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An tÚdarás Um Fhaisnéis
agus Cáilíocht Sláinte

Protocol for high level review of configuration and reform of Public Health systems in selected countries

15 March 2022

Version	2.0
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Version History

Version number	Date	Details
V1.0	3 February 2022	
V2.0	15 March 2022	Inclusion of: <ul style="list-style-type: none">▪ detailed search strategy▪ ethics framework▪ topic guide for RQ2▪ inclusion/exclusion criteria for RQs▪ further clarification of the four “pillars” of Public Health▪ ethical approval reference number.

Purpose and Aim

This protocol aims to outline the process by which the health technology assessment (HTA) team will identify and review relevant evidence on the structure, function, and reform of Public Health systems in selected countries. This work will support the Public Health Reform Expert Advisory Group (EAG), convened by the Minister for Health. The HTA team will perform reviews based on the two specific research questions (RQs) outlined within this protocol.

1. Process outline

It is vital that a standardised approach to the process is developed and documented to allow for transparency, aid project management, and mitigate risks that may arise due to changes in personnel delivering the project.

Five distinct steps in the process have been identified and will be completed. These are listed below and described in more detail in sections 2.1-2.5.

- 1.** Search of relevant sources
- 2.** Screening of eligible websites and identified articles
- 3.** Data extraction
- 4.** Verification of information
- 5.** Summarise the findings.

The Public Health Reform EAG seeks to identify international best practices and lessons learned regarding the systems and structures that deliver core Public Health functions. Broadly, these will be considered relative to four key pillars of Public Health:

- health protection
- health improvement
- health intelligence
- health service improvement.

To support the work of the Public Health Reform EAG, the evidence summary will address the following two RQs:

1. How do Public Health systems and or structures of selected countries function at a high level?
2. What were the lessons learned about the establishment of, or transition to, those structures in other countries, including any lessons learned regarding their suitability in light of the COVID-19 pandemic?

2.1 Search of relevant sources

Data relating to Public Health systems and structures (RQ1) and lessons learned (RQ2) for a select group of countries will be identified from the following sources:

- organisations' websites
- electronic database and grey literature searching
- representatives from key national-level organisations.

A search of a select number of countries will be performed to identify and describe the configuration of the Public Health systems within. The following countries have been selected for inclusion in this review:

- Australia
- Canada
- Denmark
- Finland
- Netherlands
- New Zealand
- Norway
- Sweden
- England
- Northern Ireland
- Scotland
- Wales.

These countries were selected based on a combination of geographical proximity to Ireland, population size, organisation of health services, European Union membership and or availability of documents in English. See Appendix 1 for a list (which is not an exhaustive list) of organisations that will be searched.

A targeted scoping search of organisations' websites (see Appendix 1), together with a search of electronic databases (see Appendix 2.1) and grey literature search (see Appendix 2.2), will be used to identify any official documents, reports and or peer-reviewed publications describing:

- the configuration and functioning of Public Health systems and structures in each of the countries identified for inclusion in the evidence summary (RQ1)
- lessons learned with regard to the establishment of, or transition to, new Public Health structures (within the last five years) in that country and their suitability in light of the COVID-19 pandemic (RQ2).

2.2 Screening of eligible websites and identified articles

For RQ1, data relating to Public Health systems and structures from any of the 12 selected countries will be eligible for inclusion. Articles and websites not meeting these criteria will be excluded.

For RQ2, the inclusion and exclusion criteria were formulated in line with the CIMO (Context, Intervention, Mechanism, Outcome) framework;⁽¹⁾ see Table 1. The CIMO framework describes "the problematic Context, for which the design proposition suggests a certain Intervention type, to produce, through specified generative Mechanisms, the intended Outcome(s). The context describes the environment within which change occurs, the intervention is what influences a change, and the intervention triggers the mechanism, producing the outcome.

Table 1. Context, Intervention, Mechanism, Outcome for RQ2

Context	<ul style="list-style-type: none">▪ The configuration of Public Health structures within one of the eligible countries as per the 12 essential Public Health functions
Intervention	<ul style="list-style-type: none">▪ Event/circumstances that triggered the need to reform the configuration of Public Health structures, for example, the COVID-19 pandemic.
Mechanism	<ul style="list-style-type: none">▪ Changes/reforms made to the configuration of Public Health structures (within the last five years to ensure currency of the data included).
Outcome	<ul style="list-style-type: none">▪ New configuration of Public Health structures in place as per the 12 essential Public Health functions▪ Lessons learned about the establishment of, or transition to, new Public Health structures in that country, and their suitability in light of the COVID-19 pandemic.

Non-English documents and websites from the included EU member states will be translated where necessary via Google Translate, with this noted as a potential caveat.

2.3 Data extraction

For RQ1, data will be extracted from official documents, reports and peer-reviewed publications under the following headings (that is, the 12 essential functions of Public Health as defined by the WHO⁽²⁾):

1. Monitoring and evaluating populations health status, health service utilisation and surveillance of risk factors and threats to health
2. Public health emergency management
3. Assuring effective public health governance, regulation, and legislation
4. Supporting efficient and effective health systems and multisectoral planning, financing, and management for population health

5. Protecting populations against health threats, including environment and occupational hazards, food safety, chemical and radiation hazards
6. Promoting prevention and early detection of diseases, including non-communicable and communicable diseases
7. Promoting health and wellbeing and actions to address the wider determinants of health and inequity
8. Ensuring community engagement, participation and social mobilization for health and wellbeing
9. Ensuring adequate quantity and quality of public health workforce
10. Assuring the quality of and access to health services
11. Advancing public health research
12. Ensuring equitable access to and rational use of essential medicines and other health technologies.

See Appendix 3 for the data extraction template.

The first step in the data collection process will be to map the 12 essential Public Health functions to the four pillars of Public Health:

- Health protection: the prevention and control of infectious disease and environmental and radiation risks, and emergency response to major incidents and health threats.
- Health promotion and well-being: developing an integrated approach to promoting health and preventing disease, with a particular emphasis on health inequalities.
- Health intelligence: using population health surveillance and monitoring of trends, and using an evidence-based assessment of policies, programmes, and services to inform health planning.
- Health service improvement: working towards delivering effective, efficient, and accessible health services.

Data extraction will be completed by one reviewer and checked for inaccuracies or omissions by a second reviewer.

For RQ2, relevant data describing the lessons learned about the establishment of, or transition to, new Public Health structures (within the last five years to ensure currency of the data included) in that country and their suitability in light of the COVID-19 pandemic will be extracted from organisations' websites, official documents, reports and peer-reviewed publications.

2.4 Verification of information

Key representatives in each country will be contacted by email and invited to participate in the project. Participation will include a review of the extracted data for RQ1 and involvement in a semi-structured interview to collect data for RQ2. The purpose of these steps is to both verify and supplement the extracted data. Ethics approval to conduct these interviews was sought from the RCSI University of Medicine and Health Sciences Research Ethics Committee (reference number: REC202202016). Informed consent will be obtained from interviewees.

Those that consent to participate will be sent a summary of the data extracted for RQ1, invited to verify and, where necessary, supplement it. They will also be sent an invitation to attend an interview for RQ2. The interview will be semi-structured. An interview topic guide will be developed, piloted and refined as necessary (see Appendix 4). The focus of the interview will be to understand recent, ongoing or planned changes to Public Health systems and structures, including their suitability for COVID-19 pandemic preparedness. The interviews will consider changes brought about by surge capacity protocols and those brought about in an effort to reform Public Health structures on a permanent basis. The questions will, therefore broadly relate to:

- pre-COVID-19 pandemic Public Health structures
- changes to Public Health structures during the COVID-19 pandemic
- Public Health structures planned for the post-COVID-19 pandemic period.

The interview will be audio recorded. A minimum of three team members will be present during the interview. One team member will conduct the interview while two others will be responsible for note-taking (on a laptop). Using a deductive approach, thematic data analysis will be conducted following a six-step process.⁽³⁾ One researcher will review the interview notes and recording to familiarise themselves with the data and conduct verification of the interview data versus data extracted from organisations' websites and the electronic database and grey literature searching. Direct participant quotes will not be used. Following the interview, a summary will be provided to the representative for their information. Key representatives will be given up to seven days to query the summary; after this time, the summary will be considered an accurate representation of the interview.

2.5 Summarise the findings

The report will consist of two main results chapters. The first will relate to how Public Health systems and structures deliver the essential Public Health functions. The second will relate to the lessons learned in relation to the performance and resilience of the Public Health systems during the COVID-19 pandemic.

For RQ1, a presentation outlining the Public Health systems and structures (as identified through scoping searches and verified by key representatives) will be presented to the Public Health Reform EAG at their meeting on 28 March 2022.

For the final report, RQ1 (that is, the overview of Public Health systems and structures) and RQ2 (that is, the overview of the lessons learned with regard to the establishment of, or transition to, the structures outlined in RQ1), will be compiled and sent to the Public Health Reform EAG in advance of a presentation to the group at their meeting on the 25 April 2022.

3. Quality assurance process

The review questions will be undertaken in accordance with the HTA directorate's Quality Assurance Framework and led by an experienced member of the team. Data extraction for each country will be done by one reviewer and checked by a second for inaccuracies. All summaries and reviews will be reviewed by at least two members of the senior management team, to ensure processes are followed and quality is maintained.

References

1. Denyer D, Tranfield D, van Aken JE. Developing Design Propositions through Research Synthesis. *Organization Studies*. 2008;29(3):393-413.
2. World Health Organization. 21st century health challenges: can the essential public health functions make a difference? Geneva 2021 [cited 2022 March 21]. Available from:
<https://apps.who.int/iris/bitstream/handle/10665/351510/9789240038929-eng.pdf?sequence=1&isAllowed=y>
3. Braun V, Clarke V. Using thematic analysis in psychology. *Qualitative Research in Psychology*. 2006;3(2):77-101.

Appendix 1 Search of eligible organisations

The organisations listed below will be searched for relevant data relating to Public Health systems and structures (this list is not exhaustive and will be added to as necessary):

1. National Ministries of Health:
 - a. [Department of Health and Social Care](#)
 - b. [Department of Health \(Northern Ireland\)](#)
 - c. [Ministry of Health, Welfare and Sport \(Dutch\)](#)
 - d. [Ministry of Social Affairs and Health \(Finland\)](#)
 - e. [Ministry of Health and Social Affairs \(Sweden\)](#)
 - f. [Royal Norwegian Ministry of Health and Care Services](#)
 - g. [Ministry of Health \(Denmark\)](#)
 - h. [Ministry of Health - Manatū Hauora](#)
 - i. [Department of Health \(Australia\)](#)
 - j. [Health Canada](#)
2. National Public Health agencies
 - a. [UK Health Security Agency](#) and [Office for Health Improvement and Disparities](#)
 - b. [Health and Social Care Northern Ireland](#)
 - c. [Public Health Scotland](#)
 - d. [Public Health Wales](#)
 - e. [RIVM: National Institute for Public Health and the Environment](#)
 - f. [Danish Health Authority](#)
 - g. [Finnish Institute for Health and Welfare](#)
 - h. [Norwegian Institute of Public Health](#)
 - i. [The Public Health Agency of Sweden – Folkhälsomyndigheten](#)
 - j. [Public Health Agency of Canada](#)
3. Specific professional Public Health bodies
 - a. [Royal Society for Public Health](#)
 - b. [Faculty of Public Health](#)
 - c. [New Zealand College of Public Health Medicine](#)
 - d. [Australasian Faculty of Public Health Medicine](#)
 - e. [The Royal College of Physicians and Surgeons of Canada](#)

Appendix 2 Search strategy

Appendix 2.1 Search strategy for electronic databases

Database: Medline (EBSCO)		
#	Query	Limiters/Expanders
S1	(MH "Public Health Administration")	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase
S2	TI "public health"	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase
S3	S1 OR S2	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase
S4	AB ("public health" N4 (config* OR reform OR structure* OR policy OR policies OR management OR system OR systems OR function* OR organi?ation* OR model OR models OR framework*)) OR TI ("public health" N4 (config* OR reform OR structure* OR policy OR policies OR management OR system OR systems OR function* OR organi?ation* OR model OR models OR framework*)))	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase
S5	S3 AND S4	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase
S6	(MH "Epidemics+")	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase
S7	AB (pandemic* OR epidemic*) OR TI (pandemic* OR epidemic*)	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase
S8	(MH "COVID-19") OR (MH "SARS-CoV-2")	Limiters - Date of Publication: 20180101-20221231 Expanders - Apply equivalent subjects Search modes - Boolean/Phrase
S9	(TI COVID-19 OR coronavir* OR "corona virus" OR (Wuhan N2 virus) OR "2019 nCoV" OR "severe acute respiratory syndrome 2" OR SARS-CoV-2 OR (2019 AND (new OR novel) AND coronavirus)) OR (AB COVID-19 OR coronavir* OR "corona virus" OR (Wuhan N2 virus) OR "2019 nCoV" OR "severe acute respiratory syndrome 2" OR SARS-CoV-2 OR (2019 AND (new OR novel) AND coronavirus))	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase
S10	S6 OR S7 OR S8 OR S9	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase

S11	S5 AND S10	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase
S12	S5 AND S10	Limiters - Date of Publication: 20180101-20221231 Expanders - Apply equivalent subjects Search modes - Boolean/Phrase

Database: Embase (Elsevier)

#	Query
1	'public health':ti
2	'public health service'/exp
3	#1 OR #2
4	('public health' NEAR/4 (config* OR reform OR structure* OR policy OR policies OR management OR system OR systems OR function* OR organi?ation* OR model OR models OR framework*)):ab,ti
5	pandemic*:ab,ti OR epidemic*:ab,ti
6	'pandemic'/exp OR 'epidemic'/exp
7	'covid 19':ab,ti OR 'sars-cov-2':ab,ti OR '2019-ncov':ab,ti OR '2019 ncov':ab,ti
8	'severe acute respiratory syndrome coronavirus 2':ab,ti
9	'coronavirus disease 2019'/exp
10	#5 OR #6 OR #7 OR #8 OR #9
11	#3 AND #4 AND #10
12	#3 AND #4 AND #10 AND [2018-2022]/py

Database: The Cochrane Library

#	Query
1	("public health"):ti (Word variations have been searched)
2	MeSH descriptor: [Public Health Administration] explode all trees
3	("public health" NEAR/4 (config* OR reform OR structure* OR policy OR policies OR management OR system OR systems OR function* OR organi?ation* OR model OR models OR framework*)):ti,ab,kw (Word variations have been searched)
4	MeSH descriptor: [SARS-CoV-2] explode all trees
5	MeSH descriptor: [COVID-19] explode all trees
6	MeSH descriptor: [Epidemics] explode all trees

7	(pandemic* OR epidemic*):ti,ab,kw (Word variations have been searched)
8	(COVID-19 OR "2019 nCoV" OR "severe acute respiratory syndrome 2" OR SARS-CoV-2):ti,ab,kw (Word variations have been searched)
9	#1 OR #2
10	#3 AND #9
11	#4 OR #5 OR #6 OR #7 OR #8
12	#10 AND #11

Appendix 2.2 Grey literature search strategy

A search of unpublished (grey) literature was conducted. Resources searched were: McMaster Health Forum <https://www.mcmasterforum.org>, the National Institute for Health and Care Excellence (NICE) Evidence Search <https://www.evidence.nhs.uk/>, Turning Research into Practice (TRIP) database <https://www.tripdatabase.com/>, and a search of Google/Google Scholar. A journal scan of high impact journals identified in Thompson Reuters Journal Citation Reports Database was also conducted to find relevant papers.

Search Strategy used for <https://www.google.com/>

intitle:"public health" (intext:configure OR intext:configuration OR intext:function OR intext:functions OR intext:framework OR intext:reform OR intext:structure OR intext:system OR intext:policy OR intext:organisation) filetype:pdf

Sort by relevance and search first 10 pages (100 results)

The search was limited to the following urls

(site:gov.uk OR site:government.nl OR site:stm.fi OR site:government.se OR site:government.nl OR site: regjeringen.no OR site:sum.dk OR site:health.govt.nz OR site:health.gov.au OR site:canada.ca OR site:publichealthscotland.scot OR site:phw.nhs.wales OR site:health-ni.gov.uk OR site:rivm.nl OR site:sst.dk OR site:thl.fi OR site:fhi.no OR site:folkhalsomyndigheten.se OR site:rsph.org.uk OR site:fph.org.uk OR site:nzcphm.org.nz OR site:racp.edu.au OR site:royalcollege.ca)

Appendix 3 Data extraction template for RQ1

Essential Public Health functions	
Monitoring and evaluating populations health status, health service utilisation and surveillance of risk factors and threats to health (EPHF1)	<p><i>National:</i></p> <p><i>Regional:</i></p> <p><i>Local:</i></p>
Public health emergency management (EPHF2)	<p><i>National:</i></p> <p><i>Regional:</i></p> <p><i>Local:</i></p>
Assuring effective public health governance, regulation, and legislation (EPHF3)	<p><i>National:</i></p> <p><i>Regional:</i></p> <p><i>Local:</i></p>
Supporting efficient and effective health systems and multisectoral planning, financing, and management for population health (EPHF4)	<p><i>National:</i></p> <p><i>Regional:</i></p> <p><i>Local:</i></p>
Protecting populations against health threats, including environment and occupational hazards, food safety, chemical and radiation hazards (EPHF5)	<p><i>National:</i></p> <p><i>Regional:</i></p> <p><i>Local:</i></p>
Promoting prevention and early detection of diseases including non-communicable and communicable diseases (EPHF6)	<p><i>National:</i></p> <p><i>Regional:</i></p> <p><i>Local:</i></p>
Promoting health and wellbeing and actions to address the wider determinants of health and inequity (EPHF7)	<p><i>National:</i></p> <p><i>Regional:</i></p>

Essential Public Health functions	
	<i>Local:</i>
Ensuring community engagement, participation and social mobilization for health and wellbeing (EPHF8)	<i>National:</i> <i>Regional:</i> <i>Local:</i>
Ensuring adequate quantity and quality of public health workforce (EPHF9)	<i>National:</i> <i>Regional:</i> <i>Local:</i>
Assuring quality of and access to health services (EPHF10)	<i>National:</i> <i>Regional:</i> <i>Local:</i>
Advancing public health research (EPHF11)	<i>National:</i> <i>Regional:</i> <i>Local:</i>
Ensuring equitable access to and rational use of essential medicines and other health technologies (EPHF12)	<i>National:</i> <i>Regional:</i> <i>Local:</i>

Appendix 4 Interview topic guide for RQ2

Questions for countries that have gone through reform

a) Opening the interview

Thank you for agreeing to participate in this interview, and for verifying the data collected as part of the research question (RQ) 1.

b) Clarification

Any uncertainties relating to RQ1 and the Public Health structures in that country should be clarified with the interviewee at this stage.

c) Reform

1. Within the last five years (and pre-pandemic) have there been reforms in how Public Health is delivered in your country.
2. What changes were made?
3. What triggers lead to these changes being made? (Prompts: What were the weaknesses of the former Public Health structures? What were you trying to achieve in making these changes? What (if any) were the strengths of the former Public Health structures in place? Were these aspects retained post reform?)
4. What efficiencies or improvements were achieved as a result of these changes?
5. What challenges were experienced as a result of these changes?
6. Who were the key players in bringing about implementation of the new Public Health structures?
7. How did you decide upon the new structure for Public Health?
8. How was the public involved in informing the changes made (consultation, acceptance, engagement), and how did this happen?

d) Changes in response to the COVID-19 pandemic

1. What changes to Public Health structures were made during the COVID-19 pandemic?
2. Were these changes temporary or long-term? Which, if any, of these changes will be maintained subsequent to the pandemic?
3. How well did these new Public Health structures integrate with the existing Public Health structures in place?
4. What efficiencies/improvements were achieved as a result of these changes?
5. What challenges were experienced as a result of these changes?
6. How did you prioritise which services to continue delivering during the COVID-19 pandemic?
7. Who were the key players in bringing about the implementation of these changes?

Questions for countries that have not gone through reform

a) Opening the interview

Thank you for agreeing to participate in this interview, and for verifying the data collected as part of the research question (RQ) 1.

b) Clarification

Any uncertainties relating to RQ1 and the Public Health structures in that country should be clarified with the interviewee at this stage.

c) Changes in response to the COVID-19 pandemic

1. What changes to Public Health structures were made during the COVID-19 pandemic?
2. Were these changes temporary or long-term? Which, if any, of these changes will be maintained subsequent to the pandemic?
3. How well did these new Public Health structures integrate with the existing Public Health structures in place?
4. What efficiencies/improvements were achieved as a result of these changes?
5. What challenges were experienced as a result of these changes?
6. How did you prioritise which services to continue delivering during the COVID-19 pandemic?
7. Who were the key players in bringing about the implementation of these changes?

d) Planned reform

1. Are there any plans to reform how Public Health is delivered in your country?
2. What changes do you anticipate? How has the COVID-19 impacted this?
3. What factors have triggered the anticipated changes? (Prompts: What are the weaknesses of the current Public Health structures? What are you trying to achieve in making these changes? What (if any) are the strengths of the current Public Health structures in place? Will these aspects be retained post-reform?)
4. What efficiencies or improvements do you hope to achieve as a result of reform?
5. What challenges are you expecting in response to reform?
6. Who were the key players in bringing about reform and implementation of any changes to Public Health structures?
7. How will you decide upon the new structure for Public Health?
8. How will the public be involved in informing the changes made (consultation, acceptance, engagement)?

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