



WP5 Task 1: Health Information System Assessment Manual

Objectives, process & guidelines,
and roles & tasks

September 2018



InfAct Health Information System Assessment manual

Objectives, process & guidelines, and roles & tasks

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1. Introduction

Within the Joint Action Information for Action (InfAct), Work Package (WP 5) focuses on the status of health information systems in EU Member States and regions. Within this Work Package, task 5.1 deals with mapping and assessing Health Information Systems (HIS). In the context of this Work Package, after receiving a two day training¹, experts from nine countries will perform peer assessments of each other's national HIS.

The methodology applied for these peer assessments will be derived from the methodology developed and piloted by WHO Regional Office for Europe²³ in the framework of the WHO European Health Information Initiative (EHII)⁴. This methodology has been adapted to make it suitable for peer assessment, as the original tool was developed for application by a WHO consultant. An important distinction with the WHO methodology is that WHO works through the Ministries of Health, while the InfAct assessments are initiated and executed at the level of health information institutions and experts.

The peer assessments are expected to have beneficial effects on several levels. First of all, they will result in the identification of strengths and weaknesses in the national HIS under assessment. This will stimulate actions to improve the assessed systems, and will lead to the identification of good practices that can also be used in countries that are not taking part in the assessments. Other countries can also learn from the experiences that will be gained during the assessments, and build on these when assessing their own HIS. Through stimulating the improvement of HIS and the exchange of good practices, the InfAct Joint Action will contribute to capacity building in European countries, which in turn may lead to the reduction of health information inequalities between countries. The series of assessments will be evaluated in order to establish to what extent these objectives have been met, and how the methodology could be improved for future application.

This document is the InfAct HIS assessment manual. It defines the objectives of the HIS assessment and how the assessment process is organized. It provides guidelines for the execution of the assessments and describes the roles and tasks of the different types of experts involved.

¹ This training will take place in Chisinau, Moldova, on 26-27 September 2018.

² <http://www.euro.who.int/en/publications/abstracts/support-tool-to-assess-health-information-systems-and-develop-and-strengthen-health-information-strategies>

³ http://www.euro.who.int/_data/assets/pdf_file/0006/317544/11-Short-communication-First-experiences-WHO-tool-assessing-HIS.pdf?ua=1

⁴ <http://www.euro.who.int/en/data-and-evidence/european-health-information-initiative-ehii>

2. Why: Objectives of the HIS assessments

2.1. For the assessed country

- Overview and mapping of the various elements that make up the national HIS within that country;
- Insight into strengths and weaknesses of the national HIS, and increased awareness thereof among stakeholders;
- Concrete suggestions for improvement of the national HIS;
- Sensitisation of wide range of stakeholders, including players outside health, to the existence of a health information system of which they form part;
- Improved interaction and collaboration between key health information stakeholders within the country and between countries.

2.2. For the peer assessors

- Insight into the organization and functioning of HISs in other countries, including good practices and possible solutions for problems in their own HIS, and common challenges for which common approaches may be developed;
- Experience with performing a HIS assessment, thus becoming more objective in assessing one's own system, and facilitating the follow up of the HIS assessment in their own country.

2.3. For the InfAct Joint Action/European countries

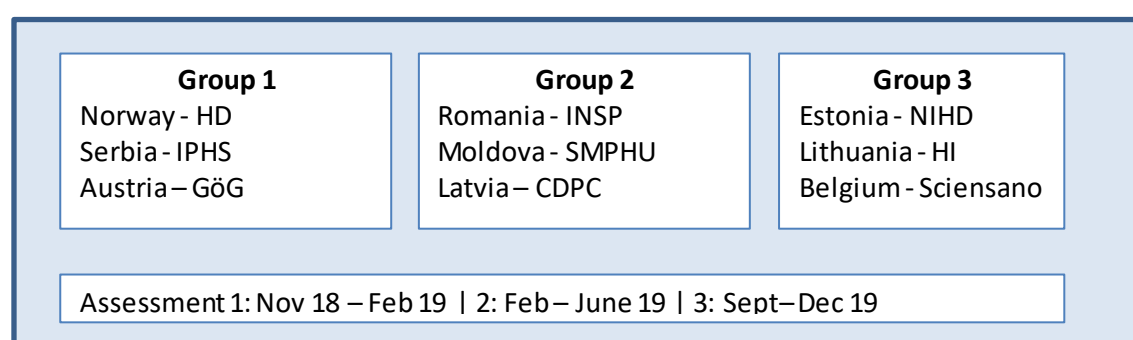
- Building capacity in European countries:
 - Through the dissemination of the experiences gained in the nine assessments;
 - Through the dissemination of good practices identified in the nine assessments;
 - Through the identification of common HIS challenges for which joint solutions may be developed, possibly in the context of the future European Research Infrastructure or a similar sustainable solution.
- Fine-tuning, piloting and evaluation of a HIS assessment tool for peer-review application.

3. How: Process and guidelines

3.1. Three cycles of three peer assessments

The HIS assessments will take place in three cycles of three peer assessments. In total, the HIS assessments will be carried out in nine countries. In each group of three countries, each cycle one country is being assessed by the other two countries. The first assessment in each group will take place in the period November 2018 – February 2019, the second in February – June 2019, and the third in September – December 2019 (see figure 1). The assessments will be carried out by one peer assessor from each assessing country, meaning two assessors in total. Ideally, the same person carries out the two assessments.

Figure 1. Country groups and assessment schedule



3.2. Assessment characteristics: broad approach at a generic level

As the basis for the assessments, a broad definition of a HIS is applied:

‘A health information system is the total of resources, stakeholders, activities and outputs enabling evidence-informed health policy-making. Health information system activities relate to all phases of population health monitoring. These are data collection, interpretation (analysis and synthesis), health reporting, and knowledge translation, i.e. stimulating and enhancing the uptake of health information into policy and practice. Health information system governance relates to the mechanisms and processes to coordinate and steer all elements of a health information system.’⁵

For a schematic overview of the different activities, stakeholders, outputs and resources, see Annex 1. Using this definition implies that the assessment will not just include (the availability of) health data, but also the generation of health information and knowledge, the use of health information and knowledge translation, and health information governance.

As the available resources are limited, the HIS assessment will be carried out at a generic level. This will result in the identification of areas and elements in the system that are currently functioning in a suboptimal way and hence require strengthening. The health information stakeholders in the assessed country can use this information to set priorities for the improvement of the national HIS, and pinpoint specific technical areas that require further developmental work and capacity building. Hence, the assessments should be seen as a first step in a longer-term HIS improvement process.

⁵ Population Health Monitoring. Climbing the information pyramid. Verschuuren & van Oers, editors. Springer Nature (in press).

Following up on the outcomes of the assessment is not within the scope of the InfAct assessments, however, it is up to the assessed country if and how to develop follow up activities.

3.3. Starting point: preparatory desk review

The assessment process begins with a preparatory desk review by the two peer assessors. It is recommended that the assessors start with the desk review no later than six weeks prior to the assessment. The main aims of the review are to:

- Identify possibly already existing assessments results/reports that can be used as the basis for this assessment exercise;
- Get a basic overview of available data, indicators and health information products;
- Get a basic overview of the organisation of the national health system and the national health information system and their mutual relations;
- Get insight into the specific functions, roles and responsibilities of identified stakeholders in the HIS;
- Identify existing strategies and HIS activities that can form a basis for future improvements.

It is emphasized that the desk review aims to create a general overview of existing or potential problems in the HIS. This review should be used as the starting point for the assessment exercise, and *not* as a comprehensive, detailed HIS description. The interviews during the actual assessment should be used for exploring the HIS and its problems in more depth. It is estimated that 3 full days of work for each peer assessor on average would be required for performing the desk review (provided that the peer assessors have received the necessary information from the contact person(s) in the country under assessment).

As preparation for the desk review the contact persons(s) in the country under assessment need to provide the assessors with relevant documents. During the training in September 2018, suitable information sources for the review are identified. See box 1 for examples. The documents provided should contain relevant information, it is up to the contact person to decide how old the documents should/can be (e.g. 20 years old documents can still provide valid information) – as long as the documents are still applicable currently. The contact person(s) in the assessed country provides the necessary documentation to the peer assessors through the OpenLucius InfAct platform (<https://workspace.inf-act.eu/>), and support with translation, if necessary. Please note that a pragmatic approach using tools such as Google Translate will often provide the assessors with enough information for assessing which parts of a document are relevant for the desk review⁶. The contact person(s) in the assessed country can assist in subsequently fine-tuning the translation of the relevant passages.

Based on the provided information, the assessors draft a short report (not more than 10 pages); see Annex 2 for the preparatory report template. If possible, the peer reviewers will deliver the preparatory report no later than three weeks prior to the assessment. In this way, the outcomes of the desk review can be used for fine-tuning the assessment programme.

Box 1: Typical information sources that can be used for the preparatory desk review

- Previous [HIS assessments carried out by the former Health Metrics Network](#) of WHO, or by WHO Regional Office for Europe* based on the [Support tool to assess health information systems and develop and strengthen health information strategies](#), or similar assessment

⁶ E.g. <https://www.onlinedoctranslator.com/en/>

exercises, such as by IANPHI and OECD e.g. [Strengthening Health Information Infrastructure for Health Care Quality Governance](#);

- [Health Systems in Transition \(HiT\) series](#) of the European Observatory on Health Systems and Policies;
- National health information policies and strategies and/or (health information paragraphs in) national health policies and strategies;
- Relevant legislation;
- Strategy documents, mission statements, activity reports etc. of key health information stakeholders (e.g. national statistical office, national public health institute, national insurance company);
- Reports on health (information) system development projects from donors (e.g. World Bank);
- Databases containing general public health indicators, e.g. WHO's Health Information Gateway, Eurostat database, OECD Health Statistics (particularly useful to assess the degree of reporting currently in place in that country);
- State of health by [European Commission](#)
- Country profiles such as provided by [WHO](#), [WHO-Euro's Health Information Gateway](#), and the [World Bank](#);
- [WHO ICD Implementation Database \(WHOFIC\)](#).

* NB: Reports of WHO Regional Office for Europe HIS assessments are not publically available, they need to be requested from the Ministry of Health.

3.4. Actual assessment strategy: semi-structured interviews

During the training in September 2018, the relevant HIS stakeholders to be included in the assessment have been identified⁷. With this information, the contact person(s) in the assessed country develops a programme, i.e. an overview of which stakeholders will be interviewed (including which specific expert(s) within each institution and organisation), and proposed duration and timeslots for the interviews.

Based on previous experiences, when well structured, stakeholder meetings should not take more than 1-1.5 hours. It is possible to interview several experts at the same time, especially around the same topic. Often, this is an efficient way of obtaining a lot of information in a short span of time, especially when it concerns multiple experts from the same institution or related institutions performing similar tasks. The host should aim for as convenient a location(s) as possible for the meeting. Meetings should be batched in such a way as to minimise the number of locations and number of moves the assessor(s) have to make during the interview days, thus maximising on the time actually used for interviews. Mealtimes can also be used to have meetings with stakeholders – albeit these may be somewhat less formal. Be aware, however, that in a group certain people are less likely to speak up (because of personal characteristics or because their boss may also be in the same room). One understands that, within a limited field of expertise, there may be some strained personal relationships. The host should make sure to manage these to the best of his/her abilities and inform the assessor(s) if these could affect the conduct of the meetings. Preferably, the programme is finalized no later than four weeks prior to the assessment, allowing adequate time for making the actual interview arrangements.

⁷ The selection of stakeholders to include may be altered/improved based on the outcomes of the preparatory desk review, see paragraph *Starting point: preparatory desk review*.

The Joint Action on Health information's (InfAct) coordination will provide an invitation letter template to be sent to the selected stakeholders. The invitation letter will emphasize that the expertise of the addressee is necessary for obtaining an accurate overview of the functioning of the HIS (i.e. we need everyone's expertise to get a complete picture). Additionally, the invitation letter should point out the benefits for the addressee (e.g. making new contacts, possibilities for initiating solutions for problems he/she encounters in his/her daily work). Most importantly, please note that this invitation letter should already include information on the multi-stakeholder meeting that will be organized after the assessment (see paragraph 3.6)

The assessment period within the country will be two days⁸. During these two days, the two assessors will conduct semi-structured interviews with the included health information stakeholders, using the HIS assessment item list in Annex 3 for guidance⁹. It is emphasized that the assessment is explorative and qualitative in nature, i.e. the aim of the exercise is *not* to put a score on the HIS or to quantitatively compare it to some sort of standard.

During the interview, they will take notes, which they will summarize afterwards:

1. in the HIS assessment item list (see annex 4 for an example), and subsequently,
2. in the form of a SWOT analysis (see below).

It is recommended that the two assessors prior to the assessment discuss the division of work (e.g. for each interview, one assessor will conduct the interview and one will take notes; who will conduct which interviews). During the interviews, the two assessors will be accompanied by the main national contact person from the receiving institution, the observer and, for part of the assessments, the evaluator (see the section below on Roles and tasks). The assessor(s) needs to master how to be polite and yet always keep the discussion on track in order to obtain as much information as possible within the limited timeframe. A short informal meeting between the assessors should happen every evening, to discuss the proceedings of the day, seek consensus on any issues that were brought up and assess whether any further issues need to be explored during the following day's assessment.

The proposed outline for these two days is as follows:

- Start off with a briefing with the receiving institution/contact person(s): go over the programme once more, discuss possible last minute changes, etc.
- Semi-structured interviews.
- End with a debriefing with the receiving institution/contact person(s).

3.5. Reporting: SWOT analysis and SMART suggestions for improvement

The outcomes of the assessment will be summarized in the form of a SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis, and a set of concrete suggestions for improvement. See Annex 5 for an example of a SWOT analysis. Preferably, the SWOT is finalized no later than three weeks after the assessment. The concrete suggestions for improvement should be formulated according to the SMART criteria (see box 2), preferably divided according to whether they can be achieved in the short, medium or long term. Where relevant and feasible, the suggestions for improvement will be complemented with good practices either from the countries of the assessors, or from other countries. Contact details for experts from other countries that might be able to advise on specific

⁸ The participants have three days of travel allowance. The assessment schedule could look like this: **day 1:** morning travel, afternoon assessment; **day 2:** assessment and **day 3:** morning assessment and afternoon travel.

⁹ The spreadsheet provided here is based on the short version of the assessment score sheet of the *WHO Support tool to assess health information systems and develop and strengthen health information strategies*. The WHO version has been (slightly) adapted to suit the purposes of the InfAct HIS assessment.

problems can be provided as well. The filled in assessment score sheet is to be provided as an Annex, in addition to the list of stakeholders interviewed. See Annex 6 for the template of the assessment report.

It is advised to have a feedback round with the contact person(s) in the assessed country before finalizing the report, to check whether the findings and suggestions for improvement are clear and recognizable for the receiving country. The assessors and contact person(s) in the assessed country could plan a teleconference for this purpose, which they could also use to prepare for the multi-stakeholder follow-up meeting (see below).

Box 2: SMART criteria

Specific – target a specific area for improvement.
Measurable – quantify or at least suggest an indicator of progress.
Assignable – specify who will do it.
Realistic – state what results can realistically be achieved, given available resources.
Time-related – specify when the result(s) can be achieved.

3.6. After the assessment: multi-stakeholder follow-up meeting

To conclude the assessment process, it is recommended that the contact person(s) in the assessed country organises a (physical) meeting with all the stakeholders included in the assessment and the assessors. The assessors can participate by tele- or videoconference to prevent additional travelling. In this meeting the assessors present their findings, and the participants jointly discuss the outcomes, and, if possible, agree on concrete follow up steps.

During the training in September 2018, participants formulated tips & tricks for organizing and conducting the multi-stakeholder meeting. These have been summarized in box 3.

Box 3. Tips & tricks for the multi-stakeholder meeting

Organizing the meeting:

- If possible, try to organize the multi-stakeholder meeting back to back with another event, such as a national public health conference, to limit the inconvenience.
- Prior to the meeting, share the draft meeting report with the involved stakeholders, to see whether they feel that the findings are valid and recognizable (see the schedule in paragraph 3.7 below).

Presenting the findings:

- Consider who would be the best/most suitable presenter(s) in the given context.
- Start with the strengths.
- Use visuals/infographics.
- Use short presentations, consider splitting the presentation of findings in several parts.
- Anonymize the findings and think carefully whether you will not bring someone into a difficult position when presenting the findings at the level of institutions.

Ensuring concrete follow-up steps:

- Create a momentum for action: get media coverage, present the outcomes at an international conference.

- Find health information champions/ambassadors, people who are motivated and willing to make an effort to stimulate improvement.
- Look for quick wins: issues that can be improved through collaboration at the level of experts/technicians (i.e. issues that do not need to go through higher managerial or political levels) and/or issues that can be resolved at no or low cost.
- Make a formal report of the multi-stakeholder meeting that can be referred to afterwards ('this is what has been agreed by all stakeholders').

3.7. Summary of the entire assessment process

When*	What	Who
Week -6 or before	Provide necessary documentations for desk review	Contact person(s) assessed country
Week -6 or before	Start preparatory desk review	Assessors
Week -5	Clarify any issues with existing documentation and demand any additional documentation, as required.	Assessors
Week -4	Start with planning and making arrangements for the interviews & multi-stakeholder meeting, send out official invitation letters (could also be send earlier)	Contact person(s) assessed country
Week -3	Finalise preparatory desk review	Assessors
Week -2	Fine-tune assessment programme based on outcomes desk review (if necessary);	Contact person(s) assessed country
Week -1	Agree on working arrangements during the interviews	Assessors
Week 0	Assessment	Assessors and contact person(s) assessed country
Week 1	Start writing assessment report	Assessors
Week 2	<ul style="list-style-type: none"> • Feedback round draft assessment report (version 1): feedback from contact person(s) in assessed country • Start preparing for multi-stakeholder meeting 	Assessors and contact person(s) assessed country
Week 3	<ul style="list-style-type: none"> • Feedback round draft assessment report (version 2): feedback from the interviewed stakeholders • Finalize meeting preparations 	Contact person(s) in assessed country distributes report on behalf of assessors; stakeholders provide feedback**
Week 4	Multi-stakeholder meeting	Assessors and contact person(s) assessed country
Week 5	Finalize assessment report and distribute	Assessors and contact person(s) assessed country

* Recommended timing

** Only mistakes/grave omissions or possible clarifications - this should be made clear when distributing the draft report

3.8. At the end of full assessment cycle: reports on country experiences

Next to the reports on the outcomes of the assessments, each country is expected to deliver a report on their experiences participating in the assessments. These are short reports that are prepared at the end of the full assessment cycles (i.e. in the beginning of 2020). A template will follow in due time.

4. Who: Roles and tasks

4.1. Contact person(s) in the assessed country

The main role of the contact person(s) in the assessed countries is to act as the national liaison during the assessment, and their main task is to organise the peer assessment. This includes:

- Providing the peer assessors with relevant documentation for the preparatory desk review, and helping with translation, if necessary;
- Organising the logistics of the assessment: planning the meetings with the stakeholders, arranging transportation for the assessment team to travel between interview locations if necessary, arranging for translation if necessary; supporting the assessment team in finding a suitable/practically located hotel;
- Accompanying the assessment team during the interviews with HIS stakeholders;
- Providing feedback on the outcomes of the assessment process to the interviewed stakeholders, ideally through a multi-stakeholder meeting (see above);
- Contributing to the evaluation of the HIS assessments (e.g. filling in questionnaires, participating in interviews).

4.2. Peer assessors

The main role of the peer assessors is to act as independent, professional assessors. This includes being aware that the assessment is not an investigation, but an exchange of experiences and knowledge between peers, and conducting themselves according to this principle. An important objective of an assessment is to create engagement. In addition, the assessors should be open to sensitivities that may exist in the assessed countries, and follow the lead of the contact person(s) in the assessed countries in this regard.

The main task of the assessors is to carry out the assessment in the two other countries in their country group. This includes:

- Performing a desk review in preparation for the actual assessment;
- Interviewing the selected HIS stakeholders and taking notes;
- During the assessment, consulting the observer on elements of the assessment approach that might be altered/improved;
- Summarizing the outcomes of the assessment in a SWOT format, and formulating concrete suggestions for improvement;
- Presenting their findings in a multi-stakeholder meeting in the assessed country a few weeks after the assessment (the assessors do not need to travel to the assessed country again but can participate by tele- or videoconference);
- Contributing to the evaluation of the HIS assessments (e.g. filling in questionnaires, participating in interviews).

All these tasks should be carried out by the two peer assessors jointly. This implies that they will need to collaborate and consult with each other throughout the entire assessment process.

4.3. Observer

The main role of the observer is to act as an independent observer. His/Her main task is to ensure that the assessment is carried out according to professional standards and procedures. This includes:

- Providing guidance to the peer assessors and the contact person(s) in the country under assessment during the (preparation of the) assessment process, at their request;
- Observing whether the professional standards and procedures as elaborated in this document are adhered to, and give advice/guidance if necessary;
- Taking note of situations in which the agreed standards and procedures are not working out as anticipated, and giving advice on how to best adapt to the specific local situation;
- In case of adaptations to the approach have been made, giving advice on whether these adaptations would also be beneficial for the assessments that will follow later in the cycle, and discuss recommendations with any other observer and the peer assessors;
- Writing a short document (1-2 pages) after each observed assessment, providing lessons learned and tips & tricks for future assessments;
- Contributing to the evaluation of the HIS assessments (e.g. filling in questionnaires, participating in interviews).

There will be one observer. This is Neville Calleja from the Ministry of Health in Malta. He has experience with applying the original WHO assessment methodology¹⁰ in countries through his work as WHO consultant. A second observer may be introduced if needed.

4.4. Evaluator

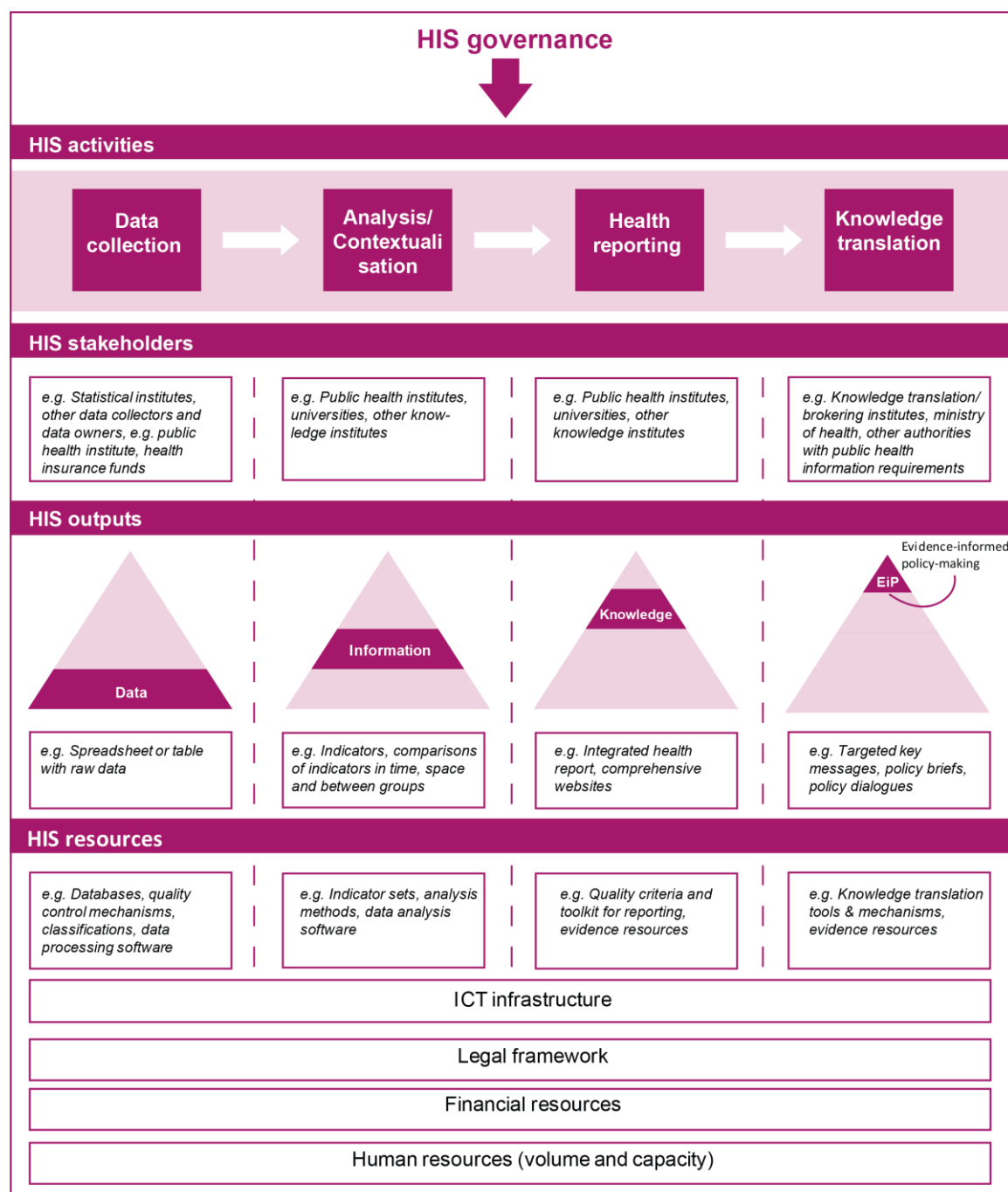
The main role of the evaluator is to act as an independent evaluator, and the main task is to assess whether the objectives as predefined for the assessed country, peer assessors and the InfAct Joint Action, have been met. This includes:

- Operationalising the objectives and elaborating a SMART framework for measuring to what extent the objectives have been met;
- Gathering data both during and after the assessment process;
- Summarising the evaluation outcomes in a report and scientific paper(s), including recommendations for improvements in the assessment approach.

Petronille Bogaert of Sciensano in Belgium will be the evaluator.

¹⁰ See the Introduction.

Annex 1. Schematic overview of the (coherence between the) various elements of a HIS



Population Health Monitoring. Climbing the information pyramid. Verschuuren & van Oers, editors. Springer Nature (in press).

Annex 2. Template for preparatory report

- Executive summary
1 page general, overarching summary.
- Background
Basic geographical and epidemiological information (e.g. population size, % of population living in rural areas, GDP, life expectancy at birth, main causes of death, member of EU and OECD?)

Creating a basis for the HIS assessment: HIS state of the art

- Main health information stakeholders
Main health information stakeholders and their roles and (legal) mandates in the HIS.
- HIS regulatory framework
Overview of main policies, strategies and legislation in force that are relevant for operating the HIS.
- Overview of main data sources and data flows
 - *Administrative sources, registries, health interview survey/health examination survey.*
 - *Health information flows between the various elements of the health (information) system (e.g. from local health authorities to the Ministry of Health, from hospitals to the health insurance company, from the statistical agency to the public health institute).*
 - *If relevant, this section should also include subnational levels.*
- Overview of main indicator sets
Overview of main indicator sets in use at the national level, and, if relevant, also at subnational levels.
- The international dimension
*To what extent can international data delivery requirements (Eurostat, WHO, OECD) be met?
To what extent is the country participating in international health information projects?*

Identifying strengths and weaknesses: Existing assessments

- Existing HIS assessments
Overview of the main findings of existing health information assessments or comparable exercises (if applicable).

Identifying possibilities for synergies: Planned and ongoing reforms

- Planned and ongoing reforms
Overview of planned and ongoing health information and relevant health system developments/improvement activities, including investments (if available), and including the responsible stakeholder(s).
- Annex: list of documents reviewed

Annex 3. HIS assessment item list

Category & nr	Item	Explanation/Elaboration situation in the country
I. Resources		
Policy & planning_1	The country has up-to-date legislation providing the legal framework for all relevant components of the national HIS: ideally, this legal framework also covers an evidence-informed policy cycle	
Policy & planning_2	There is a comprehensive, written HIS strategic plan in active use and it is implemented at the national level	
Policy & planning_3	The ministry of health has established a multisectoral HIS coordination mechanism with the other main HIS stakeholders in the country (e.g., a task force on health statistics); this coordination mechanism has a clear role and mandate	
Policy & planning_4	There is a routine system in place for monitoring the performance of the HIS and its various subsystems	
HIS institutions, human resources and financing_1	The institutions with official roles in the health information system (e.g. the ministry of health, national statistical office, national public health institute, subnational health authorities) have adequate and sustainable capacity in core health information sciences (epidemiology, demography, statistics, ICT, knowledge integration (including forecasting), health reporting, knowledge translation)	
HIS institutions, human resources and financing_2	The institutions with official roles in the health information system (e.g. the ministry of health, national statistical office, national public health institute, subnational health authorities) have adequate and sustainable resources for their health information activities	
HIS Infrastructure	Adequate ICT infrastructure (e.g. computers, data management software, internet access) and adequate ICT support is in place at the national level, at relevant sub-national levels and at hospital/provider level.	
II. Indicators		

Indicators_1	Core indicators have been selected in a transparent way and implemented for national and relevant subnational levels, covering all categories of health indicators (e.g. determinants of health; health system inputs, outputs and outcomes (health systems performance assessment); health status; health inequalities)	
Indicators_2	Reporting on the set(s) of core indicators occurs on a regular basis	
Indicators_3	The usefulness and completeness of the core indicators is periodically evaluated together with policy-makers and other end users	
Indicators_4	There is adequate alignment between the core indicators used at national and at sub-national levels; there is adequate alignment between the core indicators used by the different sub-national health authorities	
III. Data Sources		
Census	The country has adequate capacity to: (1) implement data collection; (2) process the data; (3) analyse the data; and (4) disseminate the analyses and the (micro)data	
Civil Registration and Vital Statistics (CRVS)_1	There is high coverage of deaths registered through CRVS	
Civil Registration and Vital Statistics (CRVS)_2	There is high coverage of cause-of-death information recorded on the death registration form	
Civil Registration and Vital Statistics (CRVS)_3	There is high quality of cause-of-death information recorded on the death registration form: there is a low proportion of all deaths coded to ill-defined causes	
Civil Registration and Vital Statistics (CRVS)_4	The country has adequate capacity to: (1) implement data collection; (2) process the data; (3) analyse the data; and (4) disseminate the analyses and the (micro)data	

Population-based surveys_1	The country has adequate capacity to: (1) conduct regular population based surveys (including sample design and field work); (2) process the data; (3) analyse the data: and (4) disseminate the analyses and the (micro)data.	
Population-based surveys_2	The health and statistical constituencies in the country work together closely on survey design, implementation and data analysis and use	
Health and disease records (including disease surveillance systems)_1	The country has adequate capacity to: (1) diagnose and record cases of notifiable infectious diseases; (2) report and transmit timely and complete data on these diseases; and (3) analyse and act upon the data for outbreak response and planning of public health interventions	
Health and disease records (including disease surveillance systems)_2	There is a high level of implementation of the <i>International Statistical Classification of Diseases and Related Health Problems version 10</i> (ICD-10) for reporting hospital discharge diagnoses	
Health and disease records (including disease surveillance systems)_3	Adequate and sustainable resources for operating the national cancer registry according to international standards are available	
Health service records_1	There is a comprehensive electronic health service based information system that brings together data on discharge diagnoses, procedures and other treatments and services provided and their costs from all public and private facilities	
Health service records_2	The electronic health service based information system has a cadre of trained health information staff, both at the central level and at the level of facilities, and regular training to keep the staff's knowledge up to date and to guarantee a sufficient pool of trained staff is provided	
Health service records_3	There is a mechanism in place for verifying the completeness and consistency of data from facilities and for feeding this information back to the facilities	

Resource records_1	There is a national database of public and private-sector health facilities with complete coverage. Each health facility has been assigned a unique identifier code that permits data on facilities to be merged.	
Resource records_2	There is a national human resources (HR) database that tracks the number of health professionals by major professional category working in either the public or the private sector with complete coverage	
Resource records_3	There is a national database that tracks the annual numbers graduating from all health-training institutions with complete coverage	
Resource records_4	Financial records are available on general government expenditure on health and its components (e.g., by ministry of health, other ministries, social security, regional and local governments, and extra budgetary entities) and on private expenditure on health and its components (e.g., household out-of-pocket expenditure, private health insurance, NGOs, firms and corporations)	
Data sources general_1	There are adequate human resources and equipment for maintaining and updating the various health services records and resource databases described above and for producing and disseminating outputs based on these databases	
Data sources general_2	The periodicity and timeliness of the routine data collections as described above is adequate and meets the demands of the end user (e.g. health facility managers, health insurance companies)	
Data sources general_3	Data from the electronic health service based information system is readily available for public health monitoring (i.e. policy support) and research purposes and are actually being used for such secondary purposes	
Data sources general_4	Regular assessments of the completeness and quality of the routine data collections as described above take place	
IV. Data management		

Data management_1	There is a written set of procedures for data management including data collection, storage, cleaning, quality control, metadata requirements, analysis and presentation for target audiences, and these are implemented throughout the country	
Data management_2	There is an integrated data warehouse at central level containing data from all population-based and institution-based data sources, both at the national and relevant sub-national levels, and a user-friendly reporting utility accessible to various user audiences	
Data management_3	A unique patient identifier is in place that allows for the linkage of various data sources at the subject level and such integrated data analyses are regularly performed	
V. National HIS data quality/information products		
Information products_1	Policy makers, at the national as well as at the relevant sub-national levels, have access to all the information they need to support their policy decisions, i.e. there are no major information gaps. In particular, all data and information necessary for monitoring the targets of the national health strategy are available	
Information products_2	The data collection method for core indicators is in line with (inter)national standards and recommendations	
Information products_3	The country is able to meet all data delivery requirements from the international organizations of which it is a member/with which it is collaborating	
Information products_4	The timeliness with which the data for official indicators are being collected and the timeliness with which these indicators are being computed and reported is adequate and meets the needs of policy makers	
Information products_5	The periodicity with which the data for official indicators are being collected and the periodicity with which these indicators are being computed and reported is adequate and meets the needs of policy makers	

Information products_6	The consistency over time of datasets from major data sources used for computing official indicators is high	
Information products_7	The coverage of major data sources used for computing official indicators is high; representativeness of estimates based on these sources is good	
Information products_8	Official indicators can be disaggregated by demographic characteristics (e.g. sex, age) socioeconomic status (e.g. income, occupation, education) and locality (e.g. urban/rural, major geographical or administrative region).	
Information products_9	In-country adjustments use transparent, well-established methods	
VI. Dissemination and use		
Dissemination and use_1	Senior managers and policy-makers demand complete, timely, accurate, relevant and validated HIS information and know how to interpret and use it	
Dissemination and use_2	Integrated health reports, including information on the core indicators and their disaggregations, are publicly distributed regularly	
Dissemination and use_3	Integrated health reports, including information on the core indicators and their disaggregations, are demonstrably used in (national and sub-national) health policy making processes	
Dissemination and use_4	Adequate mechanisms for knowledge translation* are in place and functioning well	
	* E.g. resources, tools, networks and platforms to structurally support the uptake of health information in policy making, i.e. to structurally support evidence-informed policy-making	
Dissemination and use_5	Making health information available for research and contribute to publications. Participation in (inter)national projects and networks.	

Annex 4. Example of filled in HIS assessment item list

Category & nr	Item	Information summarized by assessors
Indicators_1	Core indicators have been selected in a transparent way and implemented for national and relevant subnational levels, covering all categories of health indicators (e.g. determinants of health; health system inputs, outputs and outcomes (health systems performance assessment); health status; health inequalities)	<ul style="list-style-type: none"> • Different indicator sets (partly) covering public health are in use by different institutions (public health institute, health insurance company, statistical agency). An overarching core set is not in place. • The existing indicator sets mainly focus on health care and health system performance assessment. • There are hardly any indicators on health inequalities.
Population-based surveys_1	<p>The country has adequate capacity to: (1) conduct regular population based surveys* (including sample design and field work); (2) process the data; (3) analyse the data: and (4) disseminate the analyses and the (micro)data.</p> <p>*These include health interview surveys, health examination surveys, household surveys.</p>	<ul style="list-style-type: none"> • Regular national Health Interview Surveys are carried out by the Public Health Institute at the request of the Ministry of Health. • There is limited capacity at the Public Health Institute for analyzing the data; there is potential for better use of the data. • The Public Health Institute is investigating the possibilities for producing aggregated data sets as open data. • There is no regular Health Examination Survey in place, and there currently no plans for establishing this in the future.

Annex 5. Example of a SWOT analysis of a HIS

Key issues highlighted in the mission terms of reference	
	To assess the health information system in the Land of Oz. (?joint HIS/eHealth system assessment)
Process and methodology followed for the HIS assessment	
	The health information system was assessed on the basis of a condensed version of the Support Tool developed by WHO Europe.
Key mission findings	
<p><u>Strengths</u></p> <ul style="list-style-type: none"> - Statistical capacity available in Health Information Unit - High IT capacity within country - Winkies Postgraduate Medical Faculty training capacity on ICT by HCPs <p><u>Opportunities</u></p> <ul style="list-style-type: none"> - Plan for new evidence-based health strategy in the short term - Plan for new eHealth standards - International donors willing to support above - Experience with eHealth systems within NGOs; private sector; certain regions - Pressure by local IT industry to develop national eHealth standards - 2016 Autumn School on Health Information to be held in Emerald City 	<p><u>Weaknesses</u></p> <ul style="list-style-type: none"> - Existing health information system based on mostly paper-based data collection based on aggregate statistics - Lack of universal unique identifier <p><u>Threats</u></p> <ul style="list-style-type: none"> - General mistrust in official health statistics - Inflexibility of health information system to generate bespoke statistics - Rigid data protection framework - Fear of retribution in case of adverse performance indicators - No legal recognition for electronic signatures

Annex 6. Template for the HIS assessment report

1. One-page executive summary
2. SWOT analysis
3. SMART suggestions for improvement (for the short, medium and long term) & good practices
4. Annex: Full filled-in HIS assessment item list
5. Annex: List of stakeholders interviewed