BRIDGEHEALTH

BRidging Information and Data Generation
for Evidence-based Health Policy and Research

D 4.2 (Part 2) : ECHI content evaluation and update on ECHI information repository

Information need matching
Technical report BRIDGE Health WP4 / RIVM

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Executive summary

The European Core Health Indicators (ECHI) shortlist is the EU core set of public health indicators. The core indicators can be used for country comparison of health data, monitoring and policy-making in the EU and its Member States and their regions. It has been in use since 2005 and is the result of joint EU broad efforts, involving MS and also international organisations, in various projects since 1998. These projects have, by definition, not been able to institutionalise the process of maintaining and improving the ECHI system, both in the sense of data developments and content-wise. In addition, it is not clear how policy makers are served best by the list nor what actions need to be taken to give ECHI a more visible and effective role in a sustainable EU health information system.

In this report, we explored the current status and future prospects for ECHI content and policy relevance as well as accessibility and considerations regarding institutionalisation of ECHI. We base our findings on literature research as well as expert consultation.

We conclude that the audience and user needs for ECHI are complex. The indicator list needs to be relatively short and actionable to best serve policy makers, but also provide for more explanatory (detailed) information – for both researchers and policy makers - whenever a change in indicator outcome is signalled. A re-appraised ECHI-core set and a well-organized ECHI-process may better support priority setting in health policy and may also show where investment in data collection and new indicator development is needed. At the same time, the fact that policy priorities have shifted over the years and will continue to do so needs to be handled as well. To support a stronger EU Health Information system the Member States will have to take up the challenge of ECHI-revival and renewal to serve their changing policy needs.

Therefore, we recommend to proceed ECHI development with exploring and piloting a change in the way the indicators are presented to better suit policy and its priorities, a sustainable method for updating the ECHI indicators and a web space for more visibility and shared knowledge, involving both policy makers and public health data experts.

To this end we present 1) some first steps in conceptualising a new ECHI format and 2) a first prototype for an ECHI repository including concepts for improving interaction and knowledge sharing. These first steps will be further developed under the JA on Health Information, working towards a web space under sustainable governance.

Key points

Our evaluations suggest that there is a need to invest in a continuous and collaborative effort from EU Member States through the following action points:

- *Strengthen the links between the ECHI-shortlist and policy makers/policy priorities*

- *Organize a structured procedure to identify new indicator areas for the EU and its MS*

- *Further develop the ECHI format, i.e., develop layering or sections to more adequately accommodate the need for both stability/monitoring and flexibility/actionability*

- *Develop a structured, collaborative and sustainable procedure to maintain and update the ECHI process of indicator development, closely involving the Member States*

- *Actively promote and evaluate the use of ECHI in national and EU reporting efforts*

- *Establish an ECHI indicator platform to share relevant technical and historical information*

- *Develop joint projects and data collections between the major international organisations active in the European region, to efficiently and sustainably embed ECHI in the international health information landscape.*

These key points will now be taken up into the Joint Action on Health Information – InfAct.

I. Introduction

This evaluation and prospect report is a deliverable of the BRIDGE Health project (http://www.bridge-health.eu/). The BRIDGE Health project aims to prepare the transition towards a sustainable and integrated EU health information system. Central to Work Package (WP) 4 are the European Core Health Indicators (ECHI).

The ECHI shortlist is the EU core set of public health indicators. The core indicators can be used for country comparison of health data, monitoring and policy-making in the EU and its Member States and their regions. It has been in use since 2005 and is the result of joint EU broad efforts, involving MS and also international organisations, in various projects since 1998. These projects have, by definition, not been able to institutionalise the process of maintaining and improving the ECHI system, both in the sense of developments data in collections and definitions and content-wise. In addition, it is currently not clear how policy makers are served best by the list nor what actions need to be taken to give ECHI a more visible and effective role in a sustainable EU health information system.

In WP4.1 and 4.2, aspects of current data availability have been evaluated [1, 2].

This part of the current report presents findings from WP4.3 and 4.4.

In WP4.3, the focus is on aspects of content and policy relevance. It builds upon historical project documentation, external evaluations and existing peer-reviewed and grey literature, in addition to expert consultations and findings from other BRIDGE Health project work packages.

Subject to WP4.4 is the creation of long term institutional memory in the form of a sustainable web based repository. In this context, a brief report was delivered in December 2016 on concepts for a health indicator repository (MS15). Here, we present an update.

Part of this evaluation has been submitted as an article to the Archives of Public Health. The current report provides additional background information, depth and width to the topic in question.

II. Aim

A. Aim and scope

The overall aim of this evaluation is to review the content of the ECHI-indicator shortlist in relation to its original aims and objectives in the broader perspective of a changing European policy priority landscape, a changing health information and indicator environment, a variable stakeholder engagement and altered demands for a future common health indicator set for the EU.

B. Objectives

The following main objectives were formulated:
1. To evaluate the usefulness of the current ECHI shortlist in the light of changing policy and information needs
2. To propose revisions of the ECHI framework and a sustainable future revision procedure (i.e. implementation on EU level)
3. To explore the realization of a sustainable information repository for ECHI, to support future work and exchange of knowledge and expertise

These objectives were addressed by literature search, additional desk research and expert consultation. This is described in the next section.

III. Approach

This section describes the methods used in fulfilling the objectives, i.e. a literature search into ECHI project documentation, earlier ECHI evaluations and other related literature; and consultations of expert knowledge, through a survey and expert meeting.

The literature search also served as input for the development of the survey and as input for the ECHI indicator repository. Similarly, the expert consultation served as a complement to the literature search.

A. Literature search

1. Evaluation questions

1. Which publications have evaluated ECHI-indicators and the ECHI process before?
2. Which publications describe the use of ECHI-indicators?
3. Which publications describe the usefulness (or uselessness) of health indicators?

2. Methods

In order to identify relevant peer-reviewed and grey literature and documents, we searched PubMed, Scopus, Embase, Google and Google Scholar (see Appendix 1 for the search strategy). In short, we searched for European Community/Core Health Indicators, European Union Health Indicators and European Union Health Information System.

In addition, we requested support in literature identification in our expert consultation (see section B).

All references were collected in a structured reference management system (Endnote X8).

B. Expert consultation

1. Evaluation questions

A survey was developed taking account of previous evaluations and with the aim to serve future demands and development of the shortlist.

The central question of the survey was: how can we improve the current policy focus, balance and appropriateness of the ECHI indicator approach to better serve stakeholders?

Some of the more detailed questions were:
- Does ECHI need revising and if so, what are options to do so?
- What is the potential for adding new health indicators to the core set?

- Which ECHI indicators do experts consider particularly useful or not useful (anymore)?
- What are the (best) options to make ECHI-indicators more sustainable?

2.   Methods

a)   Survey development
A 2013 external evaluation of the use and impact of ECHI [3], commissioned by the European Commission, concluded that increasing the usefulness for policy planners should become a priority (see also the section on ECHI documentation under Findings). The report states that if the list develops towards being more of a policy instrument, addressing evolving information needs of policy makers and steering the strategic policy planning and monitoring process across Europe, this would have implications for the ECHI shortlist size, flexibility and balance. Hence, these aspects were included in the survey.

The survey consisted of 3 parts:
- Respondent background and affiliation
- Shortlist criteria, flexibility, size, balance, policy relevance and utility
- Support in identifying literature in which ECHI are used or evaluated

The survey was created in an online form management system (https://en.formdesk.com/) and accessible via a link sent by email. Pausing and resuming without loss of data was made possible. Questions were formulated variably in open and closed (checkbox and radio) format.

The survey was first piloted with the Advisory Core Group (see section c on involvement of expert groups) in February 2017 and adapted according to feedback. It was then launched with the Members of EGHI (n=50), with an option to forward to others, in March 2017. Completion was requested in April; reminders to non-responders were sent twice. Final results were received in May 2017.

b)   Survey participation
Twenty experts contributed to the survey, representing a total of n=18 countries (see Fig 1). Combined, they were knowledgeable of all public health areas, some being generalists and some with expertise in one or more specific areas, most often morbidity/disability and mortality. About half of the respondents were affiliated with a government structure and about half with a (science-based governmental) public health institute. About half characterized their work as a bridging between science and policy, about a quarter as relating most to policy and a quarter as relating most to science. As far as tasks within the policy cycle, n=15 were involved in monitoring and forecasting, and n=12 in benchmarking, and n=5 were involved in health system performance assessment, target-setting and policy evaluation each.
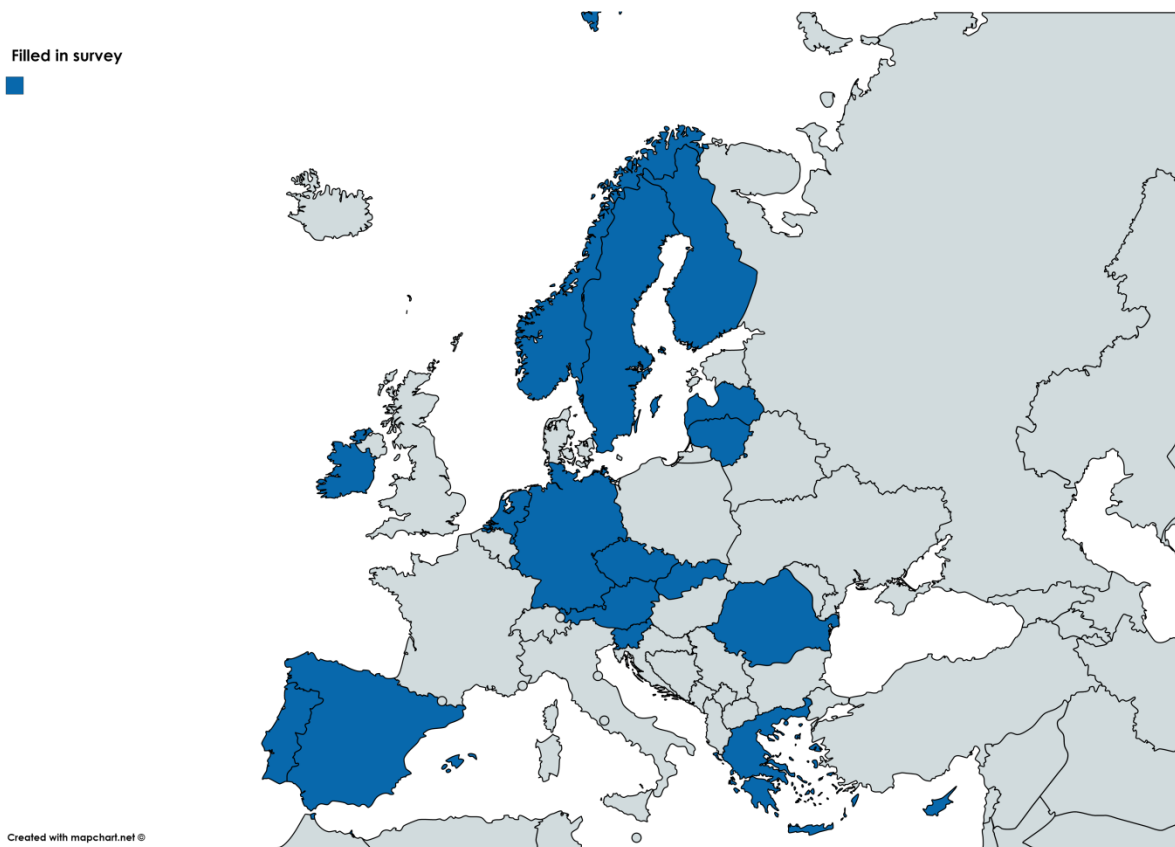
Fig 1: countries that contributed to the survey

c)   *Involvement of expert groups*

WP4 established two experts groups to support its activities and to strengthen and maintain the network of national and international health information experts:

- An Advisory Core Group (ACG), comprising representatives of international organizations (Eurostat, OECD, WHO) and/or of academia in the field of public health. This group was asked to provide strategic direction to the work of WP4, ensuring that its activities align well with developments at European and international levels.
- An Expert Group on National Health Indicator Implementation (EG-NHII) consisting of over 20 members of the EU Expert Group on Health Information (EGHI[1]). Its main task was to assist WP4 in identifying issues surrounding the national use and implementation of ECHI-indicators.

The survey's main findings were presented and discussed in a face-to-face expert meeting in May 2017 with members of EG-NHII and ACG, and interested WP/HA leaders/representatives.

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[1] https://ec.europa.eu/health/indicators/expert_group_on_health_information_en

IV. Findings

A. ECHI documentation

There have been 4 ECHI projects, covering the years 1998 until 2012. Each has delivered a final report, as summarised below.

Project	Period	Author/year of final report
ECHI-I	1998-2001	ECHI working group, 2001 [4]
ECHI-II	2002-2004	Kramers et al., 2005 [5]
ECHIM	2005-2008	Kilpeläinen et al., 2008 [6]
Joint Action for ECHIM	2009-2011	Part I, Tuomi-Nikula et al., 2012 [7]
		Part II, Verschuuren et al., 2012 [8]
		Part III, Thelen et al., 2012 [9]

These projects formulated recommendations on the future advancement of ECHI, see Box 1. In addition, during the JA ECHIM, an ECHI transition network was established, which delivered a proposal on how to maintain a health indicator system for the EU after the Joint Action for ECHIM, in 2011[10]. It can be seen that the recommendations mainly deal with process (e.g., international collaboration) and technical (e.g., data availability) matters and less with content-related matters.

Next to these reports from the ECHI projects themselves, two large external reports commissioned by DG SANTE (then SANCO) reviewed ECHI, either directly or indirectly;
The first one was a direct 'Evaluation of the use and impact of the European Community health indicators ECHI by Member States' [3]; the second one a 'Cost/benefit analysis of a sustainable EU Health Information System' [11] which included ECHI.

The first report, evaluating of ECHI use and impact, by the Public Health Evaluation and Impact assessment Consortium (PHEIAC) under the lead of the Economisti Associati (Bologna, Italy) appeared in 2013. It based its findings on an extensive literature review, a large number of interviews and a widespread survey among the Member States. We here summarise some of the main findings (see also Box 1 for the recommendations from this report):

- Knowledge of ECHI is skewed: poor visibility and recognition of ECHI exists in the formal policymaking process (i.e., among staff responsible for planning and monitoring of policies or for policy evaluation and the assessment of healthcare services) when compared to the health information services. Also, there is a lack of publications on concrete use of data and policy lessons that can be drawn from them.
- ECHI indicators are generally widely used, but uptake of ECHI is skewed; ECHI are used for descriptive or benchmarking purposes, but use for policy planning or monitoring purposes or for health system assessment is limited, as is uptake in general strategies and planning documents. At the same time, benchmarking efforts are often fragmented, uncoordinated and poorly documented initiatives, whose pay-off is not always visible to those not directly involved.

- The combination of financial constraints and poor visibility/recognition in the formal policymaking process does not help in building a case for ECHI.
- There is general consensus on having a system of European Indicators like ECHI in place and on the importance of embedding ECHI into a permanent institutional mechanism at EU level. The ECHI would benefit from a clearer legal status. Financing issues, both for individual indicators as for having the ECHI system in place, need to be handled.
- There is overwhelming consensus that enhanced coordination and synergy with the work of OECD and WHO should be sought.

The second report, analysing cost/benefit aspects of having a sustainable EU Health Information System was published in 2017. Its purpose was to review the costs and the benefits of the EU health information system (consisting of the various health information initiatives and the related indicators developed and implemented at EU-level with the support of EU-funding) and to compare the current set-up with a possible system built on a sustainable ground. It started from the aim to compare different policy options, but then evolved to a more explorative assessment comparing status quo with a theoretical scenario where fully harmonized and policy-relevant indicators are implemented comprehensively across MS. In the report key findings, ECHI was referred to as the first and most structured attempt to set up an integrated information system and EU-wide data platform on health. The report's recommendations focus on enhancing current developments towards a sustainable governance structure and enhancing policy-related use of indicators (see Box 1). To circumvent between-country comparability difficulties (due to implementation disparities or country-specific biases) it was thought promising to use same-country assessments of trends and then compare these trends across countries.

Box 1: Recommendations for advancement of ECHI, internal and external

ECHI transition project recommendations (2011)[10]:
- The ECHI indicator system should be maintained and improved.
- The central health indicator database and data presentation tool should be further developed.
- The ECHIM network should be maintained.
- The implementation of data sources and indicators in Member States should be continued.
- Collaboration with other international organisations should be enhanced.
- In the longer term, health reporting as well as analysis and interpretation of health data should become priorities.

JA ECHIM PART II recommendations (2012)[8]:
- Ensure sustainability, quality and efficiency of the ECHI indicator work
- Keep the ECHI indicator documentation up to date and easily accessible
- Work with supra/international organizations and Member States on further harmonization of existing data collections
- Work on improving implementation-readiness of indicators in the work-in-progress and development section
- Update the ECHI shortlist on a regular basis

> **Recommendations report PHEIAC on ECHI use and impact (2013)[3]:**
> - Minor modifications of the ECHI shortlist are possible (e.g., child and adolescent health indicators).
> - Simplification / streamlining of the shortlist may be considered (depending on purpose).
> - ECHI legal status should be clarified.
> - There is a need for increasing ECHI awareness among certain categories of policymakers.
> - The work-in-progress section of ECHI should be finalized.
> - Cross-country benchmarking should be encouraged (increase the added value).
> - It should become a priority to increase the usefulness for policy planners (increase the added value).
> - Address financing issues.
>
> **Recommendations report Economisti Associati on EU Health Information System (2017)[11]:**
> - Enhance the consolidation and coordination trends (in the larger European Health Information landscape).
> - Enhance policy-related use of harmonised indicators. This would require:
>   (i) mechanisms to reduce the time-lag in the publication of indicators;
>   (ii) more flexible and rapid processes to update the indicators collected in view of emerging policy-relevant challenges, (iii) more policy-oriented "knowledge-based" products complementing the provision of indicators with analysis, (iv) adequate visibility and communication actions, as well as mechanisms for restitution of the information to raw data producers.
> - Adopt incremental measures to mitigate the burden of indicators.

In the peer-reviewed literature, we identified a number of publications, covering the years 2003-2015. Part of these cover ECHI directly and have been produced by authors directly involved in the successive projects [12-17]. The journal format was used to explain the ECHI (process) to the scientific community or to describe the ECHI national implementation. Outside this scope, authors have recently used the ECHI shortlist i.a. to compare indicator quality aspects [18], to compare calculation methodology [19] and as a proof of concept [20].

The Google and Google Scholar show a diverse array of national reports, presentations, a doctoral thesis [21] and handbooks [22] which cover ECHI.

Indirect or direct reference to ECHI can be found in various EU documents. In 2007, the European Commission published the white paper 'Together for Health' [23] stating that The Commission is in a unique position to assemble comparable data from the Member States and regions and must answer calls for better information and more transparent policymaking, including through a system of indicators covering all levels (national and subnational). Among adopted actions for the Commission was a 'System of European Community Health Indicators with common mechanisms for collection of comparable health data at all levels, including a Communication on an exchange of health related information'. A programme of Community action on health monitoring, aiming

for the establishment of a Community health monitoring system, was already called for by [Decision No 1400/97/EC](), which initiated the ECHI projects.

The Council of the European Union, in its 2013 conclusions on the "Reflection process on modern, responsive and sustainable health systems" [24],

- "welcomes the further development and consolidation, while avoiding duplication of work, of a health monitoring and information system at EU level based on the European Core Health Indicators (ECHI) and existing health monitoring and reporting systems developed as a result of a cooperation between Member States supported by the Programmes of Community Action in the field of Health"; and
- "invites the Commission and MS to "cooperate with a view to establishing a sustainable and integrated EU health information system, built on what has been already achieved through different groups and projects, such as ECHI-ECHIm projects, exploring in particular the potential of a comprehensive European health information research infrastructure consortium as a tool"

ECHI is explained on the European Commission Directorate of Health and Food Safety DG SANTE (formerly SANCO) [website]()[2], which also includes a graphic tool and an interactive application to present relevant and comparable information on health at European level, the [ECHI data tool]()[3]. DG SANTE has also established the '[State of Health in the EU cycle]()'[4]; to support MS in their evidence-based decision making and highlight potential for mutual learning and EU added value. This two year cycle includes four deliverables, among which the biennial Health at a Glance: Europe report [25]. The Health at a glance report is based partly on ECHI indicators and is the result of a strong collaboration with the OECD.

Plans are also being developed to work more closely together with the WHO/Euro European Health Information Initiative (EHII), in which EC is involved as an observer, in aligning indicators and reducing reporting burden, under the Joint Action for Health Information.

ECHI has been taken up in EU decisions and legislation

- [Regulation No 1338/2008]() established a framework for Community statistics on public health and health and safety at work, which requires MS to produce statistical "data for structural indicators, sustainable development indicators and European Community Health Indicators (ECHI), as well as for the other sets of indicators which it is necessary to develop for the purpose of monitoring Community actions in the fields of public health and health and safety at work"
- [Regulation No 2015/359]() lays down lays down rules for the development and production of European statistics in the area of healthcare expenditure and financing, one of the subjects for statistics on healthcare listed in Annex II to Regulation (EC) No 1338/2008; This concerns the data, metadata, reference periods, intervals and time limits for the data provision to be supplied. This does not mean the ECHI process has legal status, but it does mean that MS are obliged to produce some of the statistical data that are needed to calculate the indicators.

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[2] https://ec.europa.eu/health/indicators/echi_en

[3] https://ec.europa.eu/health/indicators/indicators_en

[4] https://ec.europa.eu/health/state/summary_en

B. ECHI content and policy relevance

The below results provide a summary of the views of the survey respondents unless otherwise specified. Some of the experts present during the final face-to-face meeting had not filled out the survey but did contribute to the discussion.

Criteria for selection, addition and deletion of indicators

The ECHI shortlist is the result of a careful selection procedure which applied the criteria as shown in Box 2. These selection criteria were considered relevant up to this date. However, there were some suggestions for different wording, e.g. to include health system performance under the scope of public health (criterion i).

Box 2: Criteria for the selection of ECHI shortlist indicators [8]

i. The list should cover the entire public health field, following the commonly applied structure of the well-known Lalonde model: health status, determinants of health, health interventions/ health services, and socio-economic and demographic factors.

ii. The indicators should serve the user's needs, meaning that they should support potential policy action, both at the EU and Member State level.

iii. Existing indicator systems, such as the indicators used in the WHO Health For All database and OECD Health Data, should be used as much as possible, but there is room for innovation.

iv. Use the viewpoint of the general public health official ('cockpit') as frame of reference.

v. Focus on the large public health problems, including health inequalities.

vi. Focus on the best possibilities for effective policy action.

Even though the intention was to keep the shortlist basically stable, the ECHI shortlist was not intended to be static per se; because scientific and public health developments may call for an update of the list, criteria were developed for adding and deleting indicators to and from the list. The criteria for addition (Box 3) were generally considered relevant (the criteria each being agreed on by 90-100% of the respondents), but some suggestions for rewording were put forward. For example, the importance of the issue (criterion i, on policy relevance) *should* not *(*but *may* be) reflected by its appearance in leading policy documents; indicators could also serve an agenda-setting function by promoting the uptake of an issue into leading policy documents. In addition, in the definition of policy relevance, next to possibilities for *prevention* also possibilities for *intervention* could be taken up.

The criterion for deletions (Box 3) was considered relevant, but considered to require further specification; also, other criteria may be added, e.g., 'a new and better indicator has been identified for the same concept', or 'there is lack of between-country differences'.

Box 3: Criteria for additions and deletions

Criteria for additions

i. "The indicator should have clear policy relevance. This implies that it should be related to one of the major public health issues in Europe, and the importance of the issue *should* be reflected by its appearance in leading policy documents. A public health issue is a policy relevant issue when it is linked to a high burden of disease, clear possibilities for prevention, and/or clear possibilities for reducing health inequalities".

ii. "The indicator should not disturb the balance of the ECHI shortlist, i.e. there should not be too many (overlapping) indicators for similar topics, and not too many indicators for 'minor' or contextual topics in the shortlist".

iii. "In line with the general goals and concepts underlying the ECHI shortlist, the shortlist should provide a 'snapshot' of public health from the point of view of the public health generalist".

iv. "In line with the general goals and concepts underlying the ECHI shortlist, the indicators in the shortlist should be suitable for providing a benchmark for reflecting time trends".

v. "In line with the general goals and concepts underlying the ECHI shortlist, the indicators in the shortlist should be suitable for providing a benchmark for international (EU) comparisons".

Criterion for deletions

i. "The indicator is related to a topic that is no longer policy relevant".

Balance, redundancies and new topics

The criteria for additions state that the indicator should not disturb the balance of the shortlist by including too many indicators for similar topics or for 'minor' or contextual topics. This may seem self-evident, but it does not mean balance is a major goal in itself. Especially if policy relevance is considered a driver of the ECHI list, then this may justify taking up more indicators under the same priority theme as well as omitting some topics that are not considered relevant.

Several indicators and operationalisations were considered redundant, but only by a few experts each. They may serve as a signal, but are not further elaborated upon here.

The experts were also asked if indicators or themes were missing or *under*represented, both in open format and additionally by presenting them with a checkbox list of topics that had been collected in the availability survey. The options from the pre-defined list that were most frequently checked were 'health inequalities' (n=9), 'healthy ageing' (n=8) and 'food and nutrition' (n=7); the open format yielded more diverse results (not shown here). In the end, 'a structured procedure is needed to identify new areas of policy information needs in the central indicator set'; out of n=20 experts, n=11 agreed and n=8 strongly agreed with this statement (n=1 had no opinion), see Figure 2 below.

Statement: A structured procedure is needed to identify new areas of policy information needs in the central indicator set

Strongly agree	8	40 %
Agree	11	55 %
Do not agree	0	0 %
Strongly do not agree	0	0 %
No opinion	1	5 %

Fig 2: Expert opinion on a structured procedure for new information needs

In addition, the idea was expressed to use ECHI as a pointer to other sets/collections, to allow for a more complete picture of a topic and enable ECHI to be more integrated in a 'system' of indicator sets across the EU. Examples given were pointing to the System of Health Accounts for health expenditure and pointing to Eurostat instead of having 86 causes of mortality under ECHI.

Flexibility/actionability

For a wider use and usability of the ECHI in the EU MS, the ECHI shortlist needs to be a recognizable brand. This would suggest that some form of stability of the list is critical. At the same time, relevant new issues may emerge and the shortlist needs to be sufficiently flexible to address these.

A mixed picture emerged from statements addressing this seeming contradiction. Out of n=20 experts, n=13 agreed and n=1 strongly agreed to the statement that ´stability is more important than flexibility´ and n=6 disagreed; in addition n=9 agreed and n=2 strongly agreed to the statement that ´it is important that ECHI indicators can indicate changes over a relatively short period of time´, whereas n=8 disagreed, see Figure 3 below.

Statement: It is important that ECHI indicators can indicate changes over a relatively short period of time

Strongly agree	2	10 %
Agree	9	45 %
Do not agree	8	40 %
Strongly do not agree	0	0 %
No opinion	1	5 %
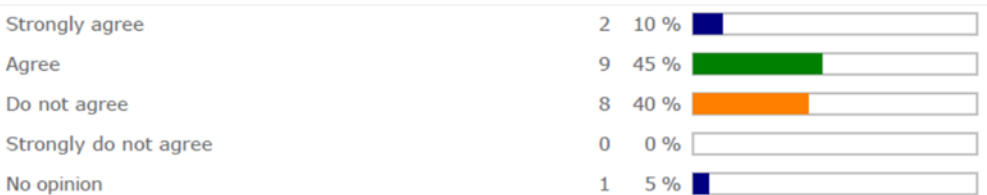
Fig 3: Expert opinion on ECHI short-term sensitivity

A change in format may remedy this and accommodate the dual usage. The experts agreed on the need to investigate the option of changing the ECHI format to capture emerging information needs, for example by distinguishing different sections. Out of n=20 experts, 7 agreed and n=10 strongly agreed that 'the ECHI list would benefit from establishing a stable core section and a flexible additional section to capture emerging information needs' (n=2 disagreed and n=1 had no opinion; see Figure 4).

Statement: The ECHI list would benefit from establishing a stable core section and a flexible additional section to capture emerging information needs

Strongly agree	10	50 %	
Agree	7	35 %	
Do not agree	2	10 %	
Strongly do not agree	0	0 %	
No opinion	1	5 %	

Fig 4: Expert opinion on ECHI division between stable and flexible section

Another option for a format change, discussed during the final expert meeting, would be to use a form of layering such as developed under the SDS Indicator framework [26] and adapted under BRIDGE Health WP12 for their european Health System Indicator (euHS) survey. This framework distinguishes indicators on 4 levels: headline, operational, explanatory and contextual. A related idea, raised in the survey, was the use of a top list of indicators (action-oriented), providing access to more detailed layers of information when needed (more analytic), as data needs are generally much more elaborate than top lists, or shortlists of indicators.

Size

When considering policy makers' needs, to it is also relevant to consider the size of the list. The current number of indicators for all sections together is n=88 (or n=94, when counting separately those indicators that are based on both survey - and register data). These are actually representing a total of >1000 operationalisations (see Figure 5).

Almost all experts considered the current number of indicators satisfactory for the ECHI shortlist but about half thought the number of operationalisations could be reduced. Reason for this is not solely there being too many, but also the difficulty to obtain some of the required disaggregations. It has to be noted that operationalisations in themselves were also considered very useful. Purpose is also important: a report requires a compact list, a database could be filled with more detailed data. To fit more than one purpose, it may be considered to separate a top level of indicators from a detailed level of more specific data.

Examples of operationalisations are:

- indicator '3.Mother's age distribution': by age <20 yrs, age >35 yrs and 3 levels of education;
- indicator '5.Population projections': by sex and 3 age categories;
- indicators '70.Average length of stay (ALOS), limited diagnoses': by age, sex & multiple causes of disease.

Figure 5: number of operationalisations (y-axis) for each indicator (x-axis)
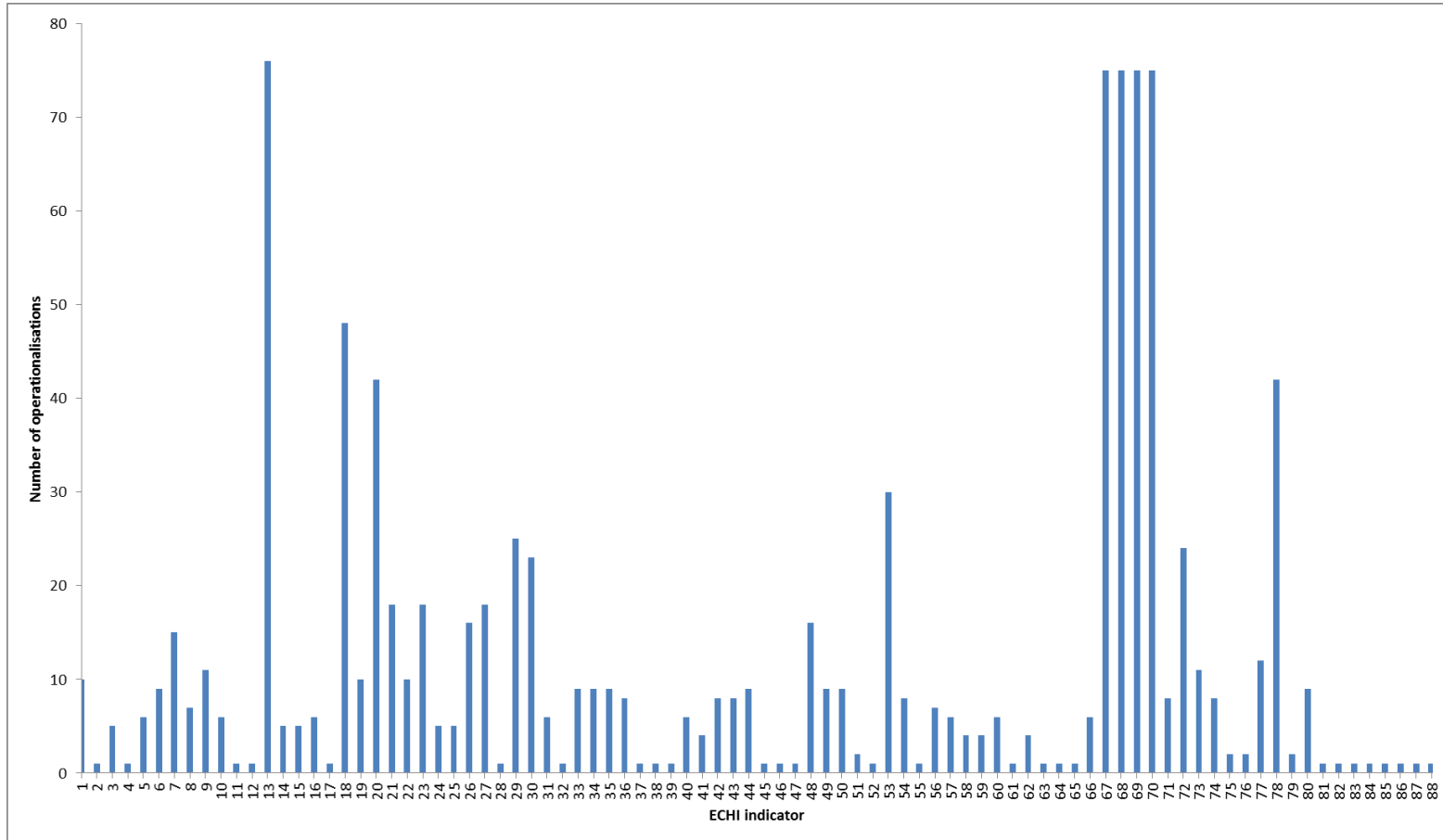
For policy purposes, most agree that a different format, consisting of a compact stable core and an additional flexible part would be more optimal (see figure 6 below and related suggestions under 'balance' and 'flexibility/actionability').

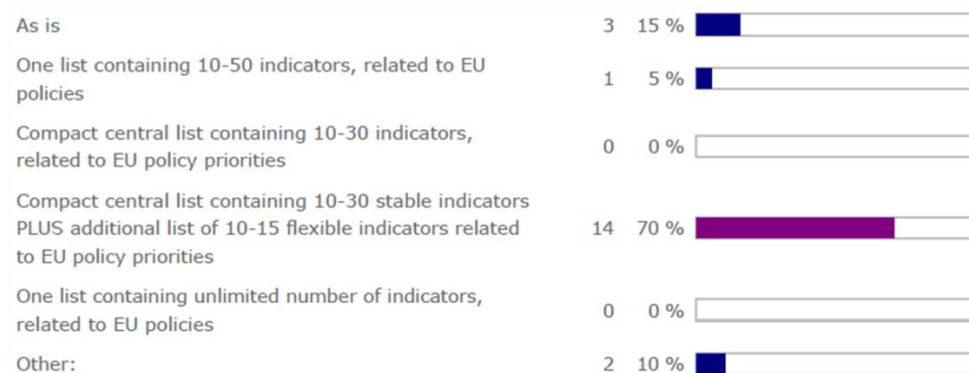**Question: What would be an optimal size for policy purposes?**

As is	3	15 %
One list containing 10-50 indicators, related to EU policies	1	5 %
Compact central list containing 10-30 indicators, related to EU policy priorities	0	0 %
Compact central list containing 10-30 stable indicators PLUS additional list of 10-15 flexible indicators related to EU policy priorities	14	70 %
One list containing unlimited number of indicators, related to EU policies	0	0 %
Other:	2	10 %

Figure 6: Expert opinion on pre-defined size options for the ECHI list

One of the suggestions for the open format 'other' option was: a "Compact central list containing *30-50* stable indicators PLUS additional list of 10-15 flexible indicators related to EU policy priorities".

Some experts stated that the number was not important, as long as the indicators are really internationally comparable and are a reflection of policy.

Relevance and use

In the survey, the ECHI indicators were generally seen as policy relevant. The experts were asked to indicate which indicators had particularly low and high relevance and expressed concrete ideas on individual indicator's relevance. Reasons given for attributing 'low' policy relevance to an indicator were that

- a better indicator was available (e.g. update from PM10 to PM2.5 - which has already been processed in the ECHI tool),
- it was very unspecific (e.g. lifestyle policies and integrated programmes in settings),
- its interpretation was unclear (e.g., is it better to have more hospital beds?), or that
- it was too specific (e.g., excess mortality by extreme temperature).

Quite a few indicators were considered highly relevant by at least some experts. To name a few that were reported by at least 5 experts and also emerged as particularly relevant in a previous evaluation [3]: 10.Life expectancy; 13.Disease-specific mortality; 20.Cancer incidence; 42.Body mass index; 44.Regular smoking; 56.Vaccination coverage in children and 77.Expenditure on health. In addition, the current survey's top 10 highly relevant indicators also included: 21B.Diabetes; 40.Healthy Life Years; 52.Physical activity and 80.Equity of access to health care services.

However, it seems necessary to ask policy makers' opinions from both EU and all MS to elaborate on this further, as well as to create consensus on what defines policy relevance and what its role should be in the ECHI list.

In the survey, the experts were asked for examples of documents in which ECHI indicators are used, documents that have specifically evaluated ECHI use, documents that provide examples of national policy making by using ECHI or that serve national policy making most efficiently.

It was reported that ECHI indicators are probably often used without explicitly mentioning they are ECHI, as many of them are also indicators from Eurostat, OECD, WHO/Euro. There were some, but not many, examples of ECHI policy relevance or use in policy (see Box x). There were no suggestions on the request for documents that specifically evaluate ECHI use. Health at a glance was reported by most participants as influencing national policy most. One participant did not think any European reports influence national policy makers, only national and regional reports.

Box: 4: Support in identifying literature on ECHI use or policy relevance

Documents that have used ECHI indicators?
- Latvia: Many reports, documents or publications have used ECHI indicators, but usually they are not identified as ECHI indicators. One example: the Statistical Yearbook of Health Care: https://www.spkc.gov.lv/en/statistics
- Czech Republic: Selected indicators are presented here: http://reporting.uzis.cz/cr/index.php?pg=statisticke-vystupy--ukazatele-zdravotniho-stavu--indikatory-echi; some are used - but not specifically mentioned - in the National Health Report (Zpráva o zdraví obyvatel Ceské republiky 2014) and the National Yearbook on Health (Zdravotnická ročenka České republiky 2015).
- Romania: Health profile (Raport Național privind Starea de Sănătate a Populației României)
- Spain: Online tool: http:inclasns.msssi.es
- Ireland: Healthy Ireland, the national framework for action to improve the health and wellbeing of the people of Ireland. **http://health.gov.ie/healthy-ireland**
- **Germany: the ECHI form part of the health monitoring and health reporting. Analyses based on the ECHI are presented in the Journal of Health Monitoring (**http://www.rki.de/EN/Content/Health_Monitoring/JoHM_en/JoHM_en_node.html**) and the yearly 'Health in Germany 2015' report (http://www.rki.de/EN/Content/Health_Monitoring/Health_Reporting/HealthInGermany/health_germany_node.html)**

Documents that specifically evaluate ECHI use?
None reported

Examples of impact on national policy making by use of ECHI indicators?
- Netherlands: European perinatal mortality (Peristat) reports have triggered policy developments, including introduction of country-wide system of perinatal audit.
- Denmark: International comparisons of life expectancy and mortality patterns have triggered prevention policies in the mid-nineties (' Lifetime in Denmark'. Second Report from the Life Expectancy Committee of the Ministry of Health, Denmark, 1994).

- UK: Comparisons of cancer survival have triggered policies:
- ECHI used in development of National Cancer Control Programmes
  (http://www.epaac.eu/national-cancer-plans)

Reports that serve national policy making most efficiently?
- OECD Health at a Glance
- WHO (Health for All)
- NOMESCO Health Statistics in the Nordic Countries
- Eurostat publications
- JAF
- HBSC report

The experts were also asked **how the utility of ECHI could be advanced**. The following box sums up the goals that were considered necessary:

Box: 5: Expert opinion on how the utility of ECHI could be advanced
- A clearer link to policies and policy options
- Better and more visible links to other indicator and data sets (ECHI part of a broader system)
- Better visibility of ECHI
  o   for health policy makers
  o   for society
- More active and formal approach to national entities
- Invest more in international comparability of the indicators

Some of the instruments that were suggested towards these goals were, among others:
- The use of policy targets and policy evaluation
- Regular ECHI-based reports, for different audiences, e.g. policy maker, researcher, society and in different formats
- Response DG SANTE/EMPL/RTD on ECHI indicator reports
- Active recommendations to use ECHI and how to use them (a "for dummies" meta-dataset).
- Support MS in implementing into national report tools
- Discussion of indicator set in Parliament every 2 yr
- Press releases
- Normative act on data collection

The experts were also asked how the ECHI list can be made more meaningful for international comparisons and for supporting time trends. Although these questions are not strictly within the scope of this text, the answers do show a need for better presentation/visuals, which forms a link with the next topic in this report, the repository/web space. Hence we do show the experts' suggestions here.

How can the ECHI list be made more meaningful for international comparisons?

- **Harmonised concepts** and **sources**, regular collection, increasing number of countries.
- **Presentation**
  - methodological requirements (e.g., confidence intervals),
  - one well developed indicator database with
  - easy access to information on comparability difficulties,
  - data presentation tool that marks issues with comparability
  - and provides easy access to methodological section or explanation,
  - with longer and more detailed indicator descriptions/metadata,
- Use the indicators for **national benchmark reports** and link the outcomes to relevant **best practices** in other countries

How can the ECHI list be made more meaningful for supporting time trends?

- **Updates**: The ECHI indicators have to be collected annually; it could be updated regularly; EHIS more frequent; Should be collected regularly and not change so often; Develop a method for historical update when needed.
- **Presentation**: Find attractive ways of calculation and presentation (Indexing to standard year). Use moving graphs (bulbs) etc.; An information on comparability difficulties should be easily available together with data presentation. The data presentation tool could mark those years, which are not fully comparable, by some flag and provide easy access to methodological section or explanation; Adding flags to indicate breaks in series; Implementing user friendly tools for analysis (i.eg. over the period change, linear regression, etc.); Long time series.
- Have a permanent panel, with a small number of indicators
- More **publicity**

C. Development and implementation of an information repository

During the final meeting, the experts discussed the concept of an ECHI information repository (subject of the BRIDGE Health Milestone 15 report) that was sent to them before the meeting. Central concept is the information repository as a single point of access aimed at a sustainable future, creating ECHI memory and possibly expanding towards including interactive facilities to exchange expertise and build capacity. The experts welcomed the concept of a web space where everything comes together; this web space could also include the idea of a pointer function towards other international organisations and projects, to avoid the time consuming task of collecting their meta-data or data (as has been part of previous projects). The web space may also be used to improve the visibility and presentation of ECHI, the need for which was seen in the previous section. The experts provided recommendations concerning the presentation and explanation of the ECHI indicators, relating to aspects of accessibility and dissemination. They warned that technical aspects still need to be thoroughly thought, for example, the use of open source software and web publication principles.

A first priority in the repository will be to preserve and disseminate the available background and meta-information on ECHI-indicators to create the single access point for information about the indicators and their data sources, metadata and use (Fig 6).
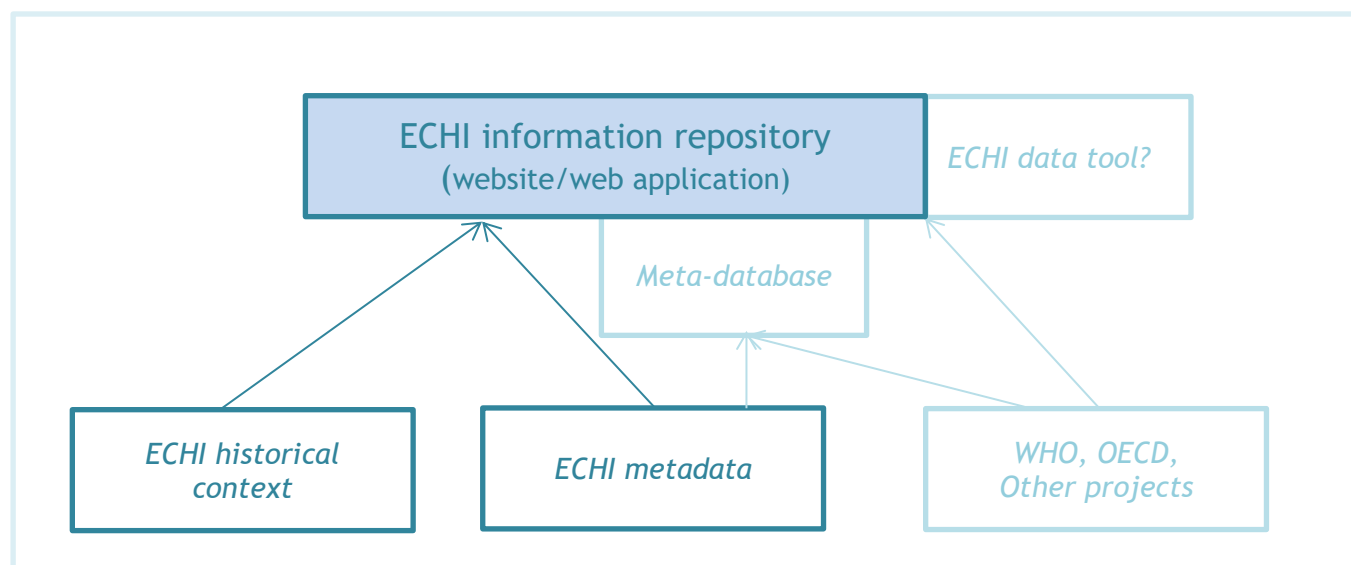
Figure 6: schematic representation of the health indicator repository of information

Thus, a central starting point is to collect the available background and meta-information on ECHI-indicators as compiled in the various ECHI and ECHIM projects and Joint Actions as well as information from related projects that have fed into setting up the ECHI-indicator lists. This includes scientific publications related to the ECHI-process and to the quality and actual use of these indicators.

Within the life of the BRIDGE Health project, we have

- Collected ECHI historical context
- Collected ECHI meta-data
- Contributed to designing a structure for presenting the above on a website
- Collected discussion points for current and future implementation

as described in BRIDGE Health Milestone 15.

Currently, the following concrete products are *under development*

- Website: see www.echi.nl, that includes a simple first prototype of the repository
- Endnote: all ECHI-related articles, for general use
- An online form to collect suggestions on different aspects of ECHI
- Alert from PubMed etc. when new information on ECHI indicators becomes available
- Meta-database: Access database containing the doc sheets, for easy searching

Providing public access to these products is a challenge, but options are being explored.

A highly important question to answer in the near future is where to host the ECHI information repository and what software to use. Some room for this has been created under the Joint Action on Health Information - InfAct.

Under InfAct, with regard to the ECHI repository, we recommend to

- Explore the sustainable governance of a web space with priority
- Explore possibilities for web based updating the ECHI documentation sheets
- Explore possibilities for web based exchange of expertise
- Restore the connection between the primary ECHI process and the ECHI data tool that is hosted by the EC
- Visualise and tighten the connection of ECHI with both Eurostat and the other players in the health information landscape in the European region that can contribute to institutionalised data collection and reporting

V. Implications and limitations

Our evaluations suggest that the time is there to revise the ECHI list and make it policy and future proof.

In the work described here, we have focused on collecting and preserving ECHI-relevant literature and obtaining views and ideas from health information experts on how to create a sustainable, policy-relevant ECHI process. Although we were only able to consult a relatively small (but highly knowledgeable) group of experts, the combination of previous evaluations and this one shows that there is common ground for revising the ECHI shortlist format and incorporating aspects of policy priorities and actionability.

We have, however, not yet found a way to involve policy makers to the extent and country coverage that we would feel necessary to accommodate their variable needs and priorities. This requires some more time and thinking. Based on our findings (section A and B) we have performed a first step in identifying relevant characteristics which may now be attributed to the indicators to help reformatting the shortlist (see Appendix 2). Also, we collected comments per indicator, as a starting point for further discussion (see Appendix 3).

In addition, we have not yet been able to include the final outcomes of the work performed in WP12, which sought to identify core health system performance indicators, but was not yet available at the time of writing this report. During the process of BRIDGE Health, we did see promising results for achieving a better coverage of health system performance issues. This will be followed-up.

VI. Conclusions and recommendations

We performed an evaluation of the ECHI-indicator shortlist with a view to optimise its sustainability and use(ability) by EU stakeholders.

Important criteria for a future ECHI shortlist are that it be balanced, i.e. accommodating both descriptive and actionable purposes, easily understandable and part of a sustainable governance structure. The future ECHI-indicator set should be a central element of a more elaborate health information system for the EU and its Member States, in close collaboration with the larger European health information landscape. Data availability, comparability and alignment are issues of continued importance.

We recommend that EU Member States invest in a continuous and collaborative effort to:

o Strengthen the links between the ECHI-shortlist and policy makers and policy priorities; and use this as input to

  - Further develop the ECHI format, i.e., to develop layering or sections to more adequately address the need for both stability and flexibility, also taking into account a suitable size, accommodating both the need for general monitoring and actionability by defining specific policy targets and commitments.

- Organize a structured procedure to identify new areas of health policy information for the EU and its MS. this would also involve revising the criteria for addition.

o Evaluate how to improve the role of health systems performance in ECHI, e.g. by incorporating (when available) results from the BRIDGE Health WP12-survey, which is aimed at harmonising monitoring of health systems and health policy.

o Develop a structured procedure to maintain and update the ECHI process and safeguard a sustainable governance structure

o Actively promote and evaluate the use of ECHI, as using the data will teach us valuable lessons. We call out to the research and policy communities to report on the concrete use of ECHI and resulting policy lessons.

o Establish an ECHI indicator platform, i.e. a single point of access for

- Easy and sustainable access to existing methodologies, expertise, historical and current knowledge; an important aspect here is that this platform may link through to other websites and indicators, i.e. fulfil a pointer function, where possible, in order to be more efficient. This will also contribute to visualising the place the ECHI have in the overarching European health information landscape.

- Exchange of expertise and capacity building on health indicators and their use in EU

- And possibly also facilitating a structural mechanism for updating the ECHI meta-data, both content-wise and technical

o Develop joint projects and data collections with the major international organisations active in the European region, to efficiently and sustainably embed ECHI in the international health information landscape.

o Analyse data (indicators) on health and care in the EU and its MS along the lines of a new and flexible ECHI-shortlist on a regular basis and provide input to the evaluation of past policies and assist in addressing new common health policy issues among MS.

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A.   Appendix 1: Search strategy

PubMed

A. ECHI
(ECHI[tw] OR ECHIM[tw] OR European core health indicator[tw] OR European community health indicator[tw] OR European core health indicators[tw] OR European community health indicators[tw]) NOT (echino*[tiab] OR HOX[tiab] OR "Employment-contingent health insurance"[tiab] OR ECHIS[tiab])

B. EU health indicator
 (("European Union"[tw] OR "European Commission"[tw] OR EU[tw] OR EC[tw]) AND health indicator*[tw]) NOT ("electrical conductivity"[tiab] OR "Escherichia coli"[tiab] OR "elemental carbon"[tiab] OR "emotional competence"[tiab])

C. European health information system
 ("European Union"[tw] OR "European Commission"[tw] OR EU[tw] OR EC[tw]) AND Health information system*[tw] NOT ("electrical conductivity"[tiab] OR "Escherichia coli"[tiab] OR "elemental carbon"[tiab] OR "emotional competence"[tiab])

Scopus

A. ECHI
TITLE-ABS-KEY (echis OR echim OR "European core health indicators" OR "European community health indicators" OR "European core health indicator" OR "European community health indicator") AND NOT TITLE-ABS-KEY (echin* OR echis* OR echoe* OR hox OR "Employment-contingent health insurance" OR river OR "echis nostoma" OR nigeria OR japan OR ich OR "engineering biotechnological institute" OR "enoyl CoA hydratase 1") AND NOT AUTHOR-NAME (echis) AND (EXCLUDE (SUBJAREA , "ARTS ") OR EXCLUDE (SUBJAREA , " MATH ") OR EXCLUDE (SUBJAREA , " AGRI "))

B. European health indicator
TITLE-ABS-KEY (("European Union" OR "European Commission" OR eu OR ec) AND ("health indicator*")) AND NOT ("electrical conductivity" OR "Escherichia coli" OR soil OR "emotional competence")

C. European health information system
TITLE-ABS-KEY (("European Union" OR "European Commission" OR eu OR ec) AND TITLE-ABS ("Health information system*")) AND NOT ("electrical conductivity" OR "Escherichia coli" OR soil OR "emotional competence")

Embase

A. ECHI
('european core health indicators':ti,ab,kw OR 'european core health indicator':ti,ab,kw OR 'european community health indicators':ti,ab,kw OR 'european community health indicator':ti,ab,kw OR 'echi':ti,ab,kw) NOT (echo*:ti,ab,kw OR echin*:ti,ab,kw OR echis:ti,ab,kw OR 'echi-nocandins':ti,ab,kw OR 'echi-nococcus':ti,ab,kw OR 'east carolina heart institute':ti,ab,kw OR hox:ti,ab,kw OR 'employment-contingent health insurance':ti,ab,kw OR 'rgd echi':ti,ab,kw OR gaba:ti,ab,kw OR 'enoyl coa hydratase 1':ti,ab,kw) AND [1998-2017]/py

Google scholar
http://scholar.google.com **(advanced search)**
A. ECHI
"European core health indicators" OR "European community health indicators" filetype:pdf
(Since 1998) (No patents or citations)
→n=304
Check toplist n=100

Google
https://www.google.com **(advanced search)**
A. ECHI
allintext: "European community health indicators" OR "European core health indicators"
filetype:pdf
allintitle: "European community health indicators" OR "European core health indicators"
Check toplist n=60

B. Appendix 2: Proposal for ECHI format evaluation under policy makers

This appendix contains some first steps for a follow-up study to explore possibilities for a new ECHI format, based on conclusions in this report. The embedded excel file contains some concepts that have arisen in the main text, that can be used to further explore a possible new format, i.e.

-the identification of indicators that could contribute to setting policy targets and/or

-the attribution of indicators to different levels (e.g., headline, operational, explanatory, contextual) and/or

-the reconsideration of the current links with policies or the attribution of new links

The sample to explore this with will need to include policy makers and provide the opportunity to represent EU-wide consensus.

Practically we would envisage an online methodology with broad coverage to implement this evaluation.

Concepts for a new
ECHI format.xlsx

C.   Appendix 3: Practical input by indicator, starting point for further discussion

The below remarks and recommendations are the result of combined input by experts in the current evaluation, as well as the detailed input from the 2013 PHEIAC report [3].

This is a working document and the comments should not be seen as a concrete proposal for changes, but could be a starting point for further evaluation and discussion in the Joint Action on Health Information.

In this, it is important to involve policy makers.

Table: collection of expert comments on individual indicators, to further spark discussion (working document)

Indicator[5]	Data source[6]	Combined remarks and/or recommendations[7]
Demographic and socio-economic		
01. Population by sex/age	A	Context; Maybe limit to pop > 65 yrs (% total pop) and/or dependency ratio and/or pop > 80 yrs.
02. Birth rate, crude	A	Context
03. Mother's age distribution	A	Teenage pregnancies may represent broader social issue. PHEIAC < 4.00
04. Total fertility rate	A	Context. Overlap with #2 for policymaking
05. Population projections	A	May remove, incidental computation and reporting instead
06. Population by education	B	May remove, replace by measure of educational achievement in a country. What is needed for inequalities?
07. Population by occupation	B	May remove, occupation no longer fixed or clear; maybe income
08. Total unemployment	B	Define health policy relevance: long-term unemployment?
09. Population below poverty line and income inequality	B	Survey: split into 2 different indicators
Health status		
10. Life expectancy	A	
11. Infant mortality	A	
12. Perinatal mortality	D	May split in foetal and neonatal mortality (Peristat)
13. Disease-specific mortality; Eurostat, 86 causes	A	May need to rethink all mortality related indicators. Maybe define major categories with policy relevance. Survey: serve as pointer
14. Drug-related deaths	F	Select EMCD core indicator(s)

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[5]Colours represent current availability status: white: implementation section (n=67), light grey: work in progress section (n=14), dark grey: development section (n=13)

[6]Letters represent A: Eurostat routine data collection; B: EU LFS & SILC; C: EHIS; D: WHO HfA; E: OECD; F: various EU (EMCDDA, ECDC, EEA, ESAW, IDB, EUROFOUND), G: various WHO (UN ECE, CICID, GISAW); blank=WiP or Dev section; envisaged sources are EHIS, Eurostat diagnosis specific morbidity data, Eurostat patient mobility, EurOhex, OECD waiting times project; some sources are not decided yet.

[7]Includes information from the report's Annex A as well as perceived usefulness from table 4.2, scored on a scale from 0 to 5 in the PHEIAC report - we here arbitrarily distinguish indicators below 4 and above 4.5 (indicators in development section have not been evaluated).

Indicator[5]	Data source[6]	Combined remarks and/or recommendations[7]
15. Smoking-related deaths		Survey: calculation complicated, need for explanation. May be removed, incidental computation & reporting instead. PHEIAC > 4.50
16. Alcohol-related deaths		Survey: calculation complicated, need for explanation. May be removed, incidental computation & reporting instead.
17. Excess mortality by extreme temperatures (formerly 'by heat waves')		Survey: too specific; Limited policy relevance, large administrative burden. May be removed, incidental computation & reporting instead.
18. Selected communicable diseases	F	May consider AMR and/or food safety DALY's
19. HIV/AIDS	G	
20. Cancer incidence	G	
21. (A) Diabetes, self-reported prevalence	C	Organise/combine the selfreported disease indicators
21. (B) Diabetes, register-based prevalence		May be removed, estimation & reporting every X year instead.
22. Dementia		May be removed, estimation & reporting every X year instead.
23. (A) Depression, self-reported prevalence	C	May be removed, estimation & reporting every X year instead.
23. (B) Depression, register-based prevalence		May be removed, estimation & reporting every X year instead. PHEIAC > 4.50
24. AMI		May be replaced by OECD AMI survival = HCQI
25. Stroke		May be replaced by OECD Stroke survival = HCQI
26. (A) Asthma , self-reported prevalence	C	See remark under 21; PHEIAC < 4.00
26. (B) Asthma, register-based prevalence		May be removed, estimation & reporting every X year instead. PHEIAC > 4.50
27. (A) COPD , self-reported prevalence	C	See remark under 21
27. (B) COPD, register-based prevalence		May be removed, estimation & reporting every X year instead. PHEIAC > 4.50
28. (Low) birth weight	D	Discuss definition (cut off)
29. (A) Injuries: home/leisure, violence, self-reported incidence	C	Discuss selection/definition PHEIAC < 4.00
29. (B) Injuries: home/leisure, violence, register-based incidence	F	May be removed, estimation & reporting every X year instead. PHEIAC > 4.50
30. (A) Injuries: road traffic, self-reported incidence	C	Discuss selection/definition; PHEIAC < 4.00
30. (B) Injuries: road traffic, register-based incidence	G	Discuss actionability; PHEIAC > 4.50
31. Injuries: workplace	F	Discuss actionability
32. Suicide attempt		

Indicator[5]	Data source[6]	Combined remarks and/or recommendations[7]
33. Self-perceived health	B	Discuss definition
34. Self-reported chronic morbidity	B	Discuss definition
35. Long-term activity limitations	B	Specify; PHEIAC < 4.00
36. Physical and sensory functional limitations	C	Survey: could include cognitive limitations
37. General musculoskeletal pain		
38. Psychological distress		
39. Psychological well-being		Take general well-being (life satisfaction)
40. Health expectancy: Healthy Life Years (HLY)	A	Discuss definition
41. Health expectancy, others		Survey: merge with 40, or remove altogether
Health determinants		
42. Body mass index	C	3 indicators: adults overweight AND obesity; Add: children
43. Blood pressure	C	May be removed, do estimation every X year instead.
44. Regular smokers	C	2 indicators: adults and children (HBSC)
45. Pregnant women smoking		Check data availability (Peristat); discuss definition
46. Total alcohol consumption	D	Discuss best alcohol indicators; Add: alcohol & children (HBSC)
47. Hazardous alcohol consumption	C	Discuss best alcohol indicators, include children
48. Use of illicit drugs	F	Composite indicator feasible? Else: select?
49. Consumption of fruit	C	Discuss definition/target; PHEIAC < 4.00
50. Consumption of vegetables	C	Discuss definition/target; PHEIAC < 4.00
51. Breastfeeding	D	Discuss definition
52. Physical activity	C	Discuss definition;
53. Work-related health risks	F	Discuss definition;
54. Social support	C	Discuss definition; PHEIAC < 4.00
55. PM10 (particulate matter) exposure	F	Survey: change to PM2.5
Health interventions: health services		
56. Vaccination coverage in children	D	PHEIAC > 4.50
57. Influenza vaccination rate in elderly	C	
58. Breast cancer screening	C	Discuss definition/target; PHEIAC > 4.50
59. Cervical cancer screening	C	Discuss definition/target; PHEIAC > 4.50
60. Colon cancer screening	C	Discuss definition/target
61. Timing of first antenatal visits among pregnant women		Discuss with Peristat; Regular reporting in Peristat report?
62. Hospital beds	A	Survey: no clear interpretation (is it better to have more?) May be removed; Applies to most resources and activity indicators, Discuss appropriate indicators

Indicator[5]	Data source[6]	Combined remarks and/or recommendations[7]
63. Practising physicians	A	May be removed (see 62)
64. Practising nurses	A	May be removed (see 62)
65. Mobility of professionals		Discuss definition; May be removed
66. Medical technologies: MRI units and CT scans	A	Discuss selection
67. Hospital in-patient discharges, limited diagnoses	A	Survey: serve as pointer
68. Hospital daycases, limited diagnoses	A	Survey: serve as pointer; PHEIAC < 4.00
69. Hospital day-cases as percentage of total patient population (in-patients & day-cases), selected diagnoses	A	Survey: serve as pointer; PHEIAC < 4.00
70. Average length of stay (ALOS), limited diagnoses	A	Survey: serve as pointer
71. General practitioner (GP) utilisation	C	Discuss definition; May consider unmet need for medical care
72. Selected outpatient visits	C	May be removed
73. Surgeries: PTCA, hip, cataract	A	Discuss selection
74. Medicine use, selected groups	C	Discuss selection
75. Patient mobility		May be removed, regular report every X year instead; PHEIAC < 4.00
76. Insurance coverage	E	
77. Expenditures on health	A	Survey: serve as pointer (to SHA); PHEIAC > 4.50; but difficult as benchmark for health policymaking
78. Survival rates cancer	F	
79. 30-day in-hospital case-fatality AMI and stroke	E	May not be fully complete due to being purely hospital-based
80. Equity of access to health care services	B	Definition may be changed somewhat
81. Waiting times for elective surgeries		May be removed, regular report every X year instead
82. Surgical wound infections		May be removed, regular report every X year instead; Local data preferred for policy-making
83. Cancer treatment delay		Project-dependent; may not be relevant for policy-making; May be removed, regular report every X year instead
84. Diabetes control		Project-dependent; May be removed, regular report every X year instead; May replace with different indicator
Health interventions: health promotion		
85. Policies on ETS exposure (Environmental Tobacco Smoke)	G	
86. Policies on healthy nutrition		Atypical indicator, may be removed; Survey: replace with better measurable, more specific indicators
87. Policies and practices on healthy lifestyles		Atypical indicator, may be removed; Survey: replace with better measurable, more specific indicators

Indicator[5]	Data source[6]	Combined remarks and/or recommendations[7]
88. Integrated programmes in settings, including workplace, schools, hospital		Atypical indicator, may be removed; Survey: replace with better measurable, more specific indicators