

The COVID-19 Health Systems Response Monitor (HSRM) collects and organizes information on how countries' health systems are responding to the crisis.

[Overview](#)[All Updates](#)[HSRM Countries](#)[Analyses](#)[Compare](#)[COVID-19 Resources](#)[Contributors](#)[COVID-19 W](#)

Cross country analyses

[< All analysis](#)

What role did National Public Health Institutes in Europe play in monitoring the COVID-19 pandemic?

24 November 2021 | Cross country analysis

[Nienke M Schutte, Jorgen Stassijns, Miriam Saso, Herman Van Oyen, Petronille Bogaert](#)

Epidemiology and public health, Sciensano, Brussels, Belgium

When the COVID-19 pandemic hit Europe in early 2020 (Spiteri et al., 2020), the National Public Health Institutes (NPHIs) took on the role of monitoring the spread of the Sars-CoV-2 virus and COVID-19. NPHIs historically have been science-based governmental organizations that serve as a focal point for a country's public health efforts, as well as a critical component of global disease prevention and response systems (Heymann, 2008). NPHIs mobilized to describe the trends and identify changes in the spread of the SARS-CoV-2 virus, assess the scale and impact of the COVID-19 crisis on population health, and offer scientific evidence for decision-making in relation to non-pharmaceutical and other measures (e.g., testing and diagnostic strategies, guidelines for health care workers and GPs, vaccination, etc.), as far as that evidence was available.

NPHIs provide information about diseases, their causes, their incidence as well as emerging pathogens (bacteria, germs, viruses) or mutations (in the case of Sars-CoV-2). Fortunately, in most NPHIs the routine monitoring and surveillance work already covered infectious diseases, such as influenza, HIV/AIDS, tuberculosis, and salmonella, relying on a network of laboratories, regional centres and other platforms that monitor these diseases. These existing health information systems could be used or extended to also monitor COVID-19, although some countries have set up new data flows or new networks consisting of scientific institutes, laboratories and NPHIs specifically for the tracking mutations of Sars-CoV-2, such as in [Spain](#) and [Germany](#). However, the COVID-19 crisis highlighted the critical need to strengthen national health data and information systems (Schmidt et al., 2021) and the related networks of which the NPHIs are part, in order to address the speed at which data had to be translated into information reflecting real-world and real-time data.

The NPHIs should have a crucial role in bringing together and linking data from different sources and translating these data into information, enabling the dissemination of reliable and trustworthy information to the general public, as well as facilitating the systematic and transparent use of the best available research evidence by policy-makers in order to strengthen the health systems' response and, as a consequence, general population health. This article explores how NPHIs in Europe were involved in monitoring the COVID-19 health crisis.

In most European countries, the monitoring of the prevalence of infectious diseases by NPHIs relies on a network of regional offices, laboratories, and medical practices. However, in many European countries additional systems and databases were set up during the COVID-19 pandemic to address the need for early detection and tracking of COVID-19 cases, hospitalisations and mortality, and wider consequences such as poor mental health, increasing health inequalities, and long-COVID. Moreover, indicators were defined, and methodologies were developed for standardization. To allow for more rapid information flows, in many European countries information pipelines were newly built or improved substantially. Subsequently, flows of information and/or communication were automated to enable routinely collected data mechanisms, in many cases under the supervision of the NPHI.

For more extensive surveillance activities, many European NPHIs gathered aggregated data that is collected in regional settings or universities. For example, many European countries have developed a wastewater surveillance system responding to a new recommendation by the European Union (2021/472) (see for an overview Gawlik et al., 2021) in which some European NPHIs are involved or have a supporting role, such as Belgium, Finland, Italy, and the Netherlands. In addition, part of the seroprevalence studies of SARS-CoV-2 in the general population or in specific subgroups, such as health care workers or patient groups, are performed by NPHIs, such as in Spain, Belgium, the Netherlands and Germany, sometimes in collaboration with academic partners (see Grant et al., 2021 for a scoping review on population-based seroprevalence studies in Europe or [SeroTracker](#), a dashboard and data platform for SARS-CoV-2 serosurveys). Seroprevalence studies use antibody tests to estimate the percentage of people who have antibodies against SARS-CoV-2. Furthermore, outbreak investigations of SARS-CoV-2 and contact tracing activities, for example in nursing homes, schools or occupational settings, are mostly performed by regional offices or local governments, but are sometimes supported by the NPHIs.

NPHIs have been collecting and using monitoring and surveillance data of the health of the general population continuously in many domains prior to the pandemic (such as health status, health care use and health determinants). Therefore, they can benchmark the monitoring and surveillance outcomes using reference points from before the pandemic, which constitutes an essential function of mapping the impact of the COVID-19 crisis using longitudinal data collection efforts. In addition, many NPHIs are experienced in handling these types of data, when it comes to privacy and data protection; data is processed in a manner that is FAIR (i.e. data meeting the principles of findability, accessibility, interoperability, and reusability) and compliant with the General Data Protection Regulation (GDPR), within a legal framework, proportionately and with sufficient technical securities.

NPHIs adapted their systems to allow for the assessment of the scale and impact of the pandemic

Whereas European NPHIs generally have a supporting role regarding data collection, they often lead in bringing together the data from monitoring and surveillance activities. This allows the description of trends and the identification of changes, helping to assess the scale and impact of infectious diseases such as COVID-19 on population health.

In addition to unifying and processing data from monitoring and surveillance activities, many NPHIs keep track of, gather and review scientific literature, grey literature, guidelines and medical breakthroughs. The COVID-19 pandemic necessitated the real-time publication and exchange of these types of documentation. However, many NPHIs needed initial adaptation of their surveillance systems to keep up with the speed with which the pandemic progressed. The network of NPHIs within the EU, built under the Joint Action of Health Information (InfAct, www.inf-act.eu), facilitated the exchange of information by organizing bi-weekly conference calls to compare data, indicators, good practices and experiences in crisis response in the EU and associated countries (Schmidt et al., 2021). This initiative became an integral part of the Population Health Information Research infrastructure (PHIRI, www.phiri.eu). There is a vast amount of literature which has been produced since the beginning of the crisis (see also the [WHO COVID-19 database](#)); many NPHIs map and synthesize research methodologies, data pathways and indicators and identify useful findings from this research.

Furthermore, as in every crisis, conflicting data and research findings, as well as their interpretation, could hamper decision-making processes. The NPHIs have a crucial role in reviewing and filtering the information that is produced to support evidence-based decision-making by health policy-makers. Data from monitoring and surveillance, as well as literature, reports and guidelines are essential to making appropriate recommendations to health authorities regarding the implementation of measures to combat and prevent current and emerging diseases.

NPHIs take on the role of reporting, providing information products and knowledge translation

NPHIs in Europe have experience and extensive networks for performing the constant and routine collection of data on infectious diseases, translating data into information, and producing reports that are aimed to inform the general public, decision-makers and administrators. During the COVID-19 crisis, the NPHIs could use this expertise to produce daily, weekly and monthly reports. Country examples include:

- [Situation updates on coronavirus](#) in Finland

dynamic modalities for reporting data visually. Although they differ in their purpose, users, content, data, and (in-depth) analyses, they are purported to empower the public by allowing them to consult health statistics and form an opinion and build trust in their government's response (World Health Organization Regional Office for Europe, 2020). Many of the national dashboards in Europe, which provide real-time "open data" on COVID-19, are jointly maintained by NPHIs, such as in [Belgium](#), [France](#), [Italy](#), [Norway](#) and [Slovenia](#).

In addition to synthesizing and reporting on monitoring and surveillance data, many NPHIs produce scientific articles that are published in peer-reviewed journals. Access to data, and the expertise on best research practices and development of indicators, tools, guidelines and methods allow the NPHIs to conduct research and be part of the global research community.

The COVID-19 crisis has had a huge impact on the workload of the NPHIs. NPHIs had to scale up quickly and did not always have the resources available to do this, while skilled professionals and highly qualified experts to manage the data and public health information in efficient ways are very much needed. This also led to redistribution of the work and routine surveillance systems to be discontinued.

NPHIs work with and link to international stakeholders

Many NPHIs function, sometimes together with the Ministries of Health (MoHs), as national contact points for international or European organizations. Examples are the European Office of the World Health Organization (WHO) and the European Centre for Disease Prevention and Control (ECDC), in which many NPHIs function as competent bodies with which the ECDC cooperates in the area of surveillance, responses to health threats, scientific opinions, scientific and technical assistance, collection of data and identification of emerging health threats and public information campaigns, ensuring interoperability and extensive collaboration (regulation (EC) 851/2004).

NPHIs can map the wider effects of COVID-19 and contribute to improved preparedness strategies

The implications of the COVID-19 pandemic reach far beyond the immediate mortality and morbidity caused by SARS-CoV-2. There are many indirect effects of the outbreak that affect population health through various pathways, including secondary consequences of the COVID-19 crisis on long-term health and wellbeing, such as due to delayed prevention, diagnosis, and medical treatment. These wider effects also extend to mental health issues, and the uneven socioeconomic effects on different groups of the population.

Ideally, the NPHIs should fulfil a crucial part in mapping these indirect effects of the crisis on the health and wellbeing of the general population. In their lead role in bringing together (public) health data in order to describe trends and identify changes, it is imperative that they have the capacity and resources to do so. Whereas in the past, health information systems functioned as silos, focusing on specific health problems, the COVID-19 crisis has shown that integrating data from multiple domains is of eminent importance to address the direct and indirect effects of the pandemic. Moreover, some NPHIs are planning to undertake or are performing foresight studies, such as in [the Netherlands](#), which are structured and systematic ways to explore different plausible future scenarios, and the opportunities and challenges they could present. These studies provide policy-makers with guidance in pre-emptively identifying policy strategies to anticipate future trends and improve preparedness and response policies.

The COVID-19 crisis provided an opportunity to stress-test health information systems in Europe and their preparedness for future crises. In order to map more thoroughly the role of NPHIs during and after the COVID-19 pandemic, the health information systems in European countries should be assessed in order to identify the strengths and weaknesses of the different data flows monitoring COVID-19 and its wider effects. In 2021, WHO published an update of the *2015 Support tool to assess health information systems and develop and strengthen health information strategies*, including new add-on modules to provide support for more in-depth assessment of, amongst others, infectious disease surveillance (World Health Organization Regional Office for Europe, 2021). Using this tool and its new add-ons, the [Public Health Information Research Infrastructure](#) plans to support 'COVID-19 Health Information Assessments' in several European countries in 2021 and 2022 to map the data flows concerning COVID-19 and identify the key stakeholders and their role in the health information system involved in addressing the crisis.

Final remarks

NPHIs form a knowledge repository and in many countries identified, gathered and managed COVID-19 related data, as well as providing population health guidelines, standards and reports. NPHIs can play a crucial role in supporting informed decision-making and priority-setting to mitigate the risks of potential information gaps in future pandemics. They are a cornerstone of robust, advanced and digitized health information systems that are vital to controlling epidemics (Negro-Calduch et al., 2021).

European Union, <https://doi.org/10.2760/300580>

Grant, R., Dub, T., Andrianou, X., et al. (2021). SARS-CoV-2 population-based seroprevalence studies in Europe: a scoping review. *BMJ Open*, 11(4), e045425. <https://doi.org/10.1136/bmjopen-2020-045425>

Heymann, D. L. (2008). NPHIs as focal points for leadership in prevention and control of infectious diseases. *Journal of Public Health Policy*, 29(3), 374–376. <https://doi.org/10.1057/jphp.2008.19>

Ivanković, D., Barbazza, E., Bos, V., et al. (2021). Features Constituting Actionable COVID-19 Dashboards: Descriptive Assessment and Expert Appraisal of 158 Public Web-Based COVID-19 Dashboards. *Journal of Medical Internet Research*, 23(2), e25682. <https://doi.org/10.2196/25682>

Negro-Calduch, E., Azzopardi-Muscat, N., Nitzan, D., et al. (2021). Health Information Systems in the COVID-19 Pandemic: A Short Survey of Experiences and Lessons Learned From the European Region. *Front Public Health*. 28(9)676838. <https://doi.org/10.3389/fpubh.2021.676838>

Schmidt, A. E., Abboud, L. A., & Bogaert, P. (2021). Making the case for strong health information systems during a pandemic and beyond. *Archives of Public Health*, 79(1), 13. <https://doi.org/10.1186/s13690-021-00531-5>

Spiteri, G., Fielding, J., Diercke, M., et al. (2020). First cases of coronavirus disease 2019 (COVID-19) in the WHO European Region, 24 January to 21 February 2020. *Euro Surveillance: European Communicable Disease Bulletin*, 25(9). <https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2020.25.9.2000178?crawler=true>

World Health Organization Regional Office for Europe. (2020). Strengthening the health systems response to COVID-19: policy brief: recommendations for the WHO European Region (1 April 2020). <https://apps.who.int/iris/handle/10665/333072>

World Health Organization Regional Office for Europe. (2021). Support tool to strengthen health information systems: Guidance for health information system assessment and strategy development. <https://www.euro.who.int/en/publications/abstracts/support-tool-to-strengthen-health-information-systems-guidance-for-health-information-system-assessment-and-strategy-development-2021>

Authors

Nienke M Schutte
Jorgen Stassijns
Miriam Saso
Herman Van Oyen
Petronille Bogaert

Related chapters/sections

1. Preventing transmission

Related cross country analysis

17 October 2021 | Cross country analysis

How have governments and public health agencies...

01 July 2021 | Cross country analysis

How has the COVID-19 vaccination been rolled-out...

03 May 2021 | Cross country analysis

What strategies are countries using to get...

23 April 2021 | Cross country analysis

How have additional government measures...

Subscribe to our newsletter

SIGN UP

The Observatory

- Countries
- Monitors
- Themes
- Publications

About Us

- Partners
- Contact us

Engage

- Newsletter

Connect on Social



© 2021 European Observatory on Health Systems and Policies

[Privacy policy](#)