



Deliverable 8.4 — WP8 Task 8.3.2

Guidelines for Member States and regions for health reports

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Executive Summary

This document is Deliverable number 8.4, prepared within task 8.3.2 of the Joint Action on Health Information (hereinafter referred to as InfAct) with project number 801553. The report provides guidance, including quality criteria, for the generation of public health reports, as well as general recommendations for good practice in national health reporting. The aim of the guidance document is to facilitate making health information adequately available while reducing inequalities in health reporting across the EU.

To get an overview of health reporting practices in EU Member States and associated countries, a web-based desk research of health reporting formats and target groups was performed. It showed that public health reports are the most frequently used format across countries (94%). Scientists and researchers were stated as target group of public health reports in 51%, followed by politicians and decision-makers (41%), while the general public is explicitly addressed in 29%. However, across all reporting formats, the general public is the most frequently addressed group. Several good-practice examples for different reporting formats were identified from the analysed publications. The desk research also showed that health reporting practices among the analysed countries are heterogeneous.

The results of the web-based desk research confirm and support the focus of this guidance document on the format of public health reports. Based on the results of earlier projects and exchange with experts, eight categories of quality criteria for preparing standardised and comparable public health reports were derived and compiled in this guidance document. The categories range from scientific standards and topic selection to data handling and presentation of results. The criteria are supplemented by general recommendations on health reporting, which can also be applied to other formats for communicating health information to the targeted groups.

The guidance document is intended to facilitate the preparation, dissemination and access to standardised and comparable public health reports as a basis for evidence-based decision-making.

Key points

- The report highlights the importance of high-quality public health reports as a basis for policy decision-making.
- A web-based desk research showed that health reports are the most frequently used reporting format in EU Member States and associated countries.
- The report is intended as guidance document for preparing standardised and comparable public health reports and provides quality criteria.
- These quality criteria should be considered when preparing a public health report and assessed for their relevance.
- The report also provides general recommendations for good practice in national health reporting.

InfAct: Guidelines for Member States and regions for health reports

I. Introduction

Health reporting provides descriptions of the health status of a population and its determinants, analyses developments and identifies areas where action is needed in health care, health protection, health promotion and disease prevention. In addition, health reporting may describe and analyse the performance of national or regional health systems including healthcare volumes and costs. It thus provides an evidence basis for health policy decisions [1]. In order to implement informed public health measures, up-to-date information must be provided adequately to the respective target groups. Depending on the needs and competencies of the addressees, it is important to develop dissemination strategies including suitable formats and communication channels [2], which represent a form of communication to share public health messages with a desired audience [3]. Dissemination of health information describes “the process of communicating information through defined channels and media in order to reach various target groups (e.g. national policymakers, researchers, health professionals, or consumers)” [4].

In the European Union (EU), heterogeneity of health reporting practices in Member States (MS) causes, next to occasional language barriers, difficulties in facilitating access to EU-comparable information [1]. The overall objective of task 8.3 of the Joint Action on Health Information (InfAct) is to develop guidelines for the accessibility, availability and reporting of health information, including information on availability and quality of data/ indicators and the quality of reporting. Task 8.3.2 aims to facilitate the preparation of standardised and comparable public health reports for EU MS and associated countries. In the further course of the report, the term guidance will be used instead of guideline, as the information provided should be seen as a recommendation rather than a requirement.

The findings of the web-based desk research – conducted in 2019 within Milestone 29 of InfAct [1] – provide insights into the health reporting practices of the analysed countries. The results show that public health reports are the main communication channel used in EU MS and associated countries, which underlines the continued importance of this format for reporting. A variety of other health reporting formats are used for the dissemination of health information including e.g. short reports, fact sheets or scientific journals [1]. In addition to printed formats, online formats like websites and social media are also becoming increasingly important [5]. This development was further fuelled by the COVID-19 pandemic, which highlighted an urgent need for up-to-date data and information.

To support policy-making on national, regional and local level, policy orientation of the health report should be kept in mind – e.g. by focusing on areas of high policy relevance and analysing health-related facts rather than merely presenting statistics [6].

II. Aim

This guidance document provides feasible quality criteria for preparing standardised and comparable public health reports while accommodating the heterogeneity of reporting in

EU MS. Although the focus is on public health reports, general recommendations for good practice in national health reporting are also included.

In addition, the report presents the main results of a web-based desk research: an analysis of health reporting formats – public health reports as well as other health reporting formats – according to selected aspects of relevance for health reporting, and good-practice examples in national health reporting that were identified from EU MS and associated countries.

The guidance aims to facilitate the preparation, dissemination and access to comparable and high-quality health information. It can potentially serve as an efficient tool for making health information adequately available while reducing inequalities in health reporting across the EU.

III. Approach

The guidance document for public health reports was developed based on existing evidence, best practices and case studies on health reporting. A web-based desk research of health reporting formats and their target groups was conducted among EU MS and associated countries. Therefore a method paper for the search strategy was drafted and circulated among Work Package partner for review and approval. Subsequently a pretest of the search strategy was conducted in the federal states of Germany and in task partner countries. The search strategy was implemented and an analysis plan for the outcome of the web-based desk research was drafted before the findings were analysed and categorised according to Mayring on the basis of a qualitative content analysis. Following univariate analysis and cross-comparisons, the identified reporting formats were analysed with regard to selected relevant aspects regarding user preferences and accessibility. Subsequently, quality criteria for preparing standardised and comparable public health reports and general recommendations on health reporting were identified on the basis of the project 'Evaluation of National and Regional Public Health Reports' (Eva PHR) [6] and the German guideline 'Good Practice in Health Reporting' for Germany [7], supplemented by literature sources in the field of public health and in general research communication. The two main sources were studied in depth and analysed for overlaps. As a result, categories for quality criteria for public health reports and general recommendations for national health reporting were partly new created or taken over from the Eva PHR project and the guideline on health reporting for Germany. The categories were then filled with criteria from the predecessor projects and from the literature reviewed. The choice of criteria, the methodology of the web-based desk research and presentation of its results, and this guidance document were developed in close collaboration with experts in the field within InfAct.

The following paragraphs provide background information on the main sources for the selection of quality criteria for public health reports and general recommendations for good practice in national health reporting.

A. Project 'Eva PHR'

The research project 'Evaluation of National and Regional Public Health Reports' was conducted within the Health Monitoring Programme of the European Union in 2003. The project group consisted of representatives from the National Institute of Public Health and Environment (RIVM), the Netherlands, the London School of Hygiene and Tropical Medicine (LSH&TM), United Kingdom, the World Health Organization (WHO) Regional Office for Europe, Denmark, and the Institute of Public Health North-Rhine Westphalia (Iögd) Germany. National and regional public health reports were collected and analysed with the aim of identifying quality criteria and best practice models of effective health reporting (Annex I). The results show that health reporting is characterised by a high degree of heterogeneity, with most public health reports covering the broadest possible range of health topics and presenting all available data and indicators. In contrast, policy-makers express their need for analysed information on health status and the determinants associated with health care and finances, future health trends and an assessment of the activities undertaken. The project concluded that it would be beneficial to put more energy into developing a common methodology for health reporting that provides guidelines for international, national and regional health reporting [6].

B. German Guideline 'Good Practice in Health Reporting'

The guideline 'Good Practice in Health Reporting' has been developed by a working group consisting of representatives from all levels of health reporting in Germany, with the aim of strengthening the field at local, state and national level. It was drawn up after a review and evaluation of existing guidelines in epidemiology and secondary data analysis and published in 2017. The guideline was revised in 2019 to incorporate contributions from various stakeholders, and to answer to the need for continual development in health reporting. The document contains guidelines and recommendations as well as a list of quality criteria that are intended to serve as technical guidance for the preparation of public health reports. It contains recommendations dealing with the ethical principles of health reporting, the necessary framework, the selection of topics (focus of the report), the basics of the work done (data quality), data preparation, analysis, interpretation and communication as well as quality assurance [7].

C. Selected references

In addition to these two main sources, further literature from the field of communication and dissemination of health information was analysed. The following publications were regarded as most relevant and are therefore included as references in this report.

Table 1: Included references

Authors	Year	Title
Bernhardt JM [8]	2004	Communication at the core of effective public health

Bou-Karroum L, El-Jardali F, Hemadi N et al. [9]	2017	Using media to impact health policy-making: an integrative systematic review
Brownson RC, Eyler AA, Harris JK et al. [5]	2018	Getting the Word Out: New Approaches for Disseminating Public Health Science
Brownson RC, Fielding JE, Maylahn CM [10]	2009	Evidence-based public health: a fundamental concept for public health practice
Carroll LN, Au AP, Detwiler LT et al. [11]	2014	Visualization and analytics tools for infectious disease epidemiology: a systematic review
Clar C, Dyakova M, Curtis K et al. [12]	2014	Just telling and selling: current limitations in the use of digital media in public health: a scoping review
Dobbins M, Jack S, Thomas H et al. [13]	2007	Public health decision-makers' informational needs and preferences for receiving research evidence
Fung IC-H, Tse ZTH, Fu K-W [14]	2015	The use of social media in public health surveillance
Green LW, Ottoson JM, Garcia C et al. [15]	2009	Diffusion theory and knowledge dissemination, utilization, and integration in public health
Nelson DE, Hesse BW, Croyle RT [16]	2009	Making data talk: communicating public health data to the public, policy makers, and the press
Ohlmeier C, Frick J, Prütz F et al. [17]	2014	Nutzungsmöglichkeiten von Routinedaten der Gesetzlichen Krankenversicherung in der Gesundheitsberichterstattung des Bundes
Owen N, Glanz K, Sallis JF et al. [18]	2006	Evidence-based approaches to dissemination and diffusion of physical activity interventions
Richards CL, Iademarco MF, Atkinson D et al. [19]	2017	Advances in Public Health Surveillance and Information Dissemination at the Centers for Disease Control and Prevention
Valdiserri RO, Sullivan PS [20]	2018	Data Visualization Promotes Sound Public Health Practice: The AIDSvu Example
Van Bon-Martens MJH, Achterberg PW, van de Goor IAM et al. [21]	2012	Towards quality criteria for regional public health reporting: concept mapping with Dutch experts
Welch V, Petkovic J, Pardo Pardo J et al. [22]	2016	Interactive social media interventions to promote health equity: an overview of reviews
Wilson PM, Petticrew M, Calnan MW et al. [2]	2010	Disseminating research findings: what should researchers do? A systematic scoping review of conceptual frameworks

IV. Results

The presentation of results is divided into three sections. First, the results of the web-based desk research on health reporting formats and their target groups in EU MS and associated countries are summarised as a starting point for the guidance document. This includes an analysis of selected aspects of relevance for health reporting (user preferences and accessibility) that shows which aspects are already well implemented and where potential for improvement could be identified. In addition, selected good-practice examples from the project countries are briefly presented for illustration. In the second section, a set of quality criteria for the preparation of standardised and comparable public health reports is outlined. A total of eight categories are identified, each containing

several criteria for the preparation of harmonised and comparable public health reports. The third and final section provides general recommendations for good practice in national health reporting and highlights the importance of health reporting as a basis for health-related policy decision-making. This section includes ten categories of recommendations and applies to a variety of health reporting formats.

A. Results of a web-based desk research

A web-based desk research on national health reporting was conducted in EU MS and associated countries. It aimed to compile a comprehensive overview of different formats and respective target groups for the dissemination of health information in the analysed countries. Detailed information on the methodology and results can be found in the Milestone report number 29 [1].

1. Health reporting formats and target groups

The categorisation of reporting formats and target groups was established on the basis of a literature review [3, 5, 6, 15, 19, 23-25] and input of the Work Package partners. Table 2 illustrates a total of twelve different health reporting formats, including their description, that were used in the analysis, while table 3 shows eight target groups of health reporting that were identified.

Table 2: Health reporting formats

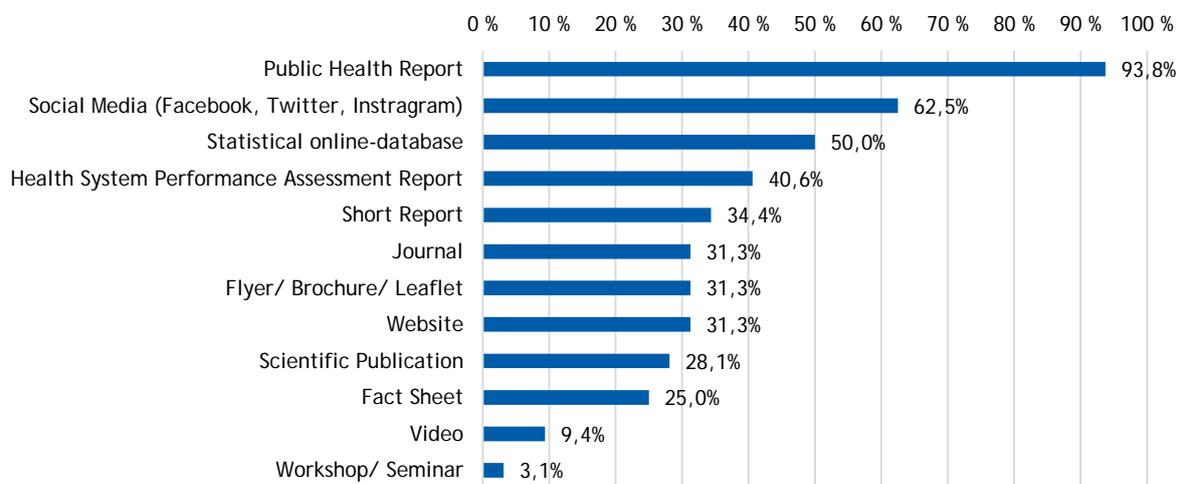
Format	Description	Pages
Public Health Report	Comprehensive and detailed description of a variety of topics	~50-200
Health System Performance Assessment (HSPA) Report	Country-specific process of monitoring, evaluating, communicating and reviewing the achievement of high-level health system goals based on health system strategies	~50-200
Short Report	Topic-specific presentation of results and interpretation	~10-30
Fact Sheet	Standardised presentation of circumscribed analyses	~1-10
Scientific Publication	Publication of specific topics relevant to science	~2-10
Scientific Journal	Publisher of his own scientific journal	~20-100
Flyer/ Brochure/ Leaflet	Compressed and simplified display of summarised public health information	~2-3
Website	All websites that provide health information	-
Statistical online-database	Provision of collected data for own analyses	-
Video	Visualised simplified and comprehensible dissemination of health information	-
Social Media	Dissemination of health information via Facebook, Twitter, Instagram	-
Workshop/ Seminar	Face-to-face communication; documentation of workshop or seminar	-

Table 3: Target groups of health reporting

- Politicians/ Decision-makers
- Health care providers
- Scientists/ Researchers
- Health educators
- General public
- Patients
- Media/ Press
- Civil society groups and community organisations

The results of the desk research comprise a total of 234 national health reporting formats from 32 countries, with each categorised format counted only once per country. This means that on average over seven different formats are used per analysed country.

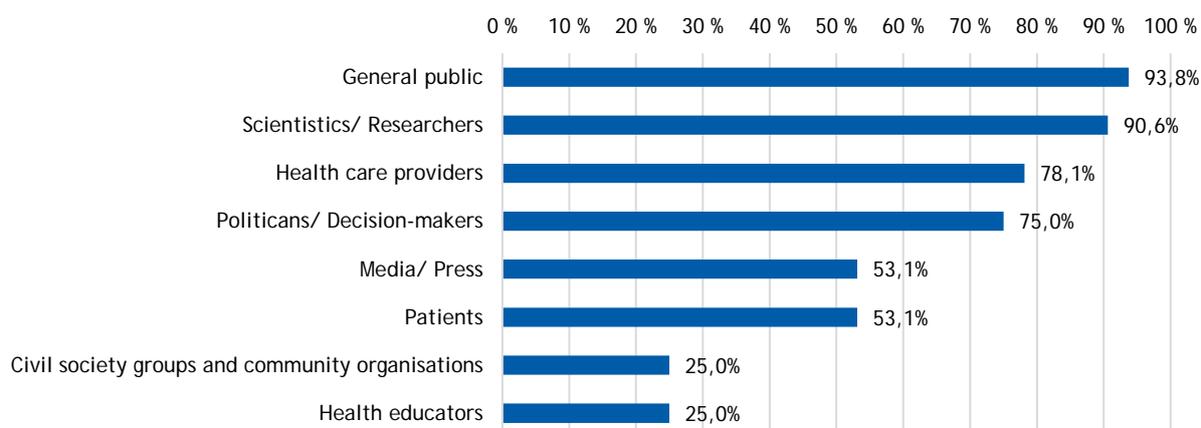
The findings document that, on country level, public health reports are the main format used for health reporting (93,8%), followed by the digital formats social media and statistical online-database (figure 1) [1].



n=32 countries

Figure 1: Health reporting formats per country

The most frequently stated target groups on country level are the general public (93,8%) and scientists/researchers (90,8%) (figure 2) [1].



n=32 countries

Figure 2: Target groups of health reporting per country

Table 4 illustrates in detail which target groups are addressed by the formats in the countries. This information is partially provided within the reporting formats but even more often as contextual information on the publishers' website. 41,4% of public health reports and 33,3% of short reports and journals are addressed to politicians and decision-makers. All analysed Health System Performance Assessment (HSPA) report addresses politicians/ decision-makers as the most important target group [1].

Table 4: Health reporting formats and their stated target groups

	Politicians/ Decision- makers	Health care providers	Scientists/ Researchers	Health educators	Patients	Civil society groups and community organisations	General public	Media/ Press
Public Health Report	41,4%	28,8%	51,4%	3,6%	7,2%	6,3%	28,8%	0,9%
Health System Performance Assessment Report (HSPA)	100,0%	76,9%	7,7%	7,7%	0,0%	7,7%	7,7%	0,0%
Short Report	33,3%	33,3%	26,7%	13,3%	13,3%	0,0%	66,7%	0,0%
Fact Sheet	0,0%	18,2%	27,3%	0,0%	27,3%	0,0%	90,9%	0,0%
Scientific Publication	11,1%	33,3%	100,0%	0,0%	0,0%	0,0%	11,1%	0,0%
Journal	33,3%	41,7%	91,7%	8,3%	0,0%	8,3%	8,3%	0,0%
Flyer/ Brochure/ Leaflet	20,0%	20,0%	20,0%	0,0%	30,0%	10,0%	60,0%	10,0%

Website	7,7%	0,0%	7,7%	0,0%	30,8%	0,0%	100,0%	0,0%
Statistical online-database	25,0%	6,3%	87,5%	0,0%	6,3%	0,0%	25,0%	6,3%
Workshop/Seminar	0,0%	100,0%	100,0%	100,0%	0,0%	0,0%	0,0%	0,0%
Video	0,0%	0,0%	0,0%	33,3%	33,3%	0,0%	100,0%	0,0%
Social Media (Facebook, Twitter, Instagram)	0,0%	0,0%	5,0%	0,0%	15,0%	5,0%	95,0%	85,0%

Number indicates which percentage of formats identified in the search (left column) addressed a particular audience (upper row). One format can address several target groups (sum >100% per format).

The findings of the desk research show a considerable diversity of health reporting practices across countries. Because of inconsistencies in the definition and use, some health reporting formats could only with difficulty be clearly identified or assigned to a target group.

2. Analysis of selected aspects of health reporting

The main task of the web-based desk research was to provide an overview of formats and target groups of health reporting in EU MS and associated countries. Using the identified formats across analysed countries, an additional descriptive analysis was carried out to determine the prevalence of selected aspects in terms of user preferences and accessibility. The following variables (figure 3) were defined in close cooperation with the Work Package partners and, in contrast to the overall results, were only provided by information within the reporting formats: stated target group, stratification by sex, interpretation of results, recommendations for action, clear language, accessibility and visualisation.

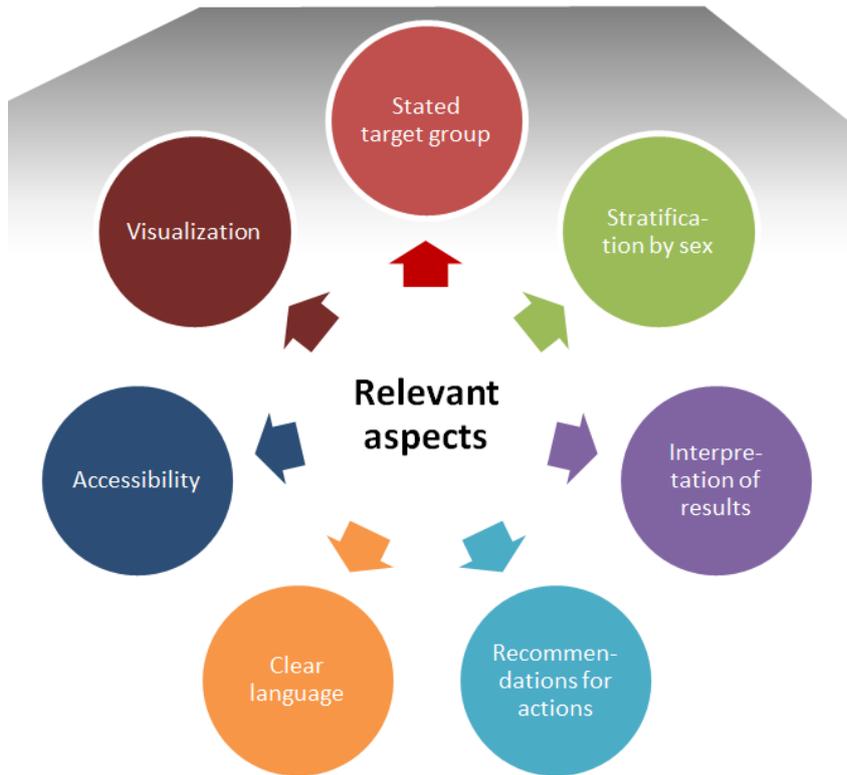
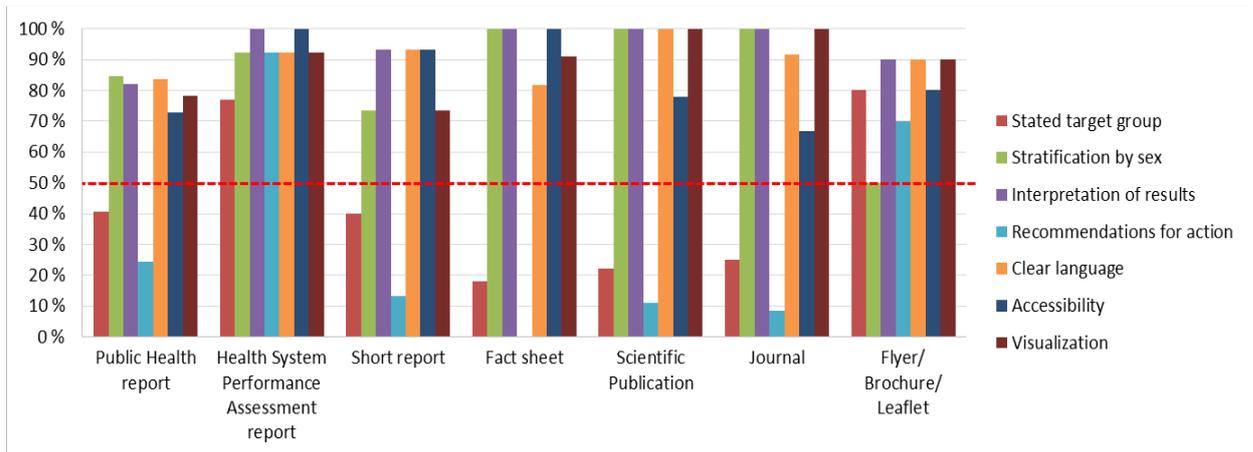


Figure 3: Selected aspects with relevance for national health reporting

The variables were applied to printed formats of health reporting across analysed countries: public health report, health system performance assessment report, short report, fact sheet, scientific publication, journal and flyer/brochure/leaflet. Figure 4 shows the most important analysis results. Overall, it is noticeable that most of the selected aspects are already largely met by the health reporting formats in the project countries. Five of the seven aspects are implemented by over 70% of the analysed formats. By contrast, the categories stated target group (red) and recommendations for action (bright blue) are below the 50% mark. Only in the format groups of health system performance assessment report and flyer/brochure/leaflet values are above 50%. Since the focus of the guidance document is on public health reports, we would like to highlight the results for this format. While recommendations for action (24,3%) and stated target groups (40,5%) are the least fulfilled aspects, stratification by sex (84,6%), interpretation of results (81,9%), clear language (83,7%), accessibility (72,9%) and visualisation (78,3%) are almost met by more than three quarters of the public health reports.



n = 181 formats

Figure 4: Formats and met aspects for health reporting across analysed countries

3. Good-practice examples

In the course of the web-based desk research a number of good-practice examples were identified. The print and digital formats presented in table 5 have succeeded in implementing appealing solutions for their communication channels of national health reporting.

Table 5: Good-practice examples in national health reporting

	Format	Institute / Country	Special feature	Link
Interactive graphics	Website	Federal Office of Public Health Switzerland	User-friendly and differentiated graphical representation of various indicators	https://www.obsan.admin.ch/en/MonAM
Flexible data analysis	Statistical online-database	Ministry of Health, Consumer Affairs and Social Welfare Spain	Platform for the flexible presentation of data with various analysis options	http://inclasns.msssi.es/?lang=EN
Informative, illustrated public health report	Public health report	National Institute for Public Health and the Environment The Netherlands	Informative report with balanced design of text and illustrations	https://www.rivm.nl/publicaties/volksgesondheid-toekomst-verkenning-2018-gezond-voorzicht-synthese
Informative fact sheet	Fact sheet	Public Health Agency of Sweden Sweden	Informative infographics for the general population	https://www.folkhalsomyndigheten.se/contentassets/0f9834a0584d40238461411bcf48f8a7/prevalence-overweight-obesity-children-high-increases-age.pdf

Comprehensible online journal	Scientific Journal	Robert Koch Institute Germany	Open access journal with readily comprehensible scientific information based on the nationwide health monitoring and other sources	http://www.rki.de/johm-en
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The web-based desk research provides a status quo of health reporting practices in the analysed countries. Building on these findings, the guidance document is drafted.

B. Quality criteria for public health reports

Health reports cover a broad spectrum of subjects and can be divided into two main types: public health reports and health system performance assessment reports [1]. Subcategories are among others 'topical' reports on for instance infectious diseases, chronic diseases or lifestyle factors, and on the other hand 'thematic' reports for example about health care of the elderly or health prevention in children. Depending on the subject and complexity of a public health report, the relevance of the following criteria should be assessed by the authors for their particular case.

Figure 5 illustrates eight categories of quality criteria, which are mainly derived and merged from best practice models within the Eva PHR project [6] and criteria described in 'Good Practice in Health Reporting' for Germany [7]. Since there is little further literature on quality criteria for public health reports, the selection is mainly based on the current state of research represented by these two projects.

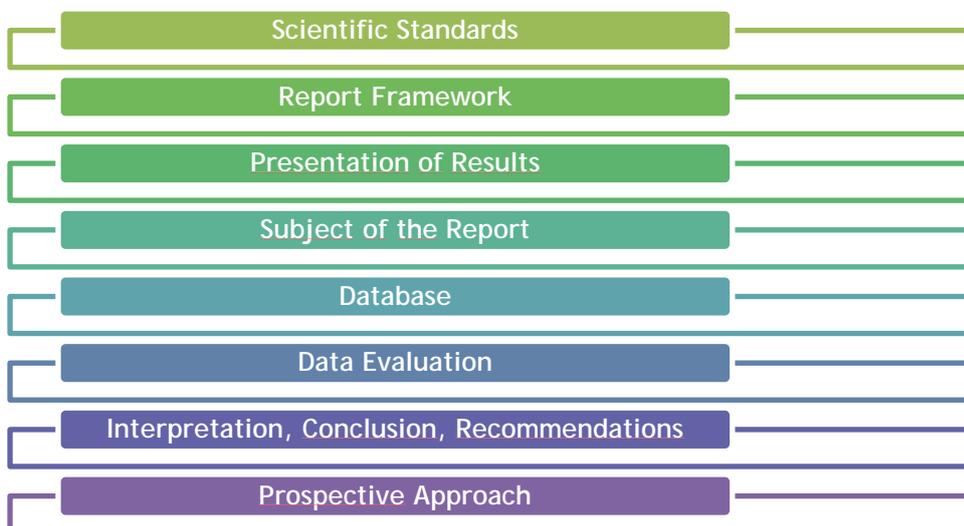


Figure 5: Categories of quality criteria for public health reports

The following paragraphs give an overview of the quality criteria for public health reports by categories. A more detailed overview of the quality criteria within the categories is provided in Annex II.

Scientific Standards: A basic precondition for the preparation of public health reports is compliance with scientific standards. This includes, for example, that the subject is clearly defined and that the report is logically structured. In addition, the data and results must be scientifically correct and supported by scientific evidence, and observations and findings truthfully reproduced. Besides a correct and complete citation of data and results from other publications, the sources used should not be chosen selectively.

Report Framework: The second category deals with the framework of the report. Authors should ask themselves the questions: Are the contracting authority and authors made transparent? Is the compilation of the report interdisciplinary, multi-professional, integrative or participative in relation to the research question? Furthermore, the report should follow a defined structure and the funding should be presented transparently.

Presentation of Results: The category deals with the presentation of the results and especially with an understandable, appealing and appropriate style of the report that adequately addresses the defined target groups (e.g. for the broader public: readily comprehensible language, avoiding scientific jargon). Further important criteria are the overall layout and free availability in printed as well as digital form.

Subject of the Report: The report should include a comprehensible justification and description of the objectives of the report. Furthermore, basic considerations should address for example that

- the population on which the report is based is correctly represented
- the evaluation of the data is gender-comparative
- the individual social status, defined e.g. by (school) education, occupation, occupational status and income, is taken into account
- the categorisation of age is appropriate to the chosen subject
- depending on the subject of the report, the individual phases of life (childhood, adolescence, adulthood, younger/older age) are taken into account
- depending on the subject of the report, data on migration experiences are included (e.g. country of birth, parents' country of birth, length of stay, native language, nationality, residency status)
- depending on the subject of the report, the interests of people with disabilities are taken into account
- changes in the health situation are monitored and comparisons are made over time
- regional differences are identified and comparisons are made on the basis of suitable and relevant indicators

Database: The category database includes criteria for data selection, accuracy and timeliness of data. Data should be selected according to the subject of the report and data should come from a variety of data sources to improve the robustness of a finding, if possible. In addition, possible statistical errors should be addressed and the most recent available data sets should be used.

Data Evaluation: When evaluating the data, care should be taken to ensure that different key figures such as case numbers, proportions and rates are shown. For example, proportions can provide information on the distribution of health-related events, while

rates provide information on the frequency of health-related events. The adequate use of epidemiological measures is also of great importance. These include: measures of disease frequency such as prevalence, incidence, mortality and lethality, measures of disease association such as relative risk, hazard ratio and odds ratio, and indicators of trends such as absolute risk difference, relative risk difference and attributable risk. The consideration of health economic issues in terms of expenditure, costs and financing is also an important part of a public health report. The transparent documentation and description of data processing and data analysis should be written down in an evaluation strategy and all steps for the evaluation of qualitative data should be made transparent.

Interpretation, Conclusion, Recommendations: The category consists of the quality criteria for interpretation, conclusions and recommendations for action. While the report substantiates specific problems, the evaluation of results leads the report to draw up recommendations for action as well as including an evaluation of the implementation of these recommendations.

Prospective Approach: To warn against upcoming health threats or support the identification of relevant policy options, demographic projections and dynamic forecasts play an important role in providing information on future developments. A prospective approach also includes the identification of realistic health targets, which can be evaluated at a later stage.

C. General recommendations for good practice in national health reporting

The results of the web-based desk research showed that a variety of health reporting formats are used for the dissemination of health information, including printed formats, like public health reports, fact sheets, flyers or publications in scientific journals. With the advance of digitalisation, new methods for the visualisation and processing of data are becoming more and more important in health reporting practices [19]. Online formats like websites, statistical online-databases and social media are gaining in relevance [5]. In order to make best use of the available formats, it is crucial to consider in advance which target groups the health reporting is aimed at and to choose a suitable reporting format that responds to the needs of the respective addressees [1].

Recommendations for good practice in national health reporting can be summarised and categorised mainly on the basis of the guideline 'Good Practice in Health Reporting' for Germany, which refers to other existing good practices [26-29]:

- Guidelines and recommendations for ensuring Good Epidemiological Practice (GEP)
- Good Practice of Secondary Data Analysis (GPS)
- Good practice guidelines for health information
- Good cartographic practice (Gute Kartographische Praxis im Gesundheitswesen (GKPiG))

The categories illustrated in figure 6 are supported by a variety of data sources related to the dissemination of health information as well as the communication of research data in general. The recommendations should ensure consistent health reporting at European level and thus make health information more comparable and accessible while reducing health information inequalities.

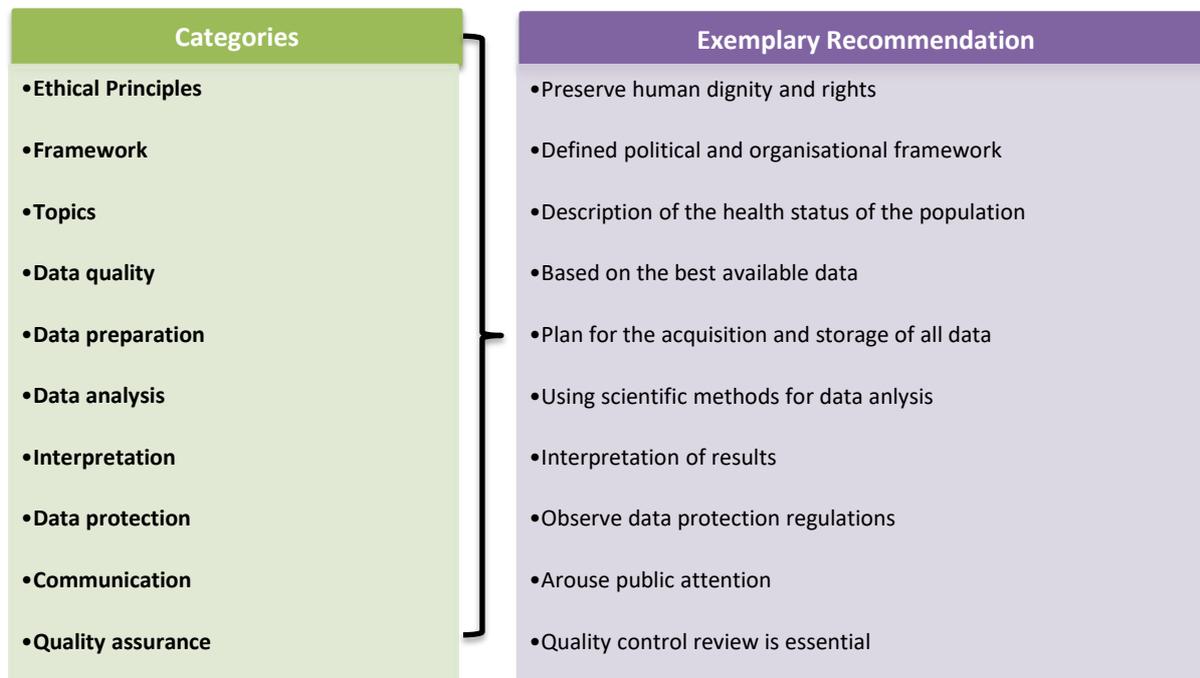


Figure 6: Exemplary recommendations for national health reporting

The ten presented categories cover many of the points already highlighted in the quality criteria for preparing public health reports. The recommendations for national health reporting of high quality are transferable to various formats and address general requirements for the dissemination of health information.

First of all, it is of high importance that health reporting is carried out in accordance with ethical principles and respects human rights [12]. Another important factor is the existence of appropriate legal frameworks and legal foundations at all political levels for the implementation of appropriate health reporting practices. Health reporting provides an empirical basis for health policy decision-making processes and describes the current status of health of the population or population groups [7]. In order to be able to make quality-assured statements, data quality, data preparation and data evaluation are of particular importance. The data used should be representative, valid, reliable and continuous, and should allow making statements specific to different population groups [17]. Data should be analysed promptly using scientifically based methods. In order to be able to classify analysis results correctly, the interpretation of results and a critical discussion is a core task of health reporting. Another highly relevant factor is compliance with data protection regulations [7]. The development of a dissemination strategy is fundamental for the communication of results. This includes the identification of target groups, the communication channels to be chosen as well as the use of generally

understandable language and attractively and appealingly designed products [3]. The entire process of health reporting and all individual stages should be covered by quality assurance, because seriousness and trustworthiness are indispensable components of health reporting processes [7].

V. Implications and Challenges

The guidance document focuses on the preparation of national public health reports and recommendations for good practice in health reporting at national level. Most of these criteria will also apply at the regional level. However, it should be considered that regional health reporting has its own requirements, and further research in this field is needed.

Only few literature on preparing high-quality public health reports as well as general recommendations for national and regional health reporting could be obtained. Comprehensive conceptual and integrative publications could not be identified. Therefore, the results are based on two main sources, supplemented by literature in various fields of communication and dissemination. This underlines that interdisciplinary university research is needed to investigate in detail which formats and dissemination strategies are most suitable for specific objectives and requirements of target groups.

Due to this lack of scientific evidence, the quality criteria for the preparation of public health reports as well as the recommendations for national health reporting could not be compiled for specific target groups and do not claim to be complete. For health reports that are specifically addressed to political decision-makers, a conceptual approach that incorporates the policy perspective would be useful in order to arrive at conclusions that can advise on policy options and increase the policy impact.

VI. Conclusion

For the effective dissemination of health information, it is crucial to consider in advance which target groups the reporting is aimed at and to choose the adequate reporting format accordingly. It would be desirable to define quality criteria for every health reporting format, both for printed and for digital communication channels, to tailor the information offer in the best possible way to the needs and competencies of the targeted groups. Further research is required in this area.

Further research should also address options for rapid reporting. The COVID-19 pandemic has clearly demonstrated the need for rapid response tools to provide health information as quickly as possible. In this situation, dashboards have proven to be an effective health reporting format for presenting and visualising the vast amount of dynamic data. The interpretation of the data provided, however, often requires a certain expertise. In this respect, scientific health reporting journals can also contribute to the rapid dissemination of well prepared and interpreted health information when adapted to the requirements of time-critical reporting. For example, the Journal of Health Monitoring [30], published as part of the Federal Health Reporting in Germany, has implemented a fast track for COVID-

19 related articles in its editorial process that takes less than two months from submission to publication including peer review.

Within the web-based desk research for this project on health reporting formats in EU MS and associated countries, which was conducted in 2019 before the emergence of COVID-19, public health reports were identified as the most widely used health reporting format. Across the analysed countries, 41,4% explicitly state that the public health reports are addressed to politicians and decision-makers. In a further analysis, selected aspects with relevance for health reporting were applied to the different health reporting formats. The majority of these aspects, e.g. stratification by sex and easy accessibility, were met to a high degree by the analysed health reporting formats. The categories 'stated target group' and 'recommendations for action', however, were less frequently met, showing potential for discussion and possible improvement.

This guidance document focuses on public health reports and gives an overview of quality criteria to be considered in the planning of this reporting format. A total of eight categories with a variety of quality criteria for public health reports were identified and are listed in Annex II. Depending on the particular subject of the public health report, the relevance of each quality criteria should be assessed. Further background information and a more detailed presentation of specific quality criteria are available in the two sources that form the main basis for the synthesis in this report: the evaluation of the project 'Eva PHR' and the guideline 'Good Practice in Health Reporting'. Beyond the guidance for public health reports, the report also provides general recommendations for national health reporting, making it a useful tool for other health reporting formats as well.

This guidance document aims to facilitate the harmonisation of health reporting practices across the EU and associated countries while reducing health information inequalities. It should be seen as a step towards improved access to standardised and comparable high-quality health information. In addition to health reporting formats, it would be desirable to harmonise the definitions of indicators within organisations and countries to reduce the burdens on health reporting. Integrating this guidance document into health reporting training programmes could provide capacity building and practical training in applying the recommendations and increase the reach. The results of the web-based desk research and the guidance document were presented at relevant conferences, and a manuscript will be prepared and submitted to relevant scientific journals to spread the findings. Furthermore the results should be circulated at national level and disseminated to the National Nodes, set up within InfAct and functioning as liaisons and advisors in matters of health information, to reach relevant stakeholders. The guidance will be applicable at national as well as international level and could be integrated into an EU HIS to enhance sustainability.

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Annex I

Categories and quality criteria of health reports, results of project 'Eva PHR' [6]

Integrative approach	Interrelation of health status, determinants, care, costs, and policy
	Interrelation of health indicators with social indicators
	Analysis and explanation of differences and similarities in health status
	Connection between data sets
	Effectiveness of information (prevention, health care, costs)
	Use of integrative indicators such as Health Expectancy, Disability Adjusted Life Years, Avoidable Mortality, and Potential Years Of Life Lost
	Focusing on disability, quality of life etc.
Prospective Approach	Identification of realistic health targets
	Trend extrapolations and models
	Looking towards the future
	Demographic projections based on expected changes in the future sex and age composition of a population
	Dynamic forecasts and qualitative analyses
Policy Orientation	Concept development in collaboration with ministry
	Information related to current political agenda
	International/interregional benchmarking
	Identification of relevant determinants and policy options
	Targets in correspondence with responsibilities (ISARE)
	Evaluation of the progress of implemented health policy activities
Data	Analysis of health facts
	Comparisons between: age groups, men/women, specific population groups, spatial (regional/international)
	Comparability in time
	Data sources mentioned
	Use of different data sources
	Topicality of data
	Data quality
Comprehensiveness	Information about health status and life expectancy
	Mortality and morbidity information
	Population groups
	Determinants
	Infectious diseases
	Health services
	Costs and finances
	Prevention
	Laws and regulations
	Health policy
Structure/Form	Level of detail of topics, data and analyses
	Clarity in presentation of topics
	Graphics to support information in contrast to "data-driven" reports
	Periodicity
	References
	Clear audience, target group
	Style in correspondence with audience
	Aesthetic impression
	Layout
Conceptual Approach	Systematic approach or recognisable story line
	Start from conceptual model not merely from available data
	Involvement of expert opinions
	Use of conceptual elements such as demographic factors, risk factors or health policy
	Presentation of material as coherently as possible

Annex II

List of quality criteria for public health reports, adapted from [6, 7]

Scientific Standards			
<ul style="list-style-type: none"> Take following scientific standards into account: the objectives of public health ethics should be taken into account the subject has been clearly delineated the scope of the report is suitable considering the available material and the focus (there are no redundancies, and unnecessary data have been omitted) 	<ul style="list-style-type: none"> the report is structured logically and each section builds upon the last (the second step results from the first) the sources of any data or information used are clearly stated methods are described in detail and are suitable to the data being applied 	<ul style="list-style-type: none"> the results are presented in a structured manner the results are objective (they are neutral and described with the necessary critical distance) the results are verifiable (the data are available and the results can be reproduced) the data and results are scientifically accurate and supported by scientific evidence 	<ul style="list-style-type: none"> observations and findings are reproduced truthfully premises and conclusions are made clear data and results from other publications are cited correctly and scientifically sources have not been chosen selectively
Report Framework			
<ul style="list-style-type: none"> Make the contracting authority and authors transparent Plan the report and make sure the report is: <ul style="list-style-type: none"> interdisciplinary multi-professional integrative participatory 	<ul style="list-style-type: none"> Structure the report: <ul style="list-style-type: none"> a table of contents a list of diagrams/tables a list of abbreviations a preface/introduction a summary that states the report's: <ul style="list-style-type: none"> contracting authority objectives 	<ul style="list-style-type: none"> target audience central findings and recommendations a background section or a section explaining the need for the report, and, if relevant, the public health relevance of its focus a section describing the data a section describing the methods 	<ul style="list-style-type: none"> a section describing the results a section discussing the results recommendations Conduct a financial review Identify relevant actors State the source of funding
Presentation of Results			
<ul style="list-style-type: none"> Use an understandable and appropriate style in correspondence with target group: <ul style="list-style-type: none"> avoid jargon wherever possible 	<ul style="list-style-type: none"> avoid 'run-on' and convoluted sentences use active instead of passive formulations do not use filler words explain abbreviations 	<ul style="list-style-type: none"> present the data and indicators in an appropriate graphical form Use a clear overall layout and aesthetic impression 	<ul style="list-style-type: none"> Distribute the report freely available online (the report meets accessibility requirements) Present the results proactively to the target group
Subject of the Report			
<ul style="list-style-type: none"> Explain the objective of the report clearly Provide information about e.g.: <ul style="list-style-type: none"> health status life expectancy 	<ul style="list-style-type: none"> mortality and morbidity birth rate fertility rate years of life lost preventable deaths gender/intersectional analysis 	<ul style="list-style-type: none"> social status age stages of life migration determinants development and trends 	<ul style="list-style-type: none"> regional comparisons health services costs and finances prevention laws and regulations health policy
Database			
<ul style="list-style-type: none"> Use different data sources e.g.: <ul style="list-style-type: none"> official statistics scientific studies surveys 	<ul style="list-style-type: none"> derived from other data sources Highlight data accuracy and possible statistical errors: <ul style="list-style-type: none"> sampling errors (such as during selection) 	<ul style="list-style-type: none"> distortions created by data collection (e.g. due to legislation) missing values 	<ul style="list-style-type: none"> measurement errors (e.g. due to variations in standardised tests) errors during data processing Use the latest available data

List of quality criteria for public health reports, adapted from [6, 7] (Continuation)

Data Evaluation			
<ul style="list-style-type: none"> ■ State: ■ <i>absolute and relative number of cases</i> ■ <i>proportions</i> ■ <i>rates</i> ■ Use epidemiological measures e.g.: ■ <i>provide a calculation of epidemiological measures of disease frequency</i> 	<ul style="list-style-type: none"> ■ <i>provide a calculation of epidemiological measures of disease association</i> ■ <i>provide a calculation of epidemiological indicators and trends</i> ■ Consider health economic issues: ■ <i>health economic issues in terms of expenditure, costs and financing</i> 	<ul style="list-style-type: none"> ■ Evaluate and process the data electronically ■ Compile an evaluation strategy: ■ <i>all steps undertaken during data processing and data analysis have been described and documented transparently</i> ■ <i>Evaluate qualitative data</i> 	<ul style="list-style-type: none"> ■ <i>all steps undertaken during data processing and analysis have been described and documented transparently</i> ■ <i>a consensual validation of the results has been carried out with all of the project participants (possibly including the participants)</i> ■ <i>the scope of the results is made clear</i>
Interpretation, Conclusion, Recommendations			
<ul style="list-style-type: none"> ■ Map and substantiate specific problems: ■ <i>the report maps out problems using objective, deliberative interpretations of the results and discusses alternative explanations</i> ■ <i>any limitations of results must be set out</i> ■ <i>the report avoids generalisations (especially when using qualitative data)</i> 	<ul style="list-style-type: none"> ■ Formulate recommendations for action: ■ <i>the evaluation of the results leads the report to draw up recommendations in need of an urgent response</i> ■ <i>the report formulates recommendations with a view to developing possible strategies for hazard prevention/risk reduction</i> 	<ul style="list-style-type: none"> ■ <i>in the formulation of these recommendations, critical distance has been maintained in order to prevent interest groups from instrumentalising the results</i> ■ <i>the report makes recommendations for preventive measures</i> ■ <i>the report makes recommendations that include opportunities for health promotion</i> 	<ul style="list-style-type: none"> ■ <i>the congruence between results and recommendations was taken into account when the recommendations were drawn up</i> ■ Include an evaluation of the implementation of the recommendations
Prospective Approach			
<ul style="list-style-type: none"> ■ Identify realistic health targets ■ Integrate trend extrapolations and models 	<ul style="list-style-type: none"> ■ Dynamic forecast and qualitative analyses 	<ul style="list-style-type: none"> ■ Looking towards the future 	<ul style="list-style-type: none"> ■ Demographic projections based on expected changes in the future sex and age composition of a population

