screening available • Access to all services, including GPs, consultants, medicines (i.e. timely access at no or affordable costs) • Same day GP appointments • Follow-up time frame on average • Cost for the same medicine in Ireland compared to EU countries
Person centeredness (patient, staff & carer experiences)	• Death with dignity (palliative care) • Stress of staff • Attendance of staff • Support provided (e.g. debriefing) • % of people who had their needs assessed and received follow-up service • Smiley face experience rating, for patient, carer, staff • % of staff who have appraisals (annual) • Staff feedback results • Tracking of ambulatory care sensitive conditions (e.g. COPD, heart failure), management in community/hospitalisation rates → acute bed days used • Delayed discharges • Qualitative views of both patients and staff • Staff retention • (Staff) self-reported satisfaction • Measures of stress associated with services • Opportunities for users to provide feedback • Carer experience of the multi-disciplinary care team	• Clear information accessible • Biopsychosocial perspective taken • Clear mechanisms for achieving consent • Care planning is undertaken & recorded • % of people in residential disability services with choice who they live with • % of people in residential disability services who have had at least 1 engagement with non-paid / staff person • Well-treated • Satisfied with experience • Other needs/requirements addressed • Rejected • Heard/listened to • Appropriately supported • Did not have to wait • Quality of life • Population surveys • Number of people supported to live in home setting of their choosing (i.e. family home/supported independent living/community group home). Disability indicators (from national framework for outcomes measurement), outcomes get from www.nda.ie • Number of people exercising real choice (+ extent to which choice drives service provision), i.e. number of people who chose to live with people they are living with, number of people living in	• Social care disability and quality of life • Involvement of patients in their own treatment plans • Patient choice for treatment after given all details of the purpose of available treatments • Information provided to be user friendly and encourage feedback from public • Doctors/consultants give adequate time to all patients • Use of understandable information by doctors • Information where to make complaint • Availability of translators for non-English speaking foreigners • Availability of reliable online information for patients about their disease • Education for self-care of patients • Time spent with the patient during examinations • Mutual respect between patient and healthcare professionals • Nurses and doctors training about ethical career • GP listening to patients

		home of their choice. Disability indicators. • Participating in social + civic life. Measures social & civic roles + extent to which this is a focus in service provision. Disability indicators • Meaningful personal relationships. Number of people who have 5+ unpaid connections in their lives. Extent to which this drives focus of supports provided. Disability indicators • Opportunities for personal development. Number of people with opportunities etc. PTO. • Disability indicators • Job or valued social roles. Extent in which this is a focus of service provision. Number of people in paid employment/volunteer roles. Disability indicators • Enjoying good quality of life. Disability indicators • Achieving best health access to screening for people with additional needs. Access to GP. Disability indicators • Safe secure + free from abuse. Disability indicators	
Quality (clinical effectiveness & safety)	• Infection control • Falls • Incident reporting • Never events • Rate of appropriate generic prescribing • Appropriately trained and managed service providers, i.e. the right people providing the right care • Readmission rates • Hand hygiene rates • Serious incident reporting, ICU, beds, staffing • Number of evidence-based advancements in healthcare • Mortality rates • Specialist staff in specialist roles • Rate of falls leasing to trauma treatment • % of antibiotic resistant treatment • % of antibiotic resistant infections • Rate of ICU/surgical site infections • % of post-operation/hospitalisation VTE incidents • Clinical handover via SBAR • Number of warning systems accurately escalated • Number of 'rescue' treatments, e.g. naloxone, flumazenil	• Process indicators with evidence based link to outcomes, e.g. % of cervical cancer detected at early stages • Proportion of consumers with positive experiences of the service • Proportion of consumers who say they feel treated with dignity & respect • Number of complaints received about a service • Proportion of consumers who feel involved in their care • Cost of quality • Regulator's assessment of performance, e.g. inspection outcomes • Acute care metrics: readmission, length of stay, in hospital mortality, survival, complication rate • Review processes & demonstrate learnings • Right practitioner in right place at right time • Maintain regulatory framework: is it robust, is it policed? • Number of adverse events, tracked over time to assess impact of reviews and learning from events	• Number of readmissions or repeat cases • Outcomes of care at each stage of illness • Number of people who are in the system with preventable illness • Consultant service quality • Morbidity rates based on how many hours doctors are working + their workloads (e.g. people more likely to have bad outcomes during the weekend) • Outcomes of care for each area • Number of cases of super bugs in hospitals • Appropriateness of medicines given • Number of people who are long-term hospital patients as a result of no discharge responsibility • Nosocomial infections in hospital • Number of hospital and GP inspections occur and report on those findings • Medication errors • Number of people coming back for the same disease

	• Medicines, HCAI • Pressure ulcers • Prescribing rates for high-risk drugs • Prescribing rates for night sedation drugs • Rate of medication doses not correctly administered • Incidence adverse events • International benchmark infections is care • Rate if serious complications, e.g. major haemorrhage • Preventable injuries (falls, medication, wrong site) • Standardised mortality rate/hospital standardised mortality rate • Near miss • Never events • Readmissions • Safe staffing framework • Survived cancer/cardiovascular • Length of stay • Patient experience • Research impact & efficient translation into practice • Preventable mortality from COPD/Diabetes, etc. • Assessment of practice against evidence • PROMS post physio treatment • PROMS 6 month post-operation for hip/knee replacements • Patient rating of hospital food quality	• Number of serious reportable events • Mandatory reporting in forthcoming patient safety bill • Adverse outcomes (incidents, track, learnings) • Protocols followed • System of controls	
Service delivery (coordination, integration, continuity)	• Number of professional medical hours saved by better integration of services and sharing of data • Number of patients whose care complies with approved guidelines for given condition • % of people who accessed a service following referral by a GP, public health nurse, or other healthcare professional • Range of services involved in delivery of care plan • Number of handovers / appointments • Patient record coverage, end to end	• Transitional care acute to primary transfer funds • Collaboration across health + community care, professional + service mix • Number/proportion of people with a certain chronic disease whose main care is self-management with support of specialist nurse or AHPs • Proportion of patients who have care/recovery plan • Inter-agency protocols in place • Number/ proportion of people with certain chronic diseases who remain home and receive care in the community (prevent hospitalisations, reduce ALOS, improve wellbeing • Felt cared for, was asked about their needs, experienced integrated care • How many people feel that they are listened to, that they're involved in their own care	Constant monitoring of medication by GPs • If referred by a GP, the information does come back to the GP • No breaks in the information system • Follow-up information after surgery • Continuity of information between healthcare providers • Follow-up call on how are you • GPs provide services like X-ray to relieve A&E • Offered alternative treatment by GP (e.g. mindfulness instead of antibiotics) • Follow-up care after hospital discharge • Delayed hospital discharge, while on home-care waiting list

			• Transparent information about why and when you will be treated • Holistic approach to health, not just the symptoms the patient presents • GP turnover in practice/regular GP • Repeat prescription • Appropriate discharge arrangement in place • Communication (handover) between specialist and GP • Patient empowerment • Involvement of patients in decisions
Governance & accountability			
Financing			
Health workforce	• Staff retention • Staff migration	• Retention • Staff resilience, retention • Gave necessary time to person • Was able to respond appropriately • Attended in a timely manner • Had necessary resources & time • Evidence-based supports in place (debriefing clinical supervision, positive psychology, resilience), training • Education program for professional suitable to needs • Professional standards & requirements upheld • Cross profession groups is essential • Skills transfer	• GPs/specialists available per county (GP to patient ratio) • Number of nurses/doctors breaking down from the stress of their profession
Health information systems			
Medical technology and infrastructure			• Implementation [rate] of new technologies
Efficiency	• Activity based funding • Safe staffing • Length of stay • Use of generic drugs • Day case rates • Income product units • Time to treatment → from first visit to treatment • Budget control • Value for money/return on investment • Waiting times for outpatient appointments • Outcome per unit of input for specified comparable cohorts of patients • % of budget linked to activity based funding • Unit cost coverage • Agency/overtime expenditure	• Task shifting • Generic prescribing • Costs falling on patients to access care • Service use cost offset • Unit cost of providing care, not just for acute services • Outcomes per investment • QALY/DALY with attendant limitations • Implementation of cost-effective interventions across continuum of care, e.g. highly cost-effective care in terms of QoL such as continence care, some surgical alternatives versus expensive medicines, delivery, limited benefit • Level of automation in clinical services	• Use of generic medicines • Cost of procedures in different counties • Annual cost per provider/service • Average cost of prescription by county • Local clinics could do more to more to stop people going into hospital or have more nurses who could do some of the work [substitution] • Doctors are very busy and prioritise untreated patients over discharging patients who are already treated [admission/discharge rate, ALOS]

	• Oversight/governance of contacts/agreements (GP, nursing, etc.) • Volume of activity/visits provided • Number of ANPs/AHPs (analytic network/hierarchy process) • Length of stay (currently monitored at very high level, should be more targeted, i.e. certain cohorts of patients) • Time on stroke ward, time to surgery, time to ICU • Integration of supports • Procedures in private care • Proportion of long-stay patients, e.g. longer than a year • Length of patient in-stay • Hospital bed days used by different categories of illness, age, etc. • Re-admission numbers • Level of investment in reform • Number of people in care • Number of times required to provide duplicate diagnosis • Number of locations required to go to • Appointments attended	• Societal engagement/contribution in co-production of positive health outcomes • Frontline versus 'overhead' cost ratio, benchmark against international cost	
Equity	• Geographic equity • Equity adjustment for other measures • Access stratified by deprivation/socioeconomic position (difficulty here is accounting for quantity of services delivered in private sector) • Outcome measures stratified by measure of socioeconomic status/deprivation: mortality, disability adjusted life years, etc.	• % of people treated in public hospitals who are public patients • Change of accessing primary care services • Process indicators as currently used in the HSE service plan • Life expectancy • Standardised mortality rates or equivalent	• Waiting times between public and private health system • Out-of-pocket costs for GP consultation [proportion of household income] • Health insurance coverage • Equal access, based on urgency of the condition for all, irrespective of income/age/gender • Equal access for al counties, same services in all areas • Private or public healthcare system shouldn't matter, the treatment on offer should be the exact same • Everyone should have access to healthcare regardless of income, age, gender, race, insurance/noninsurance • Waiting times equal for everyone • Average GP cost compared by county • Comparison services provided by private and public • Treatment/prescription referrals by gender • Rare diseases – minorities are an unheard population with uncommon health

			issues [prevalence and treatment options for rare diseases]
Resilience Health & wellbeing	• Life expectancy (subgroups: m/f, ethnic minorities, social margins) • Morbidity (subgroups: m/f, ethnic minorities, social margins) • Age of patients with a chronic disease • Obesity levels in adults and children • Self-reported self-assessment (via census?) • Incidence chronic disease by geographic location + age of onset disease • % of people with a non-communicable disease • Healthy life years • Levels of disability • Vaccination rates • Smoking levels • Excessive use of alcohol • Screening • Physical activity • Pre-mature deaths, e.g. drug poisoning deaths • Improved health & wellbeing • Management of / or reduced disease burden (micro & meso levels) • Health literacy • Benefit of health & wellbeing prevention measures, primary prevention, secondary prevention • Rates of mental health conditions • Self-reported good health • Decline in diseases • National happiness index	• Mortality rates of people with disability compared with people without • % of people with disability reporting very poor health compared to people without disabilities • Rates of health screening in people with disabilities compared with people without disabilities • Educate citizens in health & wellbeing from early in life, before they become a casualty of life styles • Population surveys • Life expectancy • Survival per indication • Experience surveys • Distress • Quality of life • PERMA: positive, emotion, engagement, relationships, meaning, achievement • Symptom burden • Functioning • A measure of population health, with an overall goal of assessing the systems efficacy (track progress over time and against comparable jurisdictions) • More metrics based on ICF rather than ICDC • Outcome measures • Risk and protective factors, which may be at individual, community or structural level	• Life expectancy • Information on healthy eating and lifestyles for our children • Availability of preventive care • Mental health, prevalence of illness • Alcohol abuse • Availability of information on quitting smoking and getting help • Life expectancy related to health screening • Alcoholism compared with other countries • Focus area of types of conditions/behaviours driving health • Average length of time people are sick before death • How much physical activity and obesity education anyone receives • Acute coronary syndromes • Wellbeing of people working in healthcare (Ireland vs EU) • Obesity • Wellbeing over 65 years (Ireland vs EU) • Knowledge about research and cures for cancer • Mental health • Smoking • General health as we get older

In a note of the Sláintecare Evaluation Framework, a number of indicators are suggested to include in the HSPA framework, grouped according to a number of domains. These domains align with domains included in the tentative HSPA framework.

a. Access/Waiting Times

- % Waiting over 12 weeks for IPDC procedure (waiting time guarantee in original report or else use existing indicator of <15 months)
- % Waiting over 10 weeks for OP appointment (as above <52 weeks)
- % Waiting over 10 days for GI scope (as above <13 weeks)
- % Emergency Department attendees admitted within 4 hours

b. Community Access

- No. of Home Support Hours provided
- % on waiting list for various services (Physio, ophthalmology, OT etc)

c. Efficiency and Integrated Care

- Average length of stay
- Number of Delayed Discharges
- Number of bed days lost through delayed discharges
- Bed days used by selected ambulatory care sensitive conditions (COPD, Heart Failure, Asthma, Diabetes)
- Hospitalisation rates for COPD, Heart Failure, Asthma, Diabetes

d. Capacity

- Number of beds open – open bed report
- Tracking of staffing resources
- Community beds
- Diagnostic facilities

e. Health and Wellbeing

- Healthy life years
- Obesity levels
- Physical activity levels
- Self-perceived health
- Screening rate for breast/cervical
- Immunisation and vaccine rates (measles, mumps, rubella/meningitis)

f. Patient Safety and Quality

- Some high-level stats from National Patient Experience Survey - overall satisfaction with healthcare in Ireland

Table. Examples of indicators from literature and existing HSPA frameworks according to fitness for purpose for HSPA goals

Fitness for purpose / Domains	Subdomain	DoH/HSE day-to-day monitoring	Strategic/Sláintecare progress	Public accountability
Access	Ability to perceive (health literacy) and approachability	•	•	• Access to services by type of service compared to need; • Self-reported difficulty obtaining health information or advice
	Ability to seek and acceptability	•	•	•
	Ability to reach and availability (including timeliness)	• Percentage of GP practices open during daily core hours or within 1 hour of daily core hours • Percentage of GP practices offering daily appointments between 17:00 and 18:30 hours	• Selected potentially avoidable GP-type presentations to emergency departments	•

	Ability to pay and affordability	•	• Affordability of primary healthcare services (needs specification);	• People deferring access to selected health care due to financial barriers
Access/person centeredness	Ability to engage and appropriateness	•	•	• People reporting they have received the right information or advice when they needed it; • People reporting they have received care and support through their language of choice; • People reporting they were treated with dignity and respect
Person centeredness	Patient experiences	•	• People reporting they chose to live in a residential care home • The rate of delayed transfers of care for social care reasons per 1,000 population aged 75 or over; • The percentage of adults who completed a period of reablement, a.) And have a reduced package of care and support 6 months later, b.) And have no package of care and support 6 months later; • The average length of time older people (aged 65 or over) are supported in residential care homes; • Average age of adults entering residential care homes; • The percentage of adults who have received support from the information, advice and assistance service and have not contacted the service again during the year; • The percentage of assessments completed for children within statutory timescales; • The percentage of children supported to remain living within their family; • The percentage of looked after children returned home from care during the year; • The percentage of re-registrations of children on local authority Child Protection Registers (CPR);	•

			• The average length of time for all children who were on the CPR during the year; • Percentage of children achieving the core subject indicator at key stage 2 and 4; • The percentage of children seen by a registered dentist within 3 months of becoming looked after; • The percentage of looked after children registered with a GP; • The percentage of looked after children who have experienced (1) or more changes of school, during a period or periods of being looked after, which were not due to transitional arrangements, in the year to 31 March; • The percentage of looked after children on 31 March who have had three or more placements during the year; • The percentage of adult protection enquiries completed within statutory timescales;	
	Carer experiences	•	• Carers reporting they felt involved in designing the care and support plan for the person that they care for	•
	Staff experiences	•	•	•
Quality	Clinical effectiveness	•	• Unplanned hospital readmission rates for patients discharged following management of select conditions; • Number of hospital patient days used by those eligible and waiting for residential aged care	•
	Safety	•	•	•
Service delivery	Coordination	•	• Percentage of adults supported at home who agree that their health and care services seemed to be well coordinated • Carers reporting they felt involved in designing the care and support plan for the person that they care for	•
	Integration	•	• Percentage of time in the lat six months of life	•

			spent at home or in a community setting • Percentage of adults with intensive needs receiving care at home	
	Continuity of care	•	• Proportion of diabetes patients with a GP annual cycle of care; • Rate of community follow up within the first seven days of discharge from a psychiatric admission • Proportion offered rehabilitation following discharge from hospital • People with Chronic Obstructive Pulmonary Disease and Medical Research Council (MRC) Dyspnoea Scale ≥3 referred to a pulmonary rehabilitation programme • Percentage of referrals to specific services/therapies, which indicated recovery/improvement/deterioration after completing treatment by the specific service •	•
	Overarching	•	•	•
Governance & accountability		• Proportion of residential aged care services that are three year reaccredited;	•	•
Financing		• Financial performance against activity funded budget (annual operating result);	•	•
Health workforce		•	•	•
Health information systems		•	•	•
Medical technology and infrastructure		•	• Residential and community aged care places per 1,000 population aged 70+ years;	•
Efficiency		• Outpatients with low-back pain who had an MRI without trying recommended treatments first, such as physical therapy • Outpatient CT scans of the abdomen that were “combination” (double) scars • Outpatient CT scans of the chest that were “combination” (double) scars	• Selected potentially avoidable GP-type presentations to emergency departments	•

	• Outpatients who got cardiac imaging stress tests before low-risk outpatient surgery • Outpatients with brain CT scans who got a sinus CT scan at the same time			
Equity	•		•	•
Resilience	•		• Distribution of health system assets and weaknesses • Health system utilisation trends • Presence of active epidemiologic surveillance system • Scope of health services available in primary care • Quality of care for sentinel conditions in basic package • Financing of healthcare: adequacy of government health expenditure and financial protection • Memorandums of understanding with non-state providers • Database of service delivery alternatives for affected and unaffected populations • Collaboration agreements with regional and global actors • Existence of a national emergency coordination system and leaders • Frequency of joint planning sessions and drills • Process for development of a one health strategy • Index of Ministry of Health and government responsiveness to community need • Population trust in health system • Platforms for dialogue with community leaders • Agreement on roles and referrals protocols for facilities • Formal provisions to reallocate funds in emergency • Management capacity of district or local health teams	•

		• Agreements on delegation of authority and funding in crises • Mechanisms for, and capacity to, track progress and evaluate health system performance in crisis and in times of calm	
Health & wellbeing	•	•	•

Appendix 7: Agenda and Participant List of the 2nd International Advisory Board Consultation on HSPA Framework and Indicators for Ireland Meeting – 26 October 2020

14:45–16:00 CET (13.45-15.00 Dublin time), Monday October 26th 2020
Zoom link and password can be found in your Outlook Calendar

Moderators
Niek Klazinga, Dionne Kringos, Erica Barbazza, Damir Ivankovic and Oscar Brito Fernandes of the Amsterdam University Medical Centre of the University of Amsterdam (the Netherlands)

14:45–14.55	**Welcome**
	Moderators will introduce the aims and objectives of the project and the purpose of today's meeting.
14:55–15.00	**Context and challenges**
	Deputy Secretary Governance & Performance Unit from the Irish Department of Health, Greg Dempsey, presents an update on the context of the project in the Sláintecare reform and COVID-19 pandemic.
15:00–15:10	**Introductory round**
	Participants introduce themselves. There will be time to discuss and ask any questions you may have.
15:10-15:25	**Presentation on developing a health system performance assessment framework in Ireland**
	The research group presents an update on: • Progress by project phases: • Health information system assessment • Developing the HSPA framework • Process to select indicators
15.25-15.50	**Round of input & feedback by Members of the Advisory Board**
	The members of the advisory board will be asked for their input on the findings of the Health information system assessment, the current version of the HSPA framework, and the process and selection of domains. Any comments on the current long list (see excel file) of indicators are welcome. **Meeting preparation**: Please prepare these inputs in advance to the meeting by reviewing the slide deck. You may take a glance at the excel file that is a long list of indicators resulting from a provisional mapping. It forms the input for further reflection, prioritization and refinement through a series of workshops with stakeholders.
15.50-16.00	**Wrap-up**
	The meeting will be wrapped up by summarizing the key messages of the meeting and providing a brief overview of the time line of the project.

List of participants

Amsterdam team (Dionne, Niek, Damir, Erica, Óscar)
Robert Mooney
Federico
Steve Thomas
Tim Hynes
Filip Domanski
Pascal Meeus
Alessandra Fantini
Emma Crowley
Greg Dempsey
Andrzej Rys
Gabriele Pastorino
Kenneth Grech
Martin Woods
Sabina Nuti
Karsten Vrangbæk
Tit Albreht

Appendix 8: Preparatory brief:
Stakeholder consultation on key performance indicators & data landscape for Health System Performance measurement in Ireland

August 12th 2020

Aim of stakeholder consultation

Consult the views and expertise with regards to performance measurement of the Irish health system's contributors and beneficiaries to identify key performance indicators and the current and required data landscape, by means of group interviews.

Recall background of the project 'Performance Accountability for the Irish Health System'

The Department of Health of Ireland requested the support of the European Commission's Structural Reform Support Service (SRSS) for the development of an Health System Performance Assessment framework. The SRSS entails a programme of the European Commission that provides funding and expertise to support countries undergoing reforms. This request was approved and in September 2019 the project 'Performance accountability for the Irish health system' was launched, led by a research team of the Academic Medical Centre of the University of Amsterdam.

The project's aims are to:

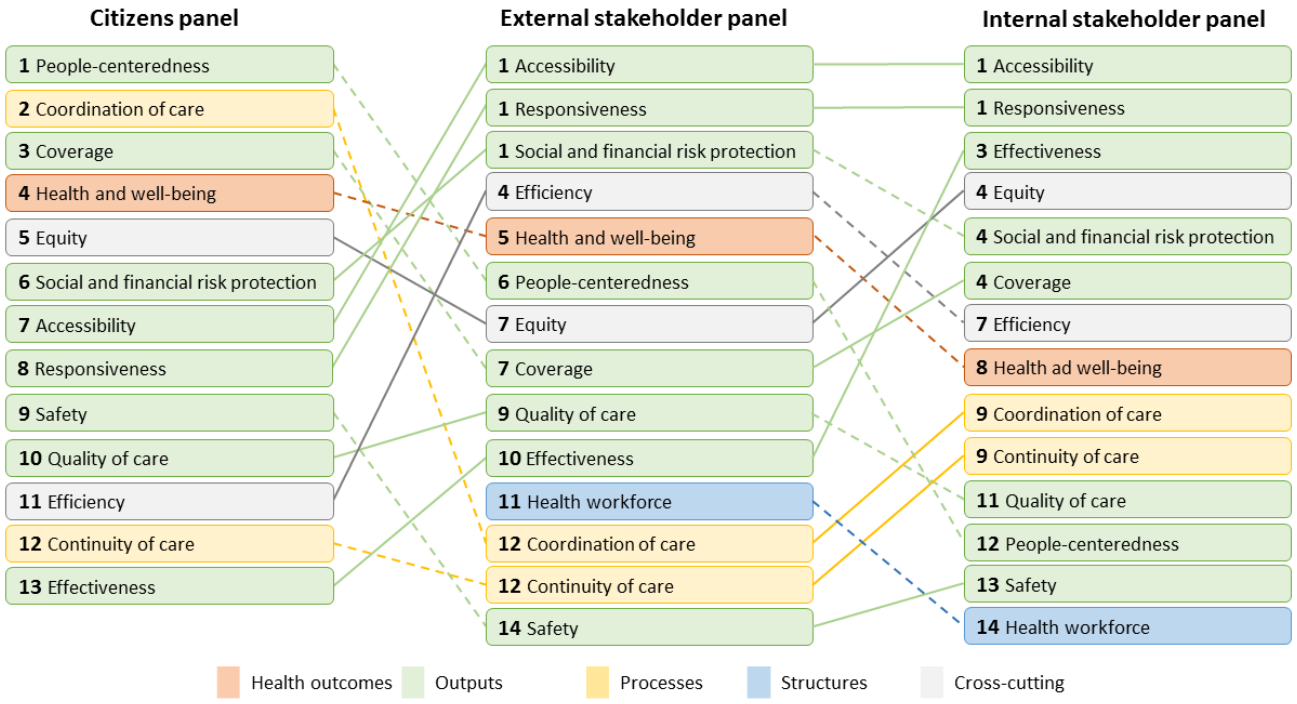
- **provide a framework** for health system performance assessment with a method for the collection, collation, and analysis of robust health outcomes data around key performance indicators in the Irish health system;
- **provide modules** within the health system performance assessment framework with measurable and quantifiable outcomes-based indicators that are linked to relevant health policies and strategies, enabling the integration of policy and reforms into a broader view of performance;
- **enhance the capacity** of the Irish authorities to produce the first HSPA report.

Stakeholder engagement during the project phases

Throughout the project, stakeholders are engaged in all development phases to ensure solid grounding of performance measurement within the health system. The first phase encompassed stakeholder panels, to prioritize the focus of the HSPA framework. In the current phases II and III, that are conducted in parallel, stakeholders are consulted by means of group interviews to inform population of the HSPA framework with indicators and identify availability and fitness for use of data sources.

Phase I: Developing the focus of the HSPA framework and performance reporting	Kick-off meeting Literature review Citizen panel Internal stakeholder panel **External stakeholder panel (31 January 2020)** Policy document review
Phase II: Assessment of the Health Information System in Ireland	Desk research **Consultation round through interviews**
Phase III: Identify domains and indicators based on best practices & priorities	Literature & policy document review **Consultation round through interviews**
Phase IV: Definition of subsets of indicators for assessing specific policies	Literature & policy document review **Consultation round through interviews**
Phase V: Action plan and pilot presentation of sample indicators	Synthesis of the outputs from previous phases

Output phase I panels



The first phase encompassed three panels, that were consulted on the priorities of health system performance in Ireland. These panels yielded similar domains, that were prioritised somewhat differently across the panels. The 'external stakeholder' column shows the outputs from the external stakeholder panel in which medical councils, professional associations, academia and other special interest groups participated.

HSPA framework

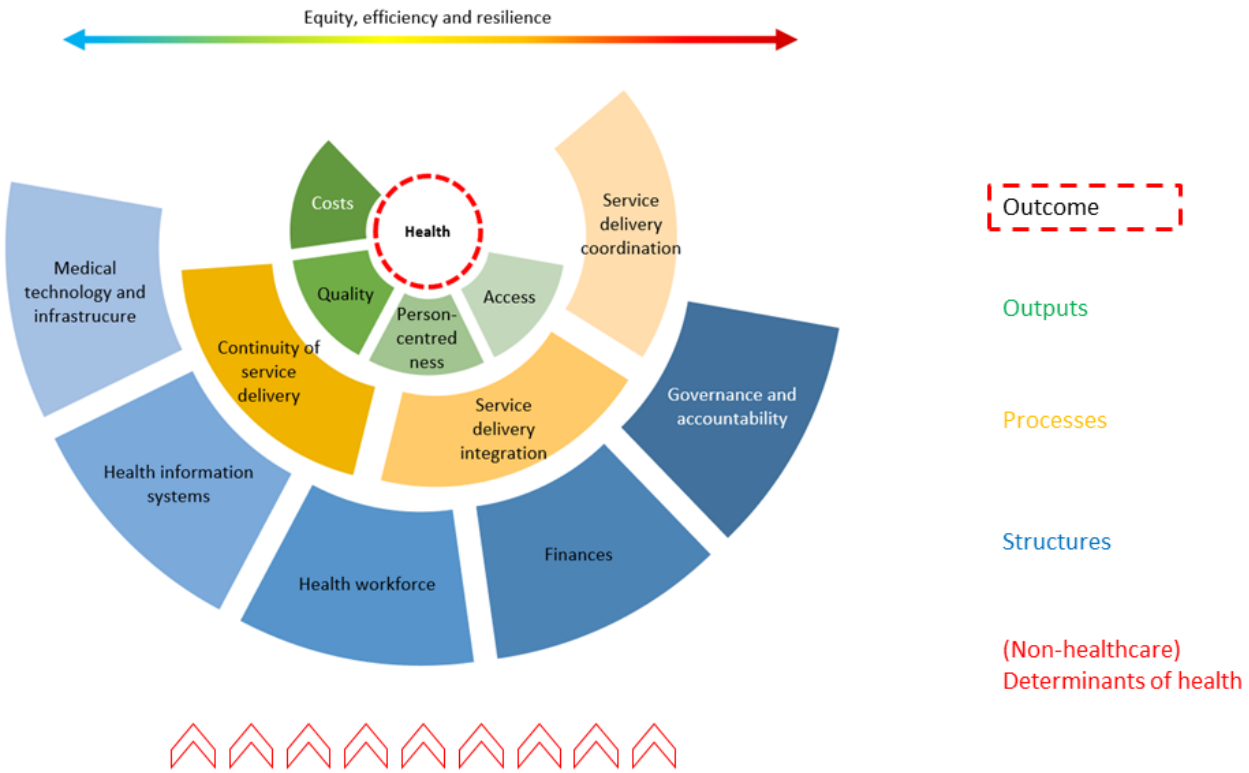
Phase I resulted in a tentative HSPA Framework that was discussed with the Department of Health and an International Advisory Board of HSPA experts. The framework incorporates 16 high-level domains for performance measurement. The domains are grouped into structure, process, outputs, health outcomes and cross-cutting domains. At the bottom of the framework, the red arrows represent the non-healthcare determinants, such as housing and environmental influences, affecting the health system and its outcomes. Six modules of service delivery are included in an overlay that can be supplemented onto the performance domains.

Purpose(s) of the HSPA Framework

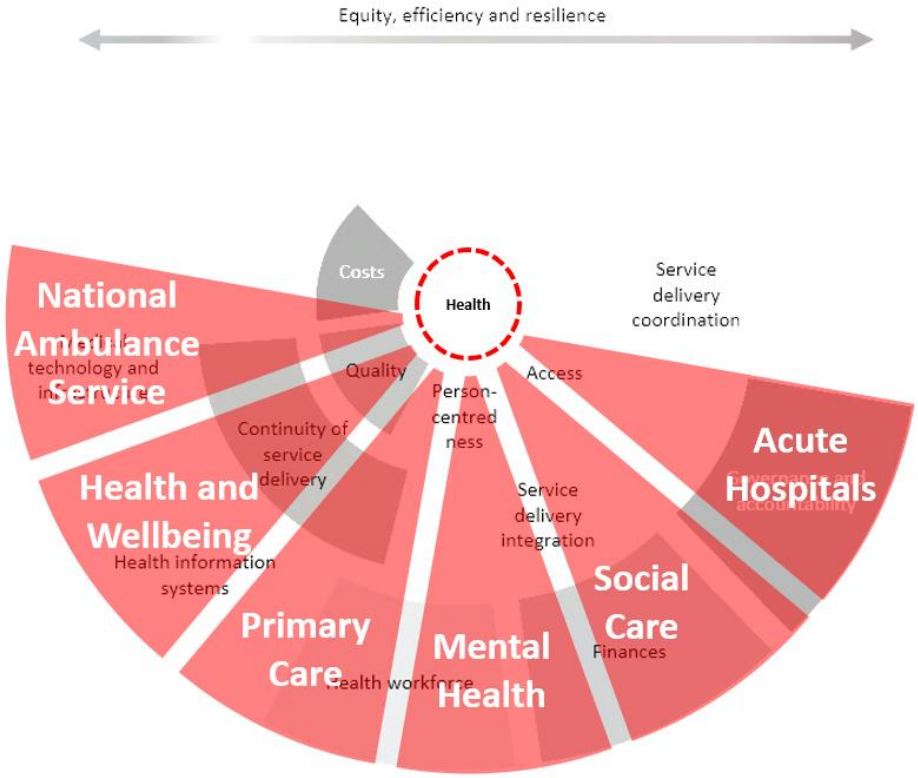
The purposes of the HSPA framework are threefold:

- **To measure** performance of the delivery system (health and social services).
- **To provide information (accountability)** to the public regarding the effectiveness of policies and strategies of the DoH and HSE on overall population health;
- **To monitor** the progress of the Sláintecare reform to enable evaluation of the priority areas of the reform and ensure that the healthcare system is more responsive to the needs of the population.

Framework



Health services modules



High level performance domains

To illustrate what the high level performance domains may encompass, the domains are disaggregated to subdomains and features if applicable. This disaggregation may help to think of key performance indicators that can populate each of the domains, whether currently used or envisaged to use in the near future. Indicators are defined as a quantitative measure that provides information about a performance domain within the health system. Use is defined as the selection, sourcing, analysis and dissemination of indicators for the purpose of performance measurement. Data sources are the collections of information generated by the health system, e.g. registrations, administrative systems, surveys, that can be used as source to measure indicators.

	Domain	Subdomains	Examples of features
Structures	Medical Technology and Infrastructure		• Basic technology • Amenities
	Health Information Systems		• Data capture • Aggregation of data • Patient platforms
	Health Workforce		• Health workforce planning • Workforce availability • Training • Collaboration
	Finances		• Expenditure • Payment methods • Benefit package
	Governance and Accountability		• Priorities • Accountability arrangements • Stakeholder participation and engagement • Quality assurance mechanisms
Processes	Continuity of Service Delivery		• Shared care plans • Care teams • Treatment • Follow-up care • Informational continuity of care
	Service Delivery Integration		• Comprehensive services across the care continuum • Collaboration of services
	Service Delivery Coordination		• Care pathways • Referral system • Transition management •
	Overarching		• Strategic planning • Managing facilities • Consultation rate
Outputs	Costs		
	Quality	• Clinical effectiveness • Safety	• Service level quality improvement mechanisms • External accountability for quality of care • Continuous professional development
	Person-centeredness	• Patient experiences • Carer experiences • Staff experiences	• Shared decision-making

	Access	• Ability to perceive (health literacy) and approachability • Ability to seek and acceptability • Ability to reach and availability (including timeliness) • Ability to pay and affordability • Ability to engage and appropriateness	• Affordability • Timeliness
Outcome	Health & Wellbeing		• Burden of disease • Risk factors • Mortality
Cross-cutting	Resilience		• Effective and participatory leadership with strong vision and communication • Coordination of activities across government and key stakeholders • Organizational learning culture that is responsive to crises • Effective information systems and flows • Surveillance enabling timely detection of shocks and their impact • Ensuring sufficient monetary resources in the system and flexibility to reallocate and inject extra funds • Ensuring stability of health system funding through countercyclical health financing mechanisms and reserves • Purchasing flexibility and reallocation of funding to meet changing needs • Comprehensive health coverage • Appropriate level and distribution of human and physical resources • Ability to increase capacity to cope with a sudden surge in demand • Motivated and well-supported workforce • Alternative and flexible approaches to deliver care
	Equity		• Equitable delivery of care • Equitable access
	Efficiency		• Unnecessary procedures • Avoidable care

Interview approach

The following approach will be taken in conducting the group interview:

- The interview will last about one hour;
- We intend to include two to five persons in the interview;
- Two interviewers from the research team will guide the meeting;
- We will use Zoom, for which you will receive a link to join the meeting;
- With your permission, we will record the meeting for the use for this research project only.

Guiding questions

The group interview is guided by the following questions:

1. What indicators are currently used for performance measurement of the Irish healthcare system within your field that you are aware of? (How) do these relate to the high level domains within the HSPA framework?
   a. What data sources are available for the measurement of these indicators?
   b. Is this data fit for use to measure these indicators? Why (not)?

2. What aim is pursued with the currently measured indicators, if any?

3. What data sources are available for current performance measurement?

4. What initiatives, if any, are in development to measure performance in the near future?

5. What should be aimed for by measuring performance within your field?

6. What performance information need does your organisation have to enact on the three purposes of the HSPA framework?
   The purposes of the HSPA framework:
   - ***To measure*** *performance of the delivery system (health and social services).*
   - ***To provide information (accountability)*** *to the public regarding the effectiveness of policies and strategies of the DoH and HSE on overall population health;*
   - ***To monitor*** *the progress of the Sláintecare reform to enable evaluation of the priority areas of the reform and ensure that the healthcare system is more responsive to the needs of the population.*

   a. Is that information available?
   b. If so, is data fit for use for performance measurement? Why (not)?
   c. What would be needed to enable fitness for use of data? Or what – currently unavailable data – is needed?

   d. What are facilitators and barriers in the measurement of these indicators, what needs to be kept and what needs to be changed in the current data landscape to enable measurement of these indicators?

7. Did the recent developments during the Covid-19 pandemic yield changes in performance measurement and data availability?

8. Can you suggest a colleague, expert in your jurisdiction or network that you think should be met with in the scope of this work?

9. Is there available work or materials of interest with regards of health system performance assessment that you are willing to share with us?