

PHIRI

Population Health Information
Research Infrastructure

D8.1 Needs Assessment

1st Needs assessment results, 31.05.2021

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Executive summary

This deliverable 8.1 of the PHIRI project provides an **overview of the current and future priorities of European countries regarding the management of the COVID-19 pandemic**. It is one of the first activities in Work Package 8 of the project, the so-called Rapid Exchange Forum (REF).

The REF assesses countries' national pandemic management in specific predefined areas, collects potential good practices and lessons learned and offers room for quick exchange between countries, research networks and stakeholders like ECDC.

To use the available resources in the best possible way, the project team planned to customise the topics covered in the bi-weekly REF meetings to the needs and expectations of the countries. Thus, a large-scale needs assessment was conducted via an online survey among project partners between mid-December 2020 and end of February 2021. Participants were asked to indicate their current and future priority topics for pandemic management and for an evaluation of the pandemic management in their country so far and for important lessons learned. **Overall, 42 responses from 24 European countries were received.**

The project team of GÖG and the Polish MoH analysed the overall aggregated replies, as well as replies grouped by **country and type of institution** with the following key results:

The current main priority topic across countries was **vaccination strategies**. In contrast to current priorities, indicated future priorities are more diverse among countries and include the areas of **testing, health data, monitoring and vaccination**. Country responses on the rating of national pandemic management and good practices/lessons learned show consistency.

The results of this needs assessment are fed into the **'pipeline' of questions addressed in the bi-weekly Rapid Exchange Forum (REF) meetings**, which are constantly revised. Selected questions are put into voting prior to each REF and the question with most votes is covered in the meeting. Results and findings are uploaded to the PHIRI SharePoint shortly after the meeting. Once the EU Health information portal is launched, selected results of non-confidential nature will be published there.

Also, these topics **guide the work in Task 8.4. and 8.5. where evidence, guidelines, research networks and policy measures** regarding the identified priority topics are searched using different scientific methods and shared among countries and EC services.

Key points

- 24 participating countries: Albania, Austria, Belgium, Bosnia and Herzegovina, Croatia, Estonia, Finland, Germany, Hungary, Ireland, Italy, Lithuania, Malta, The Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, United Kingdom
- Country profiles of each country including the number of responses, type of participating institutions, top 10 current and future priority topics, additional priority topics and rating of national pandemic management
- Overview of good practices and lessons learned during the COVID-19 pandemic
- Transnational analysis of responses grouped by type of institution

PHIRI: 1st Needs Assessment results

I. Introduction

The Needs Assessment is an accompanying process to *task 8.2 One-stop-shop* and also guides *tasks 8.4. and 8.5.* of PHIRI's work package 8 'Rapid Exchange Forum' (REF). The task is led by the WP 8 lead GÖG, which is the Austrian national public health institute and as such heavily involved in the Austrian pandemic management.

It includes a ranking of current and future top 10 priority topics on COVID-19, a retrospective rating of countries' national pandemic management during the COVID-19 pandemic in specific predefined areas during the first wave, summer period and second wave, and the collection of good practices and lessons learned that REF participants would like to share with their peers.

II. Aim

The main purpose of the need assessment is to identify priority topics of the public health community - both researchers and national decision support experts - in Europe to facilitate COVID-19 pandemic management at European and national level. Additionally, the rating of national pandemic management aims at providing a subjective overview of countries' approaches (e.g., measures taken) in specific predefined categories including their development throughout the pandemic.

Furthermore, the exercise aims to identify good practices and lessons learned during the COVID-19 pandemic that countries want to share with others to provide insights that could help other countries to improve their performance in the management of the current or future pandemics.

III. Methodologic approach

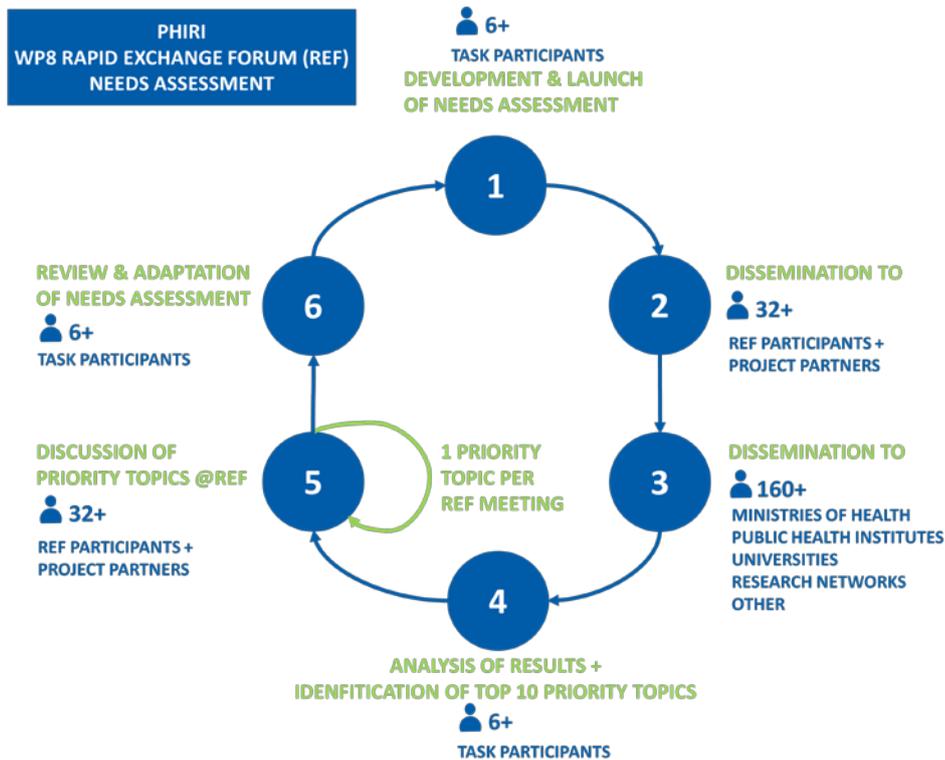
The initial needs assessment was conducted via an online survey and has been repeated on an irregular basis. Target groups are government authorities, national decision support experts/advisors, public health institutes, universities, non-university research organisations, scientific/medical associations and research networks.

The survey was conducted between mid-December 2020 and end of February 2021. Results were analysed by country, type of institution and aggregated at the European level. Multiple responses by countries and institutions were aggregated.

Results are available in addition to the report via [Microsoft Power BI](#).

The process of the needs assessment is depicted in Figure 1.

Figure 1: Needs assessment process



Overall, 36 current and future priority topics were defined based on literature (e.g., Haug, N. et al., Ranking the effectiveness of worldwide COVID-19 government interventions, <https://doi.org/10.1101/2020.07.06.20147199>) and a structured brainstorming of the members of GÖG's COVID-19 taskforce:

- National continuous COVID-19 testing strategies
- Mass testing approaches
- Surveillance of seroprevalence and associated immunity
- Accuracy and usability of different test methods
- Protection of care facilities
- Protection of hospitals
- Protection of vulnerable groups
- Protection of schools and kindergardens
- Protection of essential infrastructures
- Changes in lifestyle due to the pandemic
- Impact of voluntary (partial) self-isolation on society and individuals (e.g. transmission, social contacts, effect on economy)
- Impacts of pandemic on (non-COVID) health (e.g. medication use, chronic care, mental health, routine care, conditions like heart attacks, strokes, cancer, childhood vaccination)
- Impact of pandemic on education
- Changes in availability of medications and medical equipment (COVID and non-COVID)
- Long COVID (long-term clinical effects; health monitoring of individuals who recovered from infection)
- Monitoring of effectiveness and harms of policy/containment measures
- Centralised vs. de-centralised pandemic management
- Collaboration between institutions/authorities
- Refine/strengthen the role of the EU in pandemic management
- Participation/empowerment on community/organisation/citizen level
- Communication between actors/players
- Communication towards population
- Infodemic

- Hospital capacities (ICU and non-ICU) and primary care capacities (non-COVID-19)
- Treatments for COVID-19 patients
- Use of telemedicine
- Vaccination strategies (availability, distribution, implementation, documentation)
- Effectiveness and safety of vaccines
- Foresight/forecast, preparedness, implementation of modelling
- Case definitions (number of cases, deaths, recovered)
- Management of (COVID-19) health data
- COVID-19 training provided for specific target groups
- Strengthen skills and address potential shortage of health professionals
- Mitigation of economic and social consequences
- Relaxing/ease of containment measures
- Public Health concepts for balancing between protection from virus and protection of personal freedom

Respondents were given the opportunity to rank a maximum of ten current and ten future priority topics. The timeframe of current priorities yielded from December 2020 until 3-6 months into the future and for future priorities beyond 3-6 months into the future. In addition to the predefined topics, respondents could indicate additional priority topics that were not included in the list of predefined priority topics of the ranking exercise.

Regarding the rating of national pandemic management, 14 areas were defined that respondents could rate (0 = 'did not work well' to 10 = 'worked very well') for three different periods (first wave, summer period and second wave). The categories are as follows:

- International networking, exchange
- Health data management/quality
- Communication (of risks, developments, measures, recommendations, ...) by politicians, experts and media
- Launching telemedicine and digital tools
- Transparency
- Collaboration of national and regional authorities
- Solidarity across parties, groups, ministries, sections of the population, etc.
- Forecasting, modelling
- Involvement of experts in decision-making
- Experts/PH institutes supply decision makers with best available evidence
- National policy response: containment measures
- National policy response: legal framework and conditions
- Clinical response: health care and services for COVID-19 patients
- Clinical response: health care and services for non-COVID-19 patients

Furthermore, countries had the opportunity to indicate specific good practices and lessons learned (i.e. potential for improvement), that they want to actively share with other countries.

IV. Results

A. Countries

In total, 24 European countries participated in the first needs assessment and 42 responses were received. The following countries participated, sorted by number of responses per country:

- Belgium, The Netherlands, Slovakia (4 responses)
- Austria, Bosnia and Herzegovina, Croatia, Serbia (3 responses)
- United Kingdom (2 responses)

- Albania, Estonia, Finland, Germany, Hungary, Ireland, Italy, Lithuania, Malta, Norway, Poland, Portugal, Romania, Slovenia, Spain, Sweden (1 response)

Figure 2 provides a geographical overview of country participation.

Figure 2: Map of countries participated in first PHIRI Needs Assessment



Source: GÖG 2021

1. Country profiles

a) Albania

Number of responses: 1
 Participating organization: University

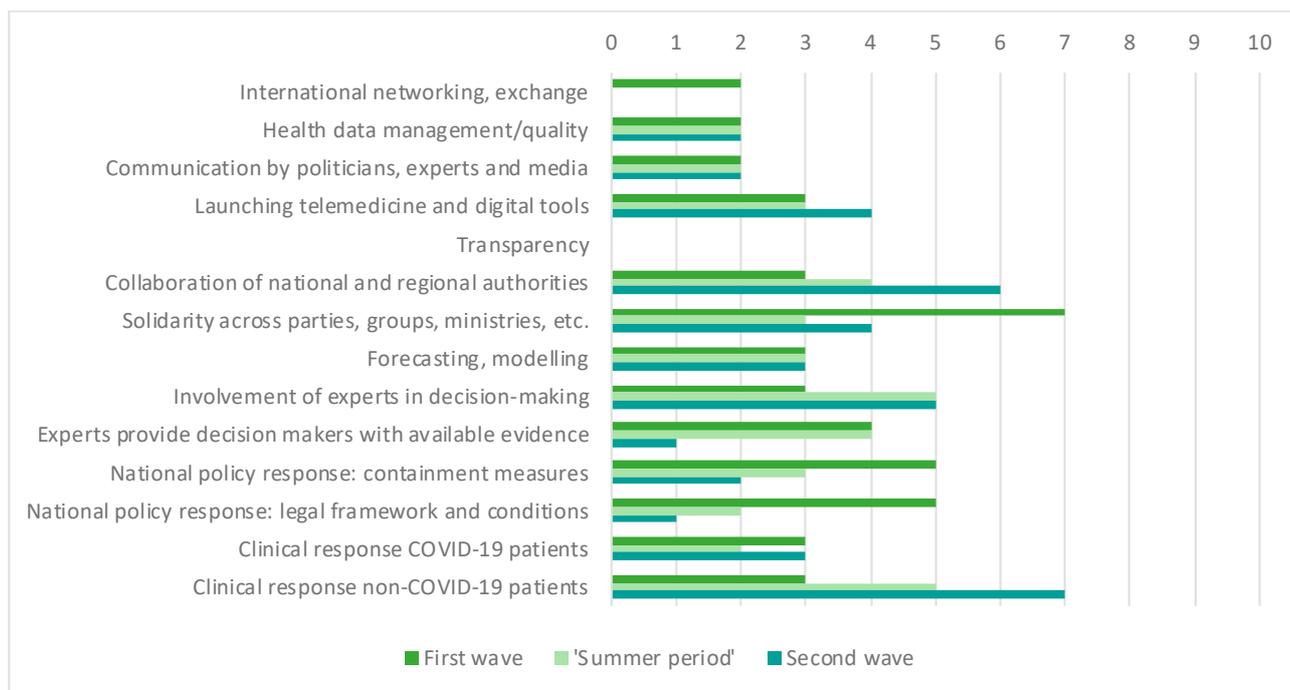
Top 10 current and future priority topics

Table 1: Priority topics - Albania

| Rank | Top 10 current priority topics AL | Top 10 future priority topics AL |
|------|--|--|
| 1 | Mass testing approaches | Mass testing approaches |
| 2 | Protection of vulnerable groups | Protection of vulnerable groups |
| 3 | Changes in lifestyle due to the pandemic | Changes in lifestyle due to the pandemic |
| 4 | Impact of pandemic on education | Centralized vs. de-centralized pandemic management |
| 5 | Centralized vs. de-centralized pandemic management | Infodemic |
| 6 | Communication between actors/players | Effectiveness and safety of vaccines |
| 7 | Infodemic | Relaxing/ease of containment measures |
| 8 | Treatments for COVID-19 patients | - |
| 9 | Mitigation of economic and social consequences | - |
| 10 | - | - |

Rating - first wave, summer period and second wave

Figure 3: Rating - Albania



Two periods, summer period and second wave in the category "International networking, exchange", as well as all three time periods in the category "Transparency" were rated by Albania with zero points. Therefore, none of these bars are displayed in the chart for the respective category.

b) Austria

Number of responses: 3
Participating organizations: Public Health Institute (1)
 Government authorities (2)

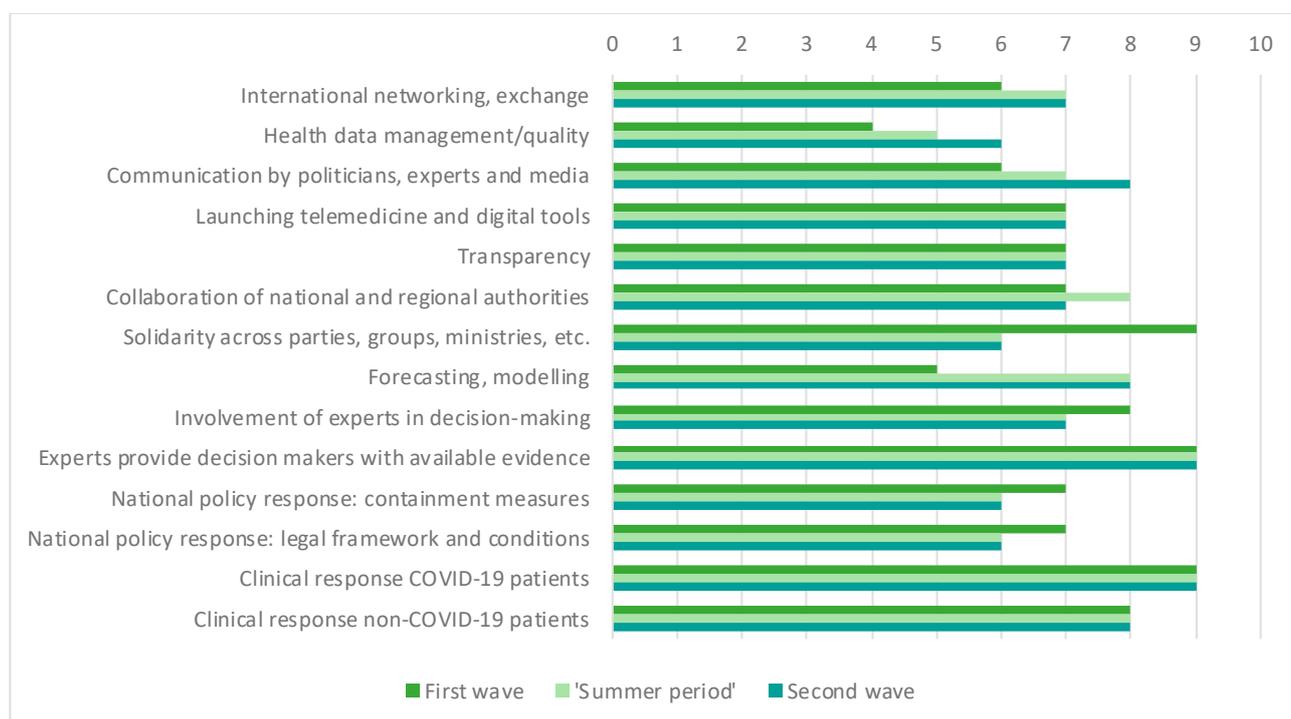
Top 10 current and future priority topics

Table 2: Priority topics - Austria

| Rank | Top 10 current priority topics AT | Top 10 future priority topics AT |
|------|--|---|
| 1 | Vaccination strategies (availability, distribution, implementation, documentation) | Vaccination strategies (availability, distribution, implementation, documentation) |
| 2 | Protection of care facilities | National continuous COVID-19 testing strategies |
| 3 | Protection of vulnerable groups | Monitoring of effectiveness and harms of policy/containment measures |
| 4 | National continuous COVID-19 testing strategies | Protection of care facilities |
| 5 | Public Health concepts for balancing between protection from virus and protection of personal freedom | Protection of vulnerable groups |
| 6 | Management of (COVID-19) health data | Hospital capacities (ICU and non-ICU) and primary care capacities (non-COVID-19) |
| 7 | Protection of schools and kindergardens | Public health concepts for balancing between protection from virus and protection of personal freedom |
| 8 | Mass testing approaches | Surveillance of seroprevalence and associated immunity |
| 9 | Protection of hospitals | Management of (COVID-19) health data |
| 10 | Long COVID (long-term clinical effects; health monitoring of individuals who recovered from infection) | Relaxing/ease of containment measures |

Rating - first wave, summer period and second wave

Figure 4: Rating - Austria



c) Belgium

Number of responses: 4
Participating organizations: Public Health Institute (1)
 Government authority (2)
 Other (1, Administration of Regional Public Health)

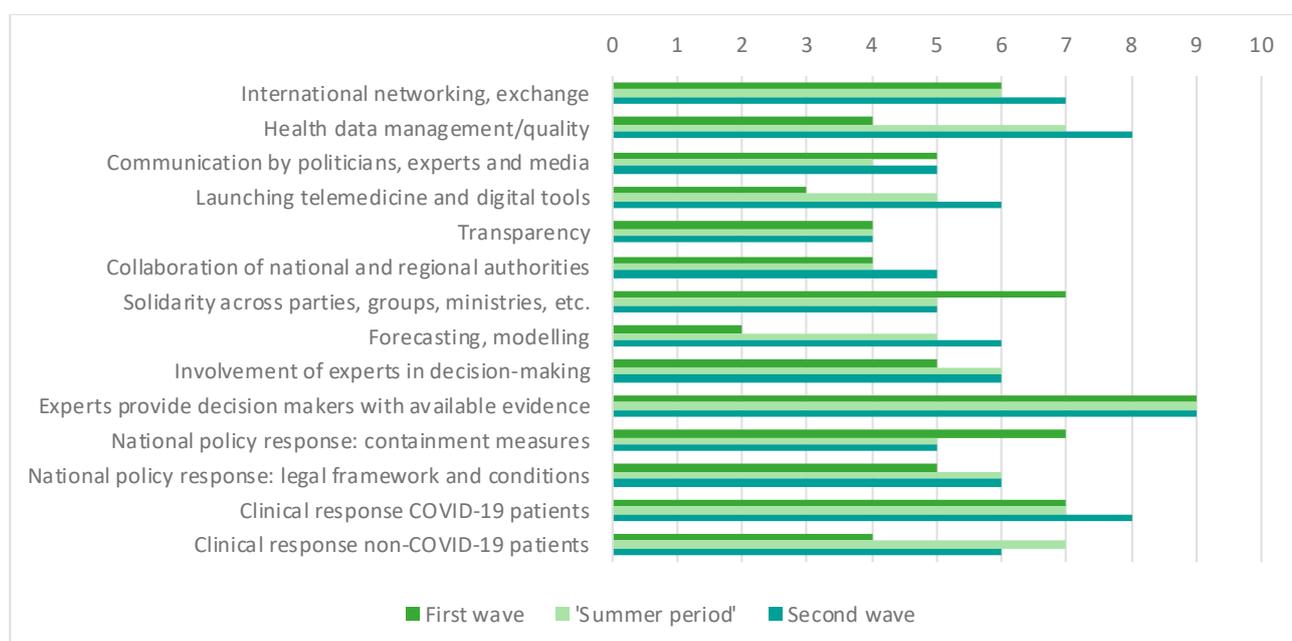
Top 10 current and future priority topics

Table 3: Priority topics - Belgium

| Rank | Top 10 current priority topics BE | Top 10 future priority topics BE |
|------|--|---|
| 1 | Vaccination strategies (availability, distribution, implementation, documentation) | Impacts of pandemic on (non-COVID) health (e.g. medication use, chronic care, mental health; routine care, conditions like heart attacks, strokes, cancer, childhood vaccination) |
| 2 | Communication towards population | Surveillance of seroprevalence and associated immunity |
| 3 | Protection of vulnerable groups | Treatments for COVID-19 patients |
| 4 | Hospital capacities (ICU and non-ICU) and primary care capacities (non-COVID-19) | Mitigation of economic and social consequences |
| 5 | National continuous COVID-19 testing strategies | Impact of pandemic on education |
| 6 | Protection of care facilities | Mass testing approaches |
| 7 | Mitigation of economic and social consequences | Refine/strengthen the role of the EU in pandemic management |
| 8 | Communication between actors/players | Relaxing/ease of containment measures |
| 9 | Impact of pandemic on education | Vaccination strategies (availability, distribution, implementation, documentation) |
| 10 | Surveillance of seroprevalence and associated immunity | Accuracy and usability of different test methods |

Rating - first wave, summer period and second wave

Figure 5: Rating - Belgium



d) Bosnia and Herzegovina

Number of responses: 3
 Participating organizations: Public Health Institute

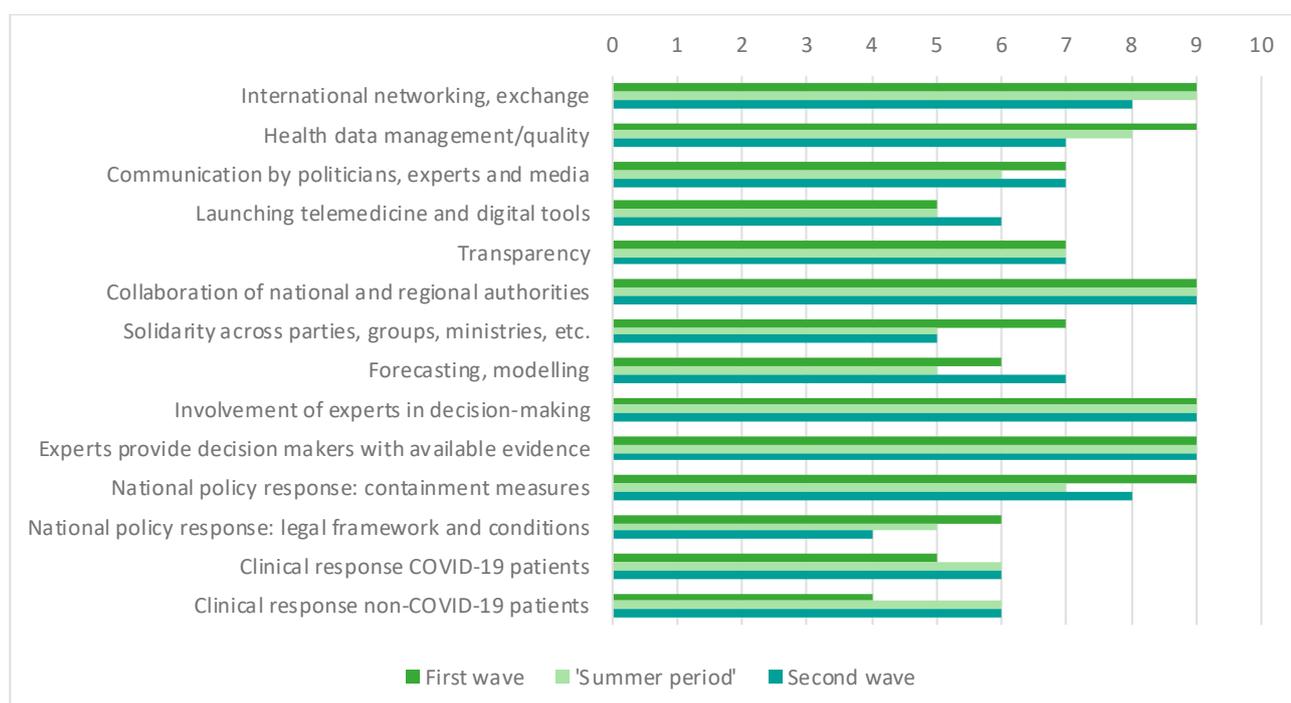
Top 10 current and future priority topics

Table 4: Priority topics – Bosnia and Herzegovina

| Rank | Top 10 current priority topics BA | Top 10 future priority topics BA |
|------|---|--|
| 1 | Hospital capacities (ICU and non-ICU) and primary care capacities (non-COVID-19) | Protection of vulnerable groups |
| 2 | Vaccination strategies (availability, distribution, implementation, documentation) | Long COVID (long-term clinical effects; health monitoring of individuals who recovered from infection) |
| 3 | Effectiveness and safety of vaccines | National continuous COVID-19 testing strategies |
| 4 | Impacts of pandemic on (non-COVID) health (e.g. medication use, chronic care, mental health, routine care, conditions like heart attacks, strokes, cancer, childhood vaccination) | Centralized vs. de-centralized pandemic management |
| 5 | Centralized vs. de-centralized pandemic management | Hospital capacities (ICU and non-ICU) and primary care capacities (non-COVID-19) |
| 6 | Changes in lifestyle due to the pandemic | Vaccination strategies (availability, distribution, implementation, documentation) |
| 7 | Foresight/forecast, preparedness, implementation of modelling | Treatments for COVID-19 patients |
| 8 | Surveillance of seroprevalence and associated immunity | Infodemic |
| 9 | Communication towards population | Management of (COVID-19) health data |
| 10 | Public Health concepts for balancing between protection from virus and protection of personal freedom | Strengthen skills and address potential shortage of health professionals |

Rating - first wave, summer period and second wave

Figure 6: Rating – Bosnia and Herzegovina



e) Croatia

Number of responses: 3

Participating organizations: Public Health Institute

Top 10 current and future priority topics

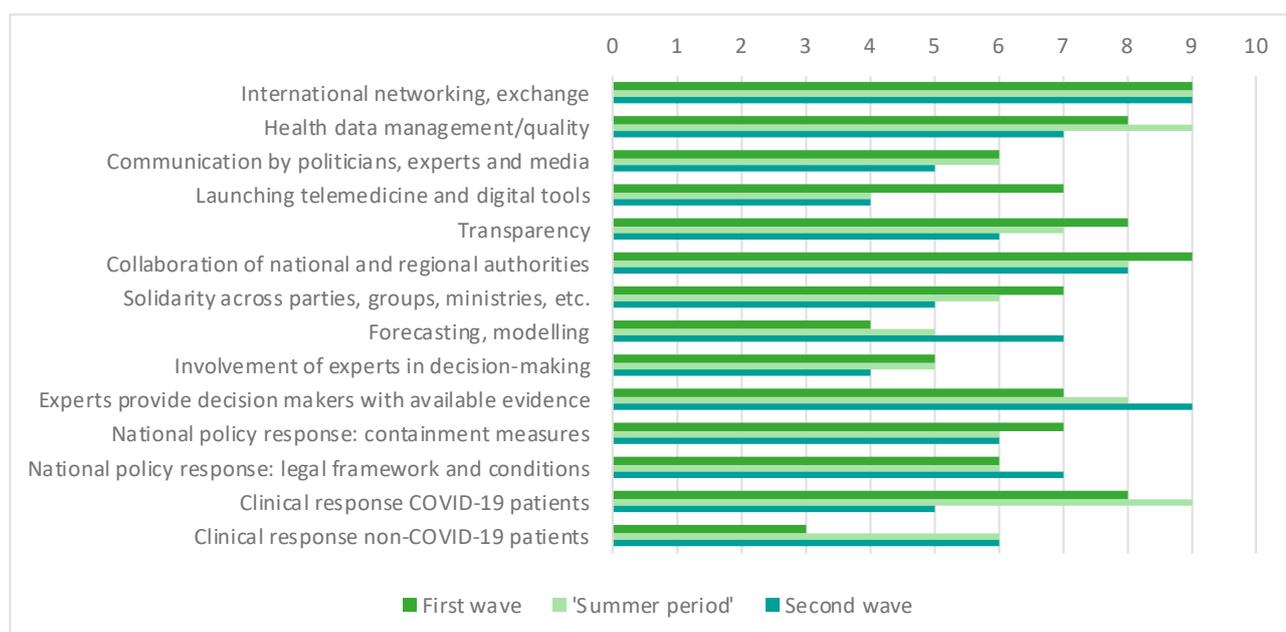
Table 5: Priority topics - Croatia

| Rank | Top 10 current priority topics HR | Top 10 future priority topics HR |
|------|--|--|
| 1 | Communication towards population | Effectiveness and safety of vaccines |
| 2 | Vaccination strategies (availability, distribution, implementation, documentation) | Communication towards population |
| 3 | Monitoring of effectiveness and harms of policy/containment measures | Protection of schools and kindergardens |
| 4 | National continuous COVID-19 testing strategies | Vaccination strategies (availability, distribution, implementation, documentation) |
| 5 | Protection of vulnerable groups | Long COVID (long-term clinical effects; health monitoring of individuals who recovered from infection) |
| 6 | Treatments for COVID-19 patients | Hospital capacities (ICU and non-ICU) and primary care capacities (non-COVID-19) |
| 7 | Refine/strengthen the role of the EU in pandemic management | Surveillance of seroprevalence and associated immunity |
| 8 | Protection of care facilities | Accuracy and usability of different test methods |
| 9 | Mass testing approaches | Mitigation of economic and social consequences |
| 10 | Accuracy and usability of different test methods | Public health concepts for balancing between protection from virus and protection of personal freedom |

Additional current priority topics: Vaccination coverage and vaccination availability

Rating - first wave, summer period and second wave

Figure 7: Rating - Croatia



f) Estonia

Number of responses: 1
Participating organization: Public Health Institute

Top 10 current and future priority topics

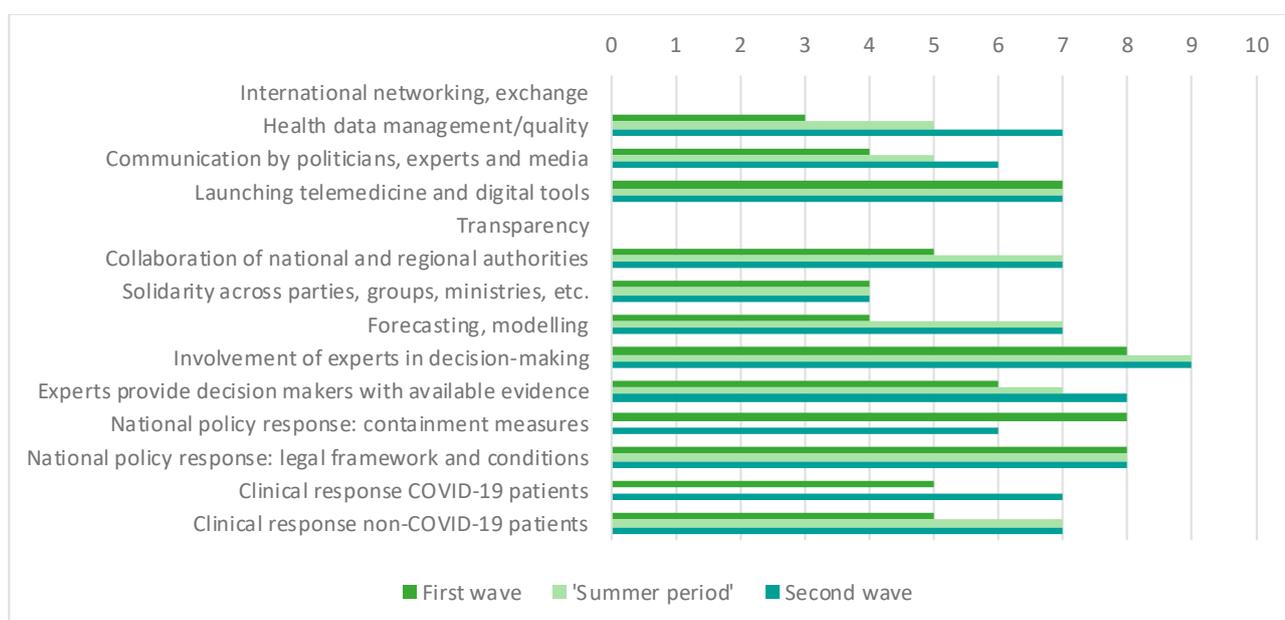
Table 6: Priority topics - Estonia

| Rank | Top 10 current priority topics EE | Top 10 future priority topics EE |
|------|---|---|
| 1 | National continuous COVID-19 testing strategies | National continuous COVID-19 testing strategies |
| 2 | Protection of hospitals | Protection of vulnerable groups |
| 3 | Protection of vulnerable groups | Impact of pandemic on education |
| 4 | Hospital capacities (ICU and non-ICU) and primary care capacities (non-COVID-19) | Long COVID (long-term clinical effects; health monitoring of individuals who recovered from infection) |
| 5 | Vaccination strategies (availability, distribution, implementation, documentation) | Management of (COVID-19) health data |
| 6 | Management of (COVID-19) health data | Mitigation of economic and social consequences |
| 7 | Impacts of pandemic on (non-COVID) health (e.g. medication use, chronic care, mental health, routine care, conditions like heart attacks, strokes, cancer, childhood vaccination) | Impact of voluntary (partial) self-isolation on society and individuals (e.g. transmission, social contacts, effect on economy) |
| 8 | Mitigation of economic and social consequences | Impacts of pandemic on (non-COVID) health (e.g. medication use, chronic care, mental health; routine care, conditions like heart attacks, strokes, cancer, childhood vaccination) |
| 9 | Collaboration between institutions/authorities | Collaboration between institutions/authorities |
| 10 | Case definitions (number of cases, deaths, recovered) | Case definitions (number of cases, deaths, recovered) |

Additional current priority topic: Impact on mental health

Rating - first wave, summer period and second wave

Figure 8: Rating - Estonia



The categories "international networking, exchange" and "transparency" were not assessed by Estonia, therefore no data is available. Further, no data were provided for the categories "National policy response: containment measures" and "Clinical response: health care and services for COVID-19 patients" for the Summer period.

g) Finland

Number of responses: 1

Participating organization: Public Health Institute

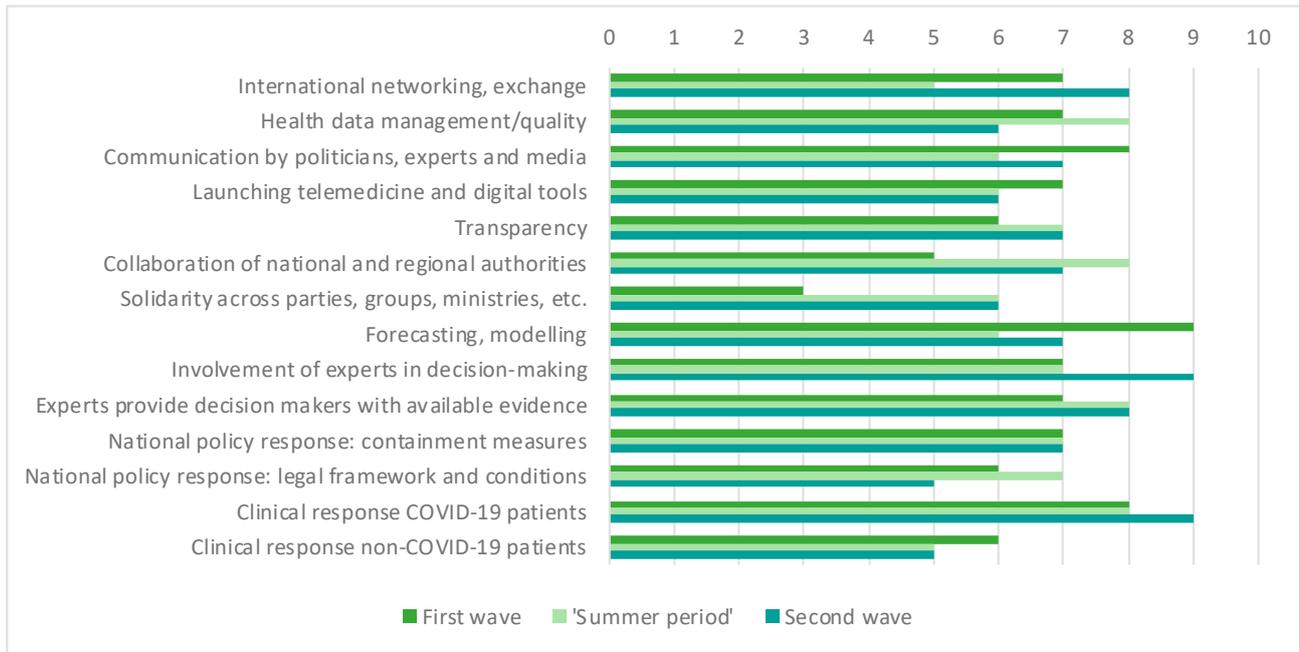
Top 10 current and future priority topics

Table 7: Priority topics - Finland

| Rank | Top 10 current priority topics FI | Top 10 future priority topics FI |
|------|---|---|
| 1 | Vaccination strategies (availability, distribution, implementation, documentation) | Strengthen skills and address potential shortage of health professionals |
| 2 | Effectiveness and safety of vaccines | Foresight/forecast, preparedness, implementation of modelling |
| 3 | Impacts of pandemic on (non-COVID) health (e.g. medication use, chronic care, mental health, routine care, conditions like heart attacks, strokes, cancer, childhood vaccination) | Vaccination strategies (availability, distribution, implementation, documentation) |
| 4 | Changes in availability of medications and medical equipment (COVID and non-COVID) | Effectiveness and safety of vaccines |
| 5 | Long COVID (long-term clinical effects; health monitoring of individuals who recovered from infection) | Centralized vs. de-centralized pandemic management |
| 6 | Monitoring of effectiveness and harms of policy/containment measures | Collaboration between institutions/authorities |
| 7 | Collaboration between institutions/authorities | Monitoring of effectiveness and harms of policy/containment measures |
| 8 | Centralized vs. de-centralized pandemic management | Impacts of pandemic on (non-COVID) health (e.g. medication use, chronic care, mental health; routine care, conditions like heart attacks, strokes, cancer, childhood vaccination) |
| 9 | Refine/strengthen the role of the EU in pandemic management | Refine/strengthen the role of the EU in pandemic management |
| 10 | - | - |

Rating - first wave, summer period and second wave

Figure 9: Rating - Finland



h) Germany

Number of responses: 1

Participating organization: Public Health Institute

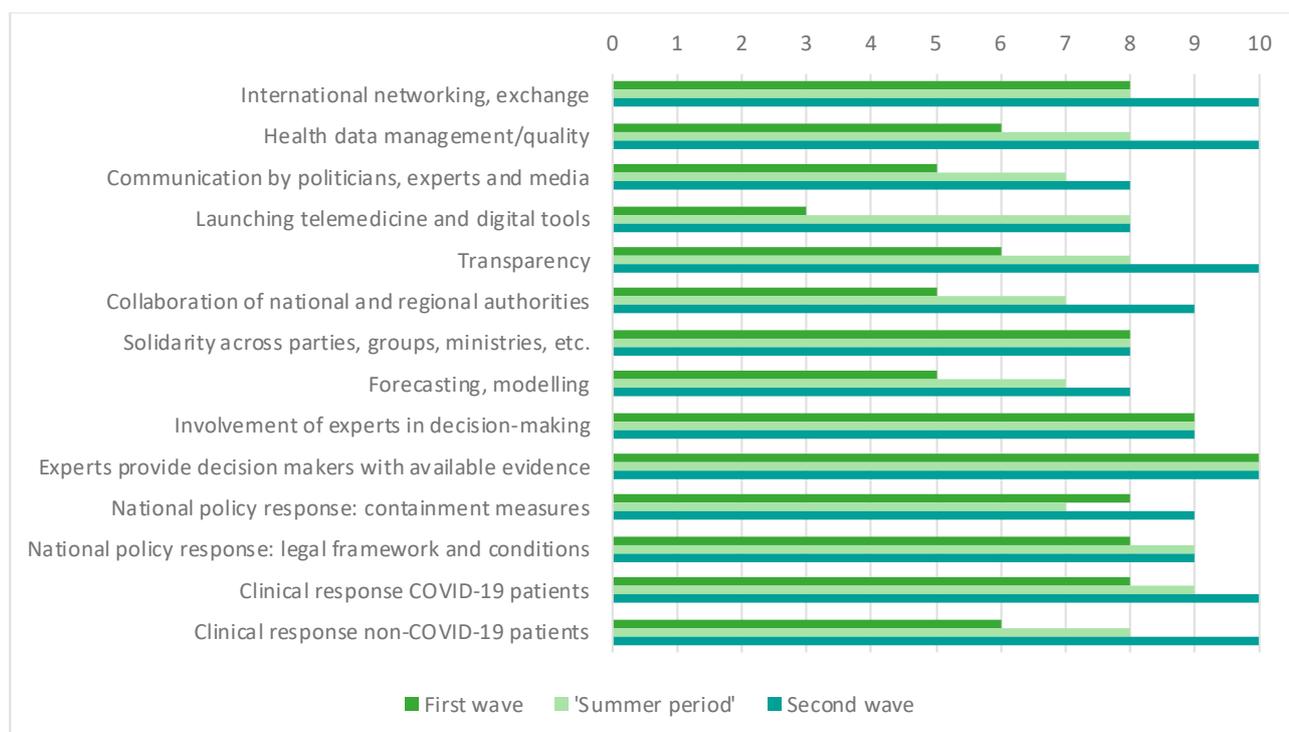
Top 10 current and future priority topics

Table 8: Priority topics - Germany

| Rank | Top 10 current priority topics DE | Top 10 future priority topics DE |
|------|--|---|
| 1 | Vaccination strategies (availability, distribution, implementation, documentation) | Impacts of pandemic on (non-COVID) health (e.g. medication use, chronic care, mental health; routine care, conditions like heart attacks, strokes, cancer, childhood vaccination) |
| 2 | Effectiveness and safety of vaccines | Changes in lifestyle due to the pandemic |
| 3 | Surveillance of seroprevalence and associated immunity | Long COVID (long-term clinical effects; health monitoring of individuals who recovered from infection) |
| 4 | Communication between actors/players | - |
| 5 | Management of (COVID-19) health data | - |
| 6 | - | - |
| 7 | - | - |
| 8 | - | - |
| 9 | - | - |
| 10 | - | - |

Rating - first wave, summer period and second wave

Figure 10: Rating - Germany



i) Hungary

Number of responses: 1

Participating organization: Government authority

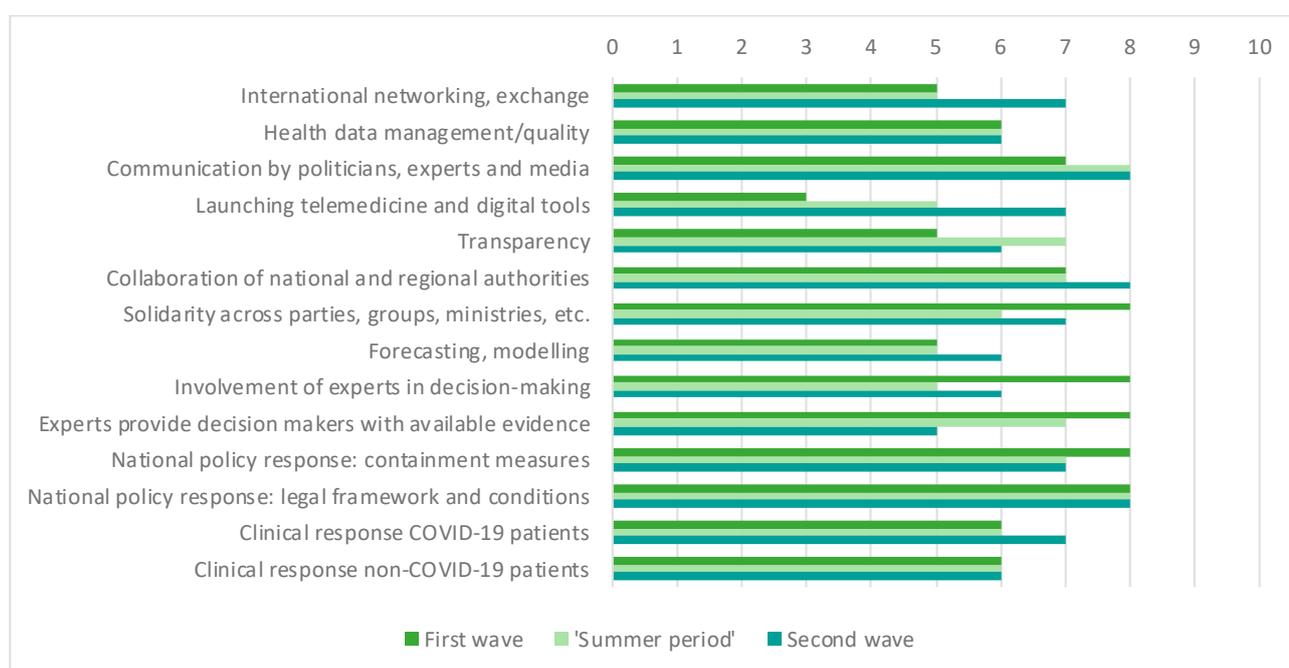
Top 10 current and future priority topics

Table 9: Priority topics - Hungary

| Rank | Top 10 current priority topics HU | Top 10 future priority topics HU |
|------|--|---|
| 1 | Treatments for COVID-19 patients | Vaccination strategies (availability, distribution, implementation, documentation) |
| 2 | Changes in availability of medications and medical equipment (COVID and non-COVID) | Impacts of pandemic on (non-COVID) health (e.g. medication use, chronic care, mental health; routine care, conditions like heart attacks, strokes, cancer, childhood vaccination) |
| 3 | Hospital capacities (ICU and non-ICU) and primary care capacities (non-COVID-19) | Mitigation of economic and social consequences |
| 4 | National continuous COVID-19 testing strategies | Use of telemedicine |
| 5 | Vaccination strategies (availability, distribution, implementation, documentation) | Relaxing/ease of containment measures |
| 6 | Communication towards population | Surveillance of seroprevalence and associated immunity |
| 7 | Monitoring of effectiveness and harms of policy/containment measures | |
| 8 | Mitigation of economic and social consequences | |
| 9 | Impact of pandemic on education | |
| 10 | - | |

Rating - first wave, summer period and second wave

Figure 11: Rating- Hungary



j) Ireland

Number of responses: 1

Participating organization: Government authority

Top 10 current and future priority topics:

Table 10: Priority topics - Ireland

| Rank | Top 10 current priority topics IE | Top 10 future priority topics IE |
|------|---|--|
| 1 | Vaccination strategies (availability, distribution, implementation, documentation) | Changes in lifestyle due to the pandemic |
| 2 | Hospital capacities (ICU and non-ICU) and primary care capacities (non-COVID-19) | Monitoring of effectiveness and harms of policy/containment measures |
| 3 | Protection of vulnerable groups | Use of telemedicine |
| 4 | Protection of care facilities | Relaxing/ease of containment measures |
| 5 | Protection of hospitals | - |
| 6 | Impacts of pandemic on (non-COVID) health (e.g. medication use, chronic care, mental health, routine care, conditions like heart attacks, strokes, cancer, childhood vaccination) | - |
| 7 | Impact of pandemic on education | - |
| 8 | Communication towards population | - |
| 9 | Management of (COVID-19) health data | - |
| 10 | - | - |

Rating - first wave, summer period and second wave

No response was received from Ireland for the rating of activities during the first wave, summer period and second wave.

k) Italy

Number of responses: 1
Participating organization: Public Health Institute

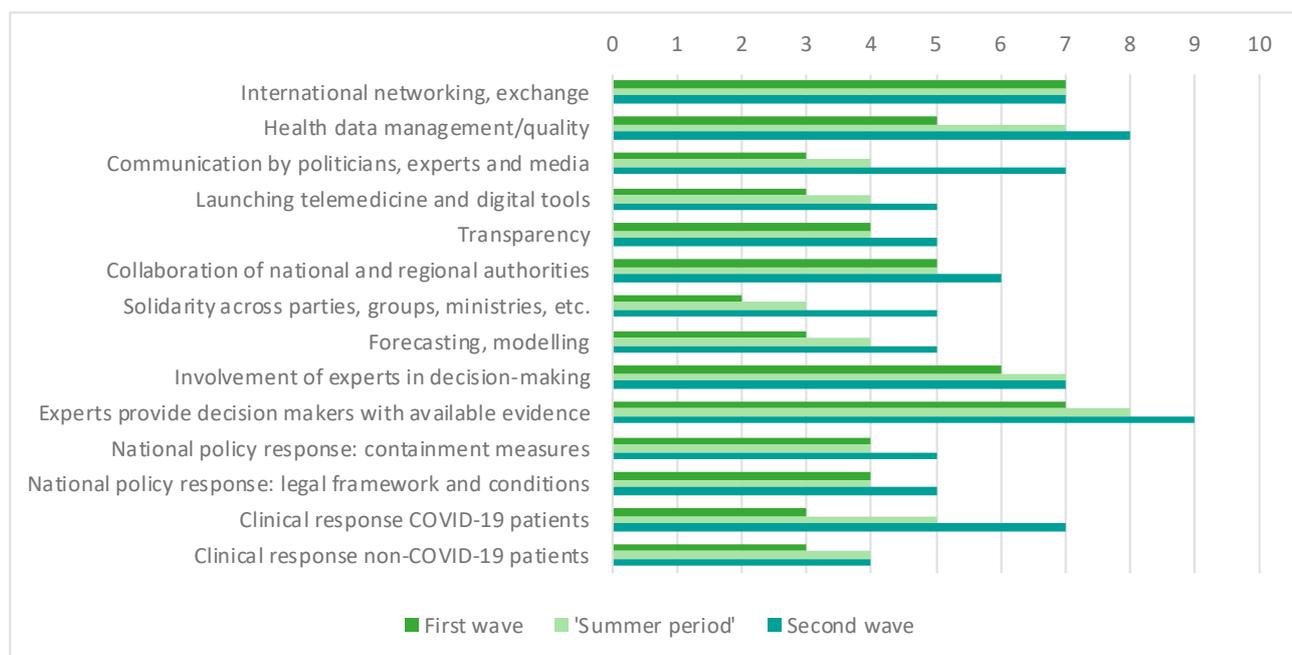
Top 10 current and future priority topics:

Table 11: Priority topics - Italy

| Rank | Top 10 current priority topics IT | Top 10 future priority topics IT |
|------|---|---|
| 1 | Vaccination strategies (availability, distribution, implementation, documentation) | National continuous COVID-19 testing strategies |
| 2 | Effectiveness and safety of vaccines | Surveillance of seroprevalence and associated immunity |
| 3 | Mitigation of economic and social consequences | Accuracy and usability of different test methods |
| 4 | Public Health concepts for balancing between protection from virus and protection of personal freedom | Communication towards population |
| 5 | Changes in lifestyle due to the pandemic | Hospital capacities (ICU and non-ICU) and primary care capacities (non-COVID-19) |
| 6 | Impact of voluntary (partial) self-isolation on society and individuals (e.g. transmission, social contacts, effect on economy) | Mitigation of economic and social consequences |
| 7 | Impacts of pandemic on (non-COVID) health (e.g. medication use, chronic care, mental health, routine care, conditions like heart attacks, strokes, cancer, childhood vaccination) | Public health concepts for balancing between protection from virus and protection of personal freedom |
| 8 | Impact of pandemic on education | - |
| 9 | - | - |
| 10 | - | - |

Rating - first wave, summer period and second wave

Figure 12: Rating - Italy



I) Lithuania

Number of responses: 1
Participating organization: Government authority

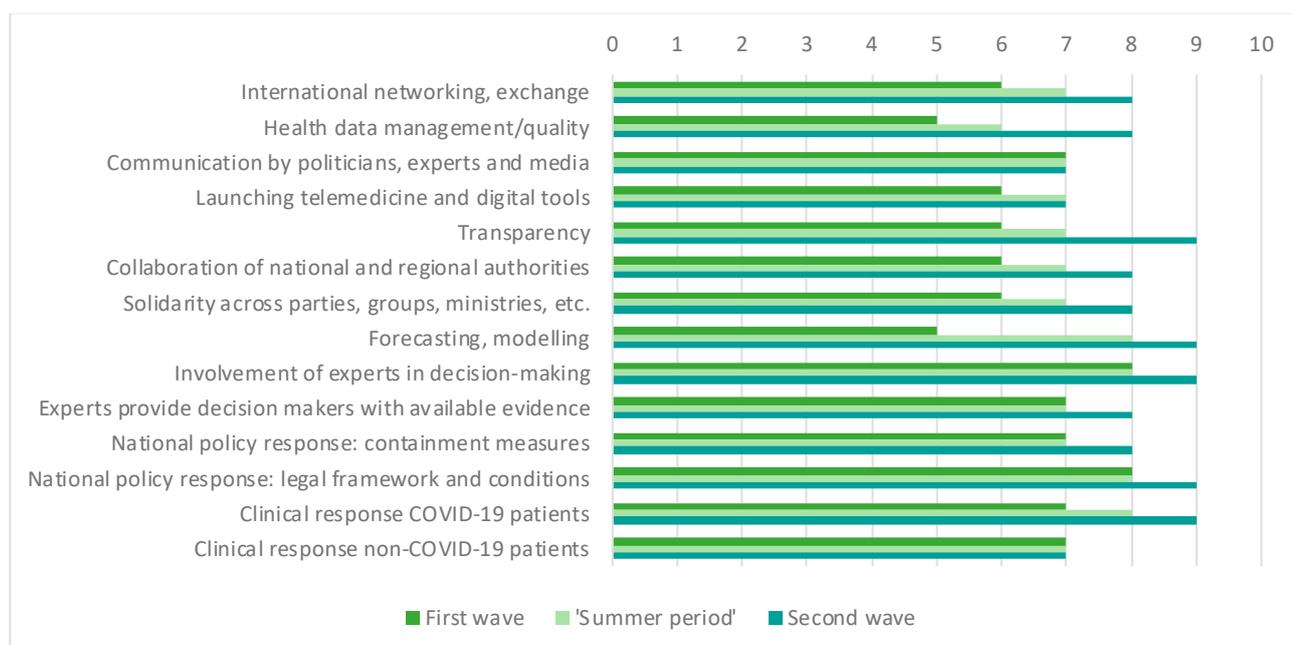
Top 10 current and future priority topics:

Table 12: Priority topics - Lithuania

| Rank | Top 10 current priority topics LT | Top 10 future priority topics LT |
|------|--|---|
| 1 | Vaccination strategies (availability, distribution, implementation, documentation) | Mitigation of economic and social consequences |
| 2 | National continuous COVID-19 testing strategies | Strengthen skills and address potential shortage of health professionals |
| 3 | Protection of schools and kindergardens | Management of (COVID-19) health data |
| 4 | Mitigation of economic and social consequences | Use of telemedicine |
| 5 | Management of (COVID-19) health data | Centralized vs. de-centralized pandemic management |
| 6 | Hospital capacities (ICU and non-ICU) and primary care capacities (non-COVID-19) | Impacts of pandemic on (non-COVID) health (e.g. medication use, chronic care, mental health; routine care, conditions like heart attacks, strokes, cancer, childhood vaccination) |
| 7 | Protection of hospitals | Surveillance of seroprevalence and associated immunity |
| 8 | Protection of care facilities | - |
| 9 | - | - |
| 10 | - | - |

Rating - first wave, summer period and second wave

Figure 13: Rating - Lithuania



m) Malta

Number of responses: 1
Participating organization: Government authority

Top 10 current and future priority topics

Table 13: Priority topics - Malta

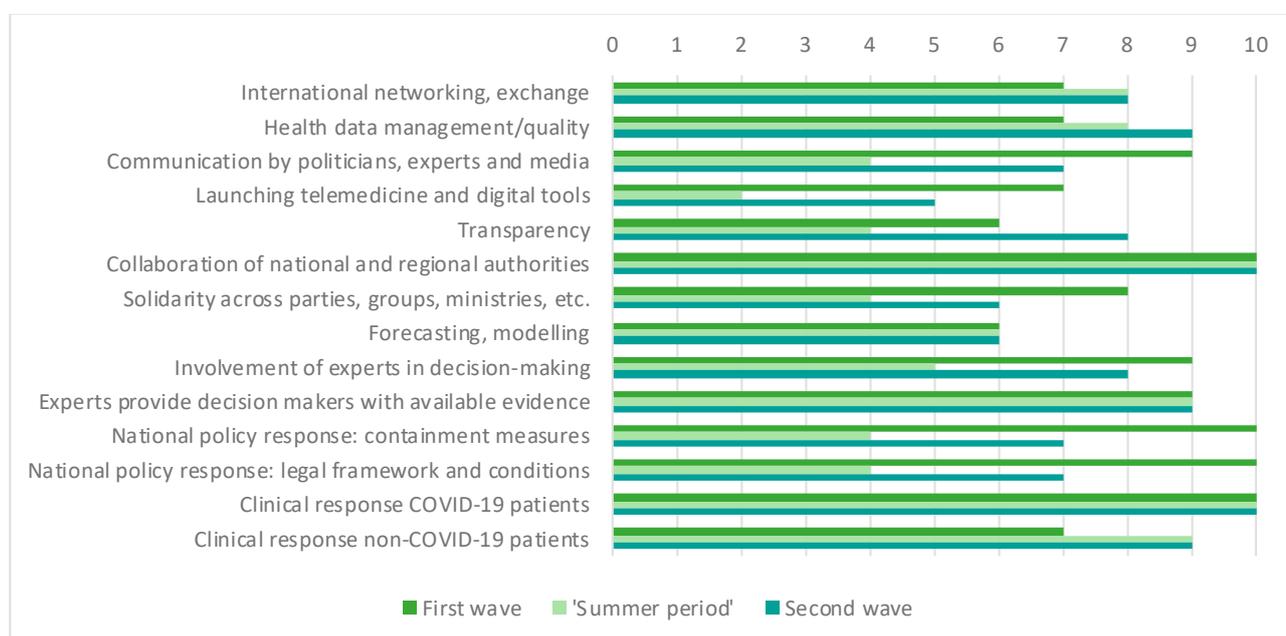
| Rank | Top 10 current priority topics MT | Top 10 future priority topics MT |
|------|--|---|
| 1 | Effectiveness and safety of vaccines | Foresight/forecast, preparedness, implementation of modelling |
| 2 | Infodemic | Public health concepts for balancing between protection from virus and protection of personal freedom |
| 3 | Accuracy and usability of different test methods | National continuous COVID-19 testing strategies |
| 4 | Relaxing/ease of containment measures | Impacts of pandemic on (non-COVID) health (e.g. medication use, chronic care, mental health; routine care, conditions like heart attacks, strokes, cancer, childhood vaccination) |
| 5 | Mitigation of economic and social consequences | Long COVID (long-term clinical effects; health monitoring of individuals who recovered from infection) |
| 6 | Foresight/forecast, preparedness, implementation of modelling | Refine/strengthen the role of the EU in pandemic management |
| 7 | Management of (COVID-19) health data | Vaccination strategies (availability, distribution, implementation, documentation) |
| 8 | Long COVID (long-term clinical effects; health monitoring of individuals who recovered from infection) | - |
| 9 | - | - |
| 10 | - | - |

Additional current priority topics: Pandemic control mechanism and (de-)escalation strategies in Australia and vaccination certification – health information needs.

Additional future priority topic: Vaccination strategies in the longer term – boosters, etc.

Rating - first wave, summer period and second wave

Figure 14: Rating - Malta



n) The Netherlands

Number of responses: 4
Participating organizations: Government authority (2)
 Public Health Institute (2)

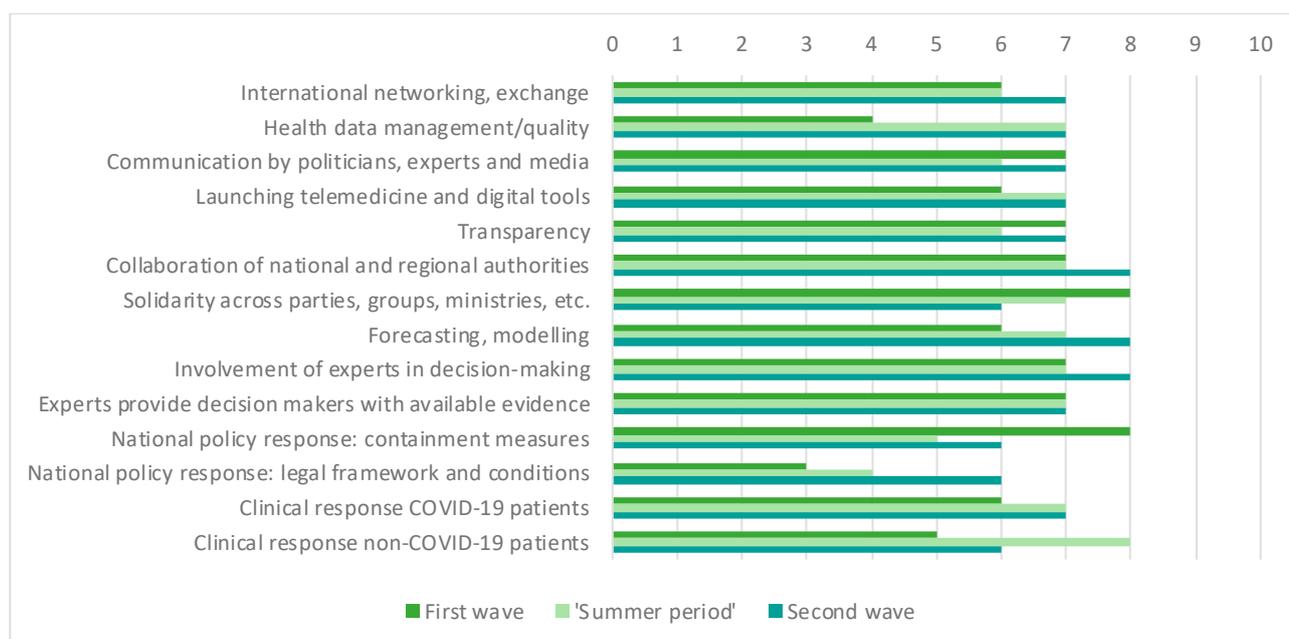
Top 10 current and future priority topics

Table 14: Priority topics -The Netherlands

| Rank | Top 10 current priority topics NL | Top 10 future priority topics NL |
|------|--|--|
| 1 | Hospital capacities (ICU and non-ICU) and primary care capacities (non-COVID-19) | Relaxing/ease of containment measures |
| 2 | Vaccination strategies (availability, distribution, implementation, documentation) | Effectiveness and safety of vaccines |
| 3 | Protection of vulnerable groups | Surveillance of seroprevalence and associated immunity |
| 4 | Communication towards population | Long COVID (long-term clinical effects; health monitoring of individuals who recovered from infection) |
| 5 | Impact of pandemic on education | Mitigation of economic and social consequences |
| 6 | National continuous COVID-19 testing strategies | Hospital capacities (ICU and non-ICU) and primary care capacities (non-COVID-19) |
| 7 | Effectiveness and safety of vaccines | Vaccination strategies (availability, distribution, implementation, documentation) |
| 8 | Mass testing approaches | Protection of vulnerable groups |
| 9 | Treatments for COVID-19 patients | Treatments for COVID-19 patients |
| 10 | Collaboration between institutions/authorities | Foresight/forecast, preparedness, implementation of modelling |

Rating - first wave, summer period and second wave

Figure 15: Rating – The Netherlands



o) Norway

Number of responses: 1
Participating organization: Public Health Institute

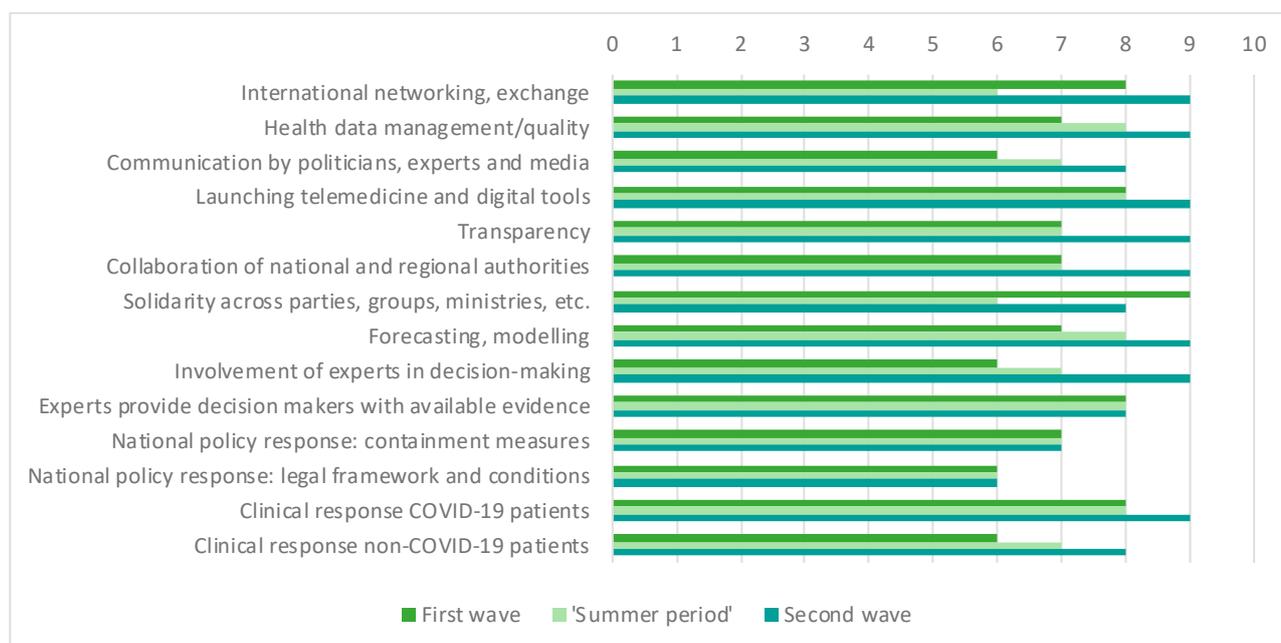
Top 10 current and future priority topics:

Table 15: Priority topics - Norway

| Rank | Top 10 current priority topics NO | Top 10 future priority topics NO |
|------|---|---|
| 1 | Protection of vulnerable groups | National continuous COVID-19 testing strategies |
| 2 | Protection of care facilities | Protection of care facilities |
| 3 | Protection of hospitals | Protection of hospitals |
| 4 | Impacts of pandemic on (non-COVID) health (e.g. medication use, chronic care, mental health, routine care, conditions like heart attacks, strokes, cancer, childhood vaccination) | Protection of vulnerable groups |
| 5 | Impact of voluntary (partial) self-isolation on society and individuals (e.g. transmission, social contacts, effect on economy) | Impact of voluntary (partial) self-isolation on society and individuals (e.g. transmission, social contacts, effect on economy) |
| 6 | Monitoring of effectiveness and harms of policy/containment measures | Monitoring of effectiveness and harms of policy/containment measures |
| 7 | Hospital capacities (ICU and non-ICU) and primary care capacities (non-COVID-19) | Hospital capacities (ICU and non-ICU) and primary care capacities (non-COVID-19) |
| 8 | Use of telemedicine | Vaccination strategies (availability, distribution, implementation, documentation) |
| 9 | Vaccination strategies (availability, distribution, implementation, documentation) | Effectiveness and safety of vaccines |
| 10 | Foresight/forecast, preparedness, implementation of modelling | Foresight/forecast, preparedness, implementation of modelling |

Rating - first wave, summer period and second wave

Figure 16: Rating - Norway



p) Poland

Number of responses: 1
Participating organization: Government authority

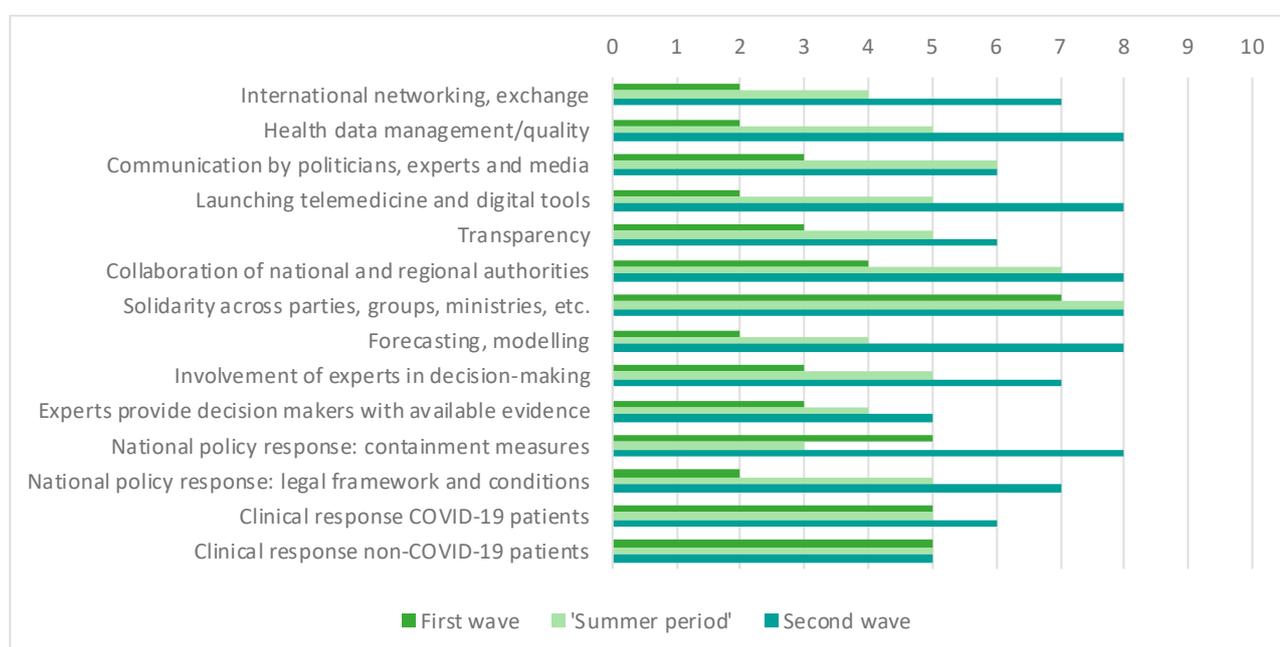
Top 10 current and future priority topics

Table 16: Priority topics - Poland

| Rank | Top 10 current priority topics PL | Top 10 future priority topics PL |
|------|--|--|
| 1 | Vaccination strategies (availability, distribution, implementation, documentation) | Effectiveness and safety of vaccines |
| 2 | Impact of pandemic on education | Vaccination strategies (availability, distribution, implementation, documentation) |
| 3 | Infodemic | Impact of pandemic on education |
| 4 | Use of telemedicine | Infodemic |
| 5 | Protection of hospitals | Changes in lifestyle due to the pandemic |
| 6 | - | - |
| 7 | - | - |
| 8 | - | - |
| 9 | - | - |
| 10 | - | - |

Rating - first wave, summer period and second wave

Figure 17: Rating - Poland



q) Portugal

Number of responses: 1
 Participating organization: University

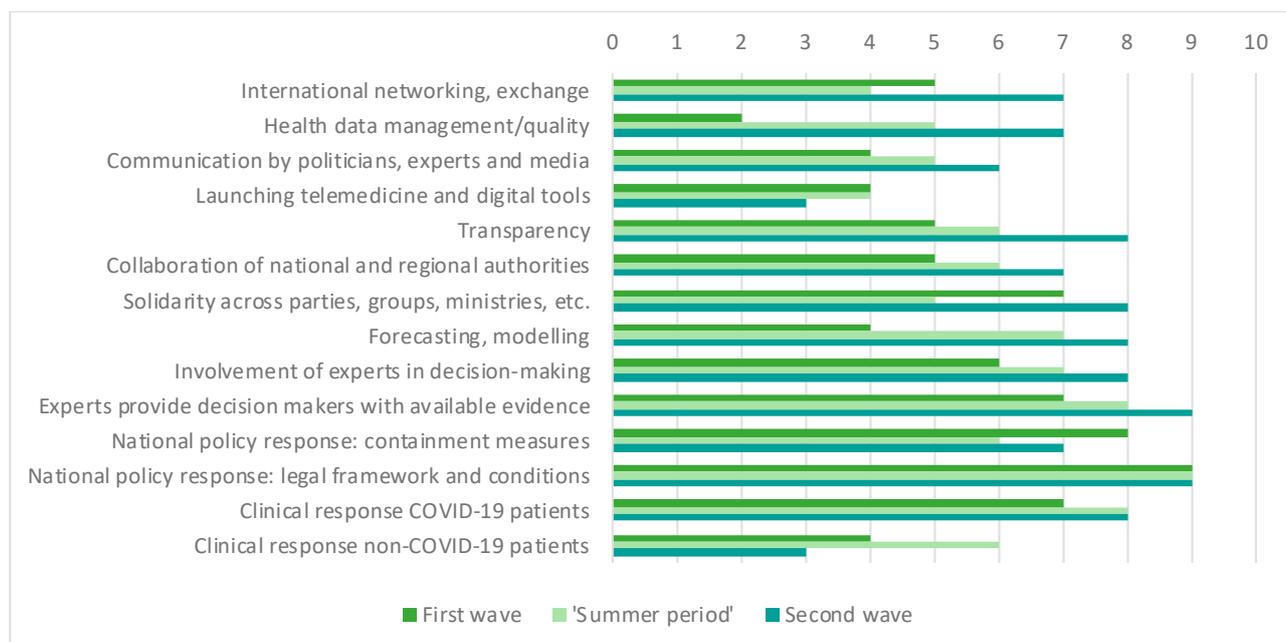
Top 10 current and future priority topics

Table 17: Priority topics - Portugal

| Rank | Top 10 current priority topics PT | Top 10 future priority topics PT |
|------|---|---|
| 1 | Protection of vulnerable groups | Surveillance of seroprevalence and associated immunity |
| 2 | National continuous COVID-19 testing strategies | Changes in lifestyle due to the pandemic |
| 3 | Impacts of pandemic on (non-COVID) health (e.g. medication use, chronic care, mental health, routine care, conditions like heart attacks, strokes, cancer, childhood vaccination) | Impacts of pandemic on (non-COVID) health (e.g. medication use, chronic care, mental health; routine care, conditions like heart attacks, strokes, cancer, childhood vaccination) |
| 4 | Monitoring of effectiveness and harms of policy/containment measures | Collaboration between institutions/authorities |
| 5 | Communication towards population | Use of telemedicine |
| 6 | Strengthen skills and address potential shortage of health professionals | Mitigation of economic and social consequences |
| 7 | Use of telemedicine | Management of (COVID-19) health data |
| 8 | Foresight/forecast, preparedness, implementation of modelling | Refine/strengthen the role of the EU in pandemic management |
| 9 | Changes in availability of medications and medical equipment (COVID and non-COVID) | Foresight/forecast, preparedness, implementation of modelling |
| 10 | Vaccination strategies (availability, distribution, implementation, documentation) | Impact of pandemic on education |

Rating - first wave, summer period and second wave

Figure 18: Rating - Portugal



r) Romania

Number of responses: 1
Participating organization: Public Health Institute

Top 10 current and future priority topics

Table 18: Priority topics - Romania

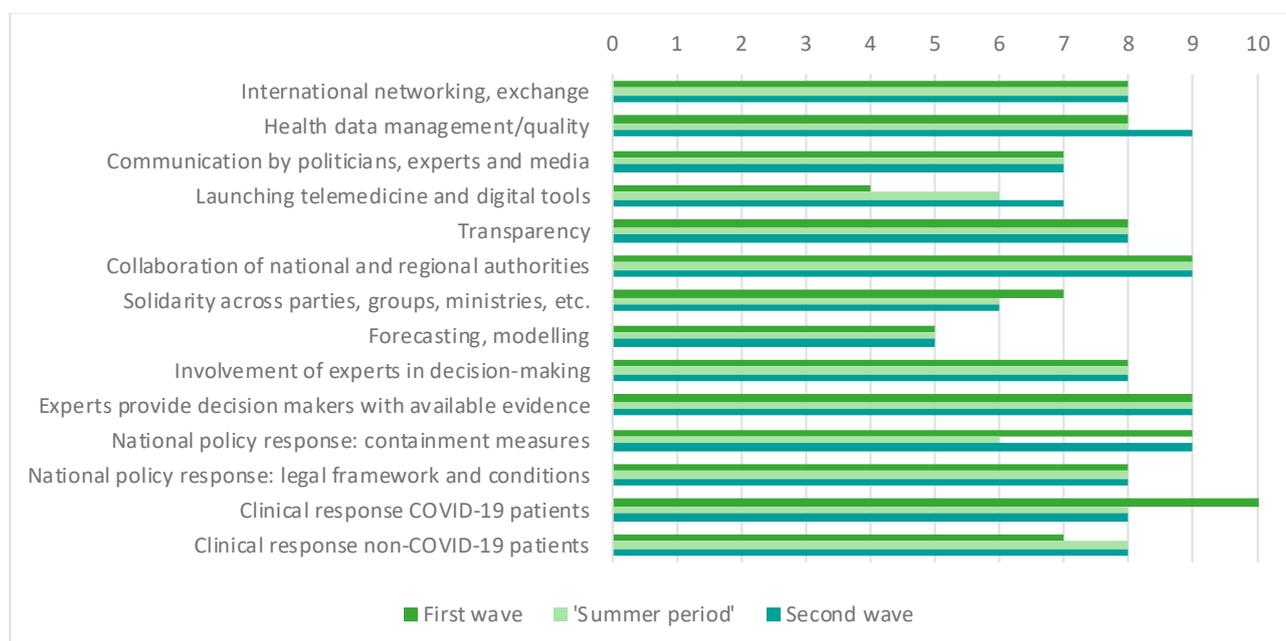
| Rank | Top 10 current priority topics RO | Top 10 future priority topics RO |
|------|---|---|
| 1 | National continuous COVID-19 testing strategies | Surveillance of seroprevalence and associated immunity |
| 2 | Surveillance of seroprevalence and associated immunity | Impact of voluntary (partial) self-isolation on society and individuals (e.g. transmission, social contacts, effect on economy) |
| 3 | Strengthen skills and address potential shortage of health professionals | Impacts of pandemic on (non-COVID) health (e.g. medication use, chronic care, mental health; routine care, conditions like heart attacks, strokes, cancer, childhood vaccination) |
| 4 | Hospital capacities (ICU and non-ICU) and primary care capacities (non-COVID-19) | Changes in availability of medications and medical equipment (COVID and non-COVID) |
| 5 | Impacts of pandemic on (non-COVID) health (e.g. medication use, chronic care, mental health, routine care, conditions like heart attacks, strokes, cancer, childhood vaccination) | Treatments for COVID-19 patients |
| 6 | Changes in availability of medications and medical equipment (COVID and non-COVID) | Effectiveness and safety of vaccines |
| 7 | Management of (COVID-19) health data | Relaxing/ease of containment measures |
| 8 | Vaccination strategies (availability, distribution, implementation, documentation) | Protection of vulnerable groups |
| 9 | Relaxing/ease of containment measures | Monitoring of effectiveness and harms of policy/containment measures |
| 10 | Mitigation of economic and social consequences | Participation/empowerment on community/ organization/citizen level |

Additional current priority topic: Population compliance with vaccination

Additional future priority topics: Continuous monitoring of medium-term vaccination effects (immunity or adverse events, if any)

Rating - first wave, summer period and second wave

Figure 19: Rating - Romania



s) Serbia

Number of responses: 3
Participating organizations: Public Health Institute (3)

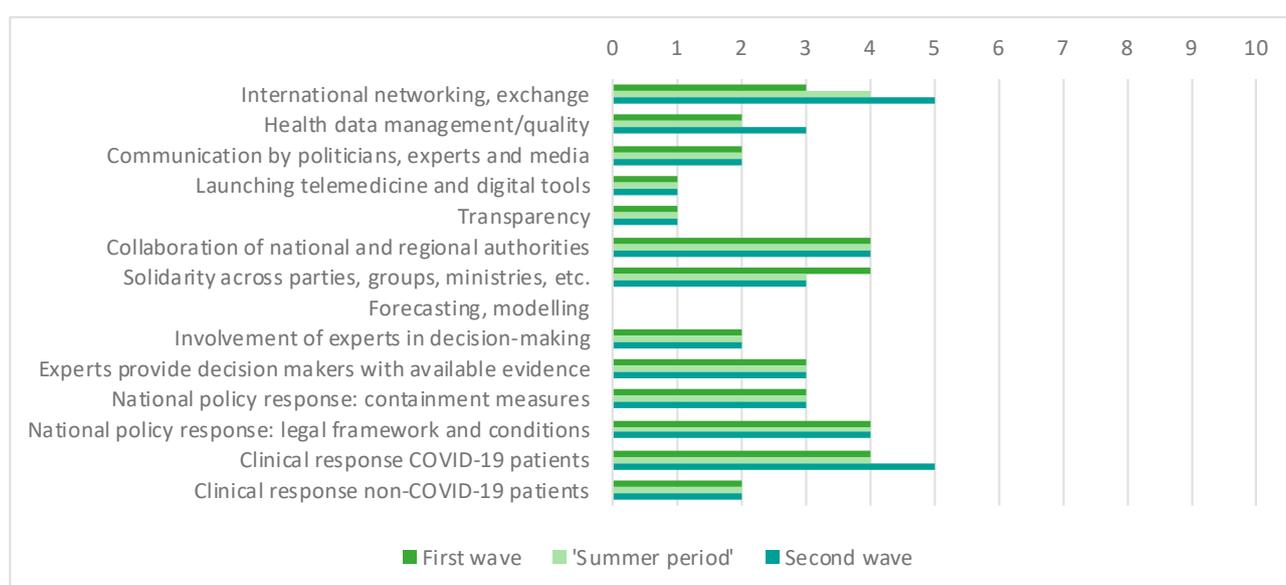
Top 10 current and future priority topics

Table 19: Priority topics - Serbia

| Rank | Top 10 current priority topics RS | Top 10 future priority topics RS |
|------|---|---|
| 1 | Vaccination strategies (availability, distribution, implementation, documentation) | Monitoring of effectiveness and harms of policy/containment measures |
| 2 | Protection of vulnerable groups | Public health concepts for balancing between protection from virus and protection of personal freedom |
| 3 | Effectiveness and safety of vaccines | Impact of pandemic on education |
| 4 | Management of (COVID-19) health data | Mitigation of economic and social consequences |
| 5 | Public Health concepts for balancing between protection from virus and protection of personal freedom | Protection of vulnerable groups |
| 6 | Case definitions (number of cases, deaths, recovered) | Strengthen skills and address potential shortage of health professionals |
| 7 | Protection of care facilities | Use of telemedicine |
| 8 | Hospital capacities (ICU and non-ICU) and primary care capacities (non-COVID-19) | Changes in lifestyle due to the pandemic |
| 9 | Protection of hospitals | Impacts of pandemic on (non-COVID) health (e.g. medication use, chronic care, mental health; routine care, conditions like heart attacks, strokes, cancer, childhood vaccination) |
| 10 | Foresight/forecast, preparedness, implementation of modelling | Vaccination strategies (availability, distribution, implementation, documentation) |

Rating - first wave, summer period and second wave

Figure 20: Rating - Serbia



All three time periods in the category "Forecasting, modelling" were rated by Serbia with zero points. Therefore, no bars are displayed for this category.

t) Slovakia

Number of responses: 4
Participating organizations: Government authority (3)
 Other (1, E-health and health statistical governance)

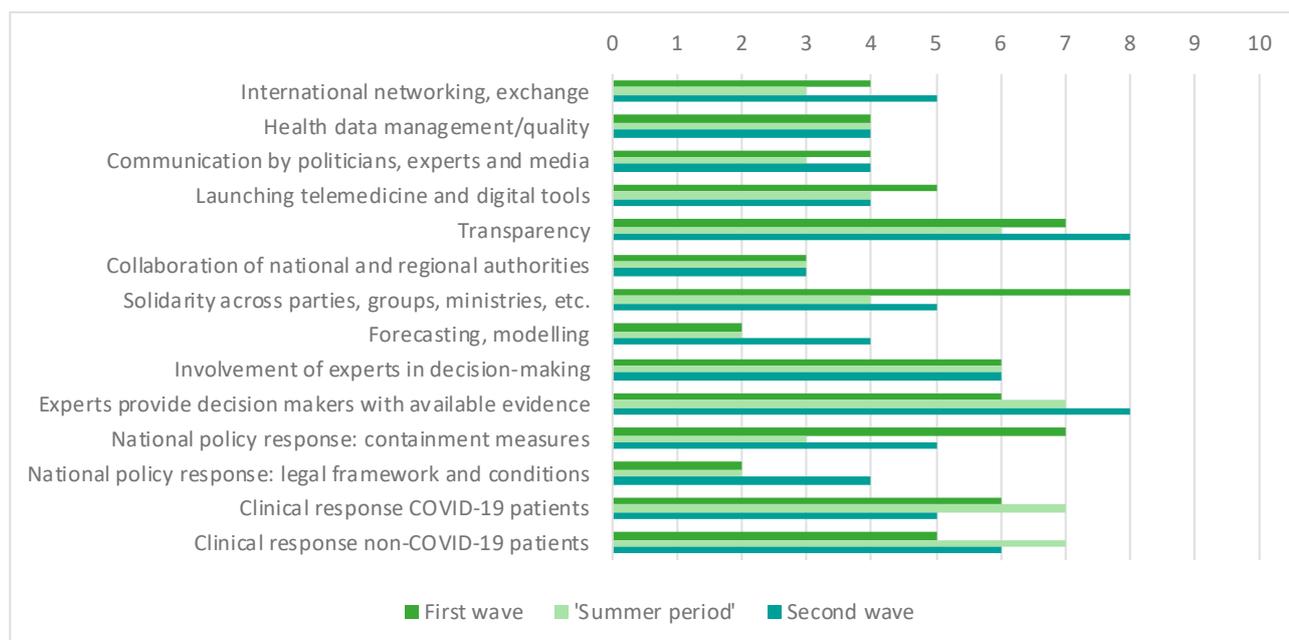
Top 10 current and future priority topics

Table 20: Priority topics - Slovakia

| Rank | Top 10 current priority topics SK | Top 10 future priority topics SK |
|------|--|---|
| 1 | National continuous COVID-19 testing strategies | Protection of vulnerable groups |
| 2 | Mass testing approaches | Vaccination strategies (availability, distribution, implementation, documentation) |
| 3 | Protection of hospitals | Mass testing approaches |
| 4 | Vaccination strategies (availability, distribution, implementation, documentation) | Mitigation of economic and social consequences |
| 5 | Protection of care facilities | National continuous COVID-19 strategies |
| 6 | Protection of essential infrastructures | Management of (COVID-19) health data |
| 7 | Protection of vulnerable groups | Relaxing/ease of containment measures |
| 8 | Relaxing/ease of containment measures | Impacts of pandemic on (non-COVID) health (e.g. medication use, chronic care, mental health; routine care, conditions like heart attacks, strokes, cancer, childhood vaccination) |
| 9 | Hospital capacities (ICU and non-ICU) and primary care capacities (non-COVID-19) | Foresight/forecast, preparedness, implementation of modelling |
| 10 | Impact of pandemic on education | Protection of hospitals |

Rating - first wave, summer period and second wave

Figure 21: Rating - Slovakia



u) Slovenia

Number of responses: 1
Participating organization: Public Health Institute

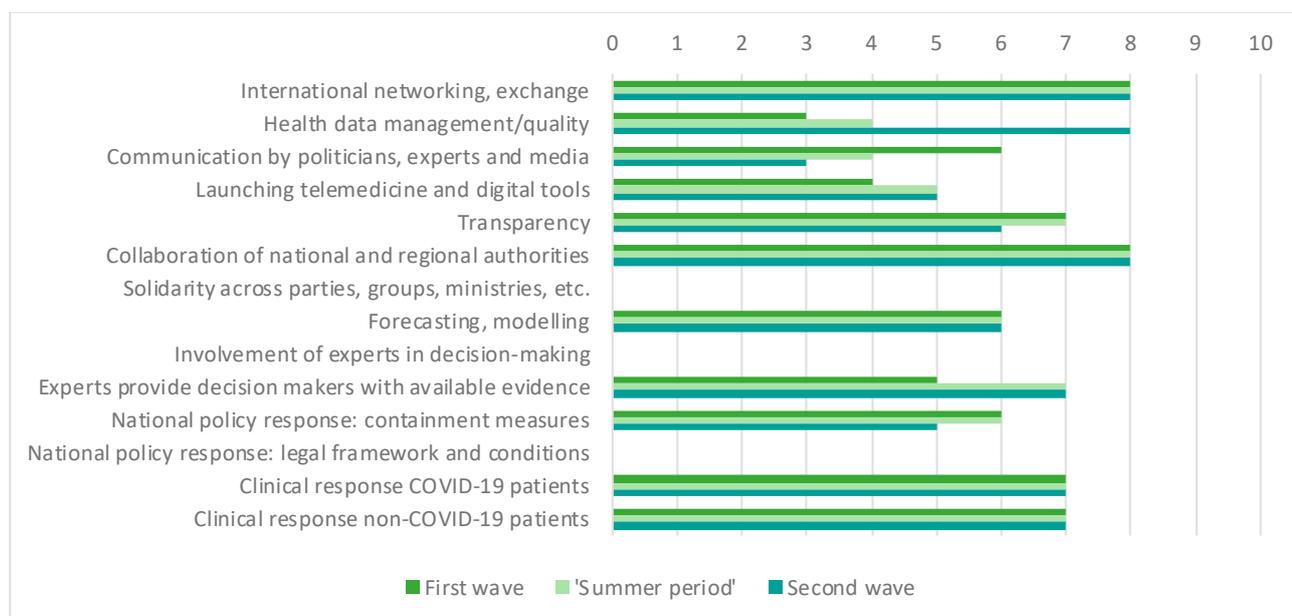
Top 10 current and future priority topics

Table 21: Priority topics - Slovenia

| Rank | Top 10 current priority topics SI | Top 10 future priority topics SI |
|------|---|---|
| 1 | National continuous COVID-19 testing strategies | Protection of care facilities |
| 2 | Mass testing approaches | Protection of vulnerable groups |
| 3 | Protection of care facilities | Changes in lifestyle due to the pandemic |
| 4 | Refine/strengthen the role of the EU in pandemic management | Impacts of pandemic on (non-COVID) health (e.g. medication use, chronic care, mental health; routine care, conditions like heart attacks, strokes, cancer, childhood vaccination) |
| 5 | Communication towards population | Monitoring of effectiveness and harms of policy/containment measures |
| 6 | Infodemic | Vaccination strategies (availability, distribution, implementation, documentation) |
| 7 | Hospital capacities (ICU and non-ICU) and primary care capacities (non-COVID-19) | Effectiveness and safety of vaccines |
| 8 | Vaccination strategies (availability, distribution, implementation, documentation) | Foresight/forecast, preparedness, implementation of modelling |
| 9 | Public Health concepts for balancing between protection from virus and protection of personal freedom | Relaxing/ease of containment measures |
| 10 | - | |

Rating - first wave, summer period and second wave

Figure 22: Rating - Slovenia



No rating was received on the following categories: "Solidarity across parties, groups, ministries, sections of the population, ...", "Involvement of experts in decision-making", "National policy response: legal framework and conditions". Therefore, no bar is displayed for all three time periods in the respective categories.

v) Spain

Number of responses: 1
Participating organization: Regional authority

Top 10 current and future priority topics

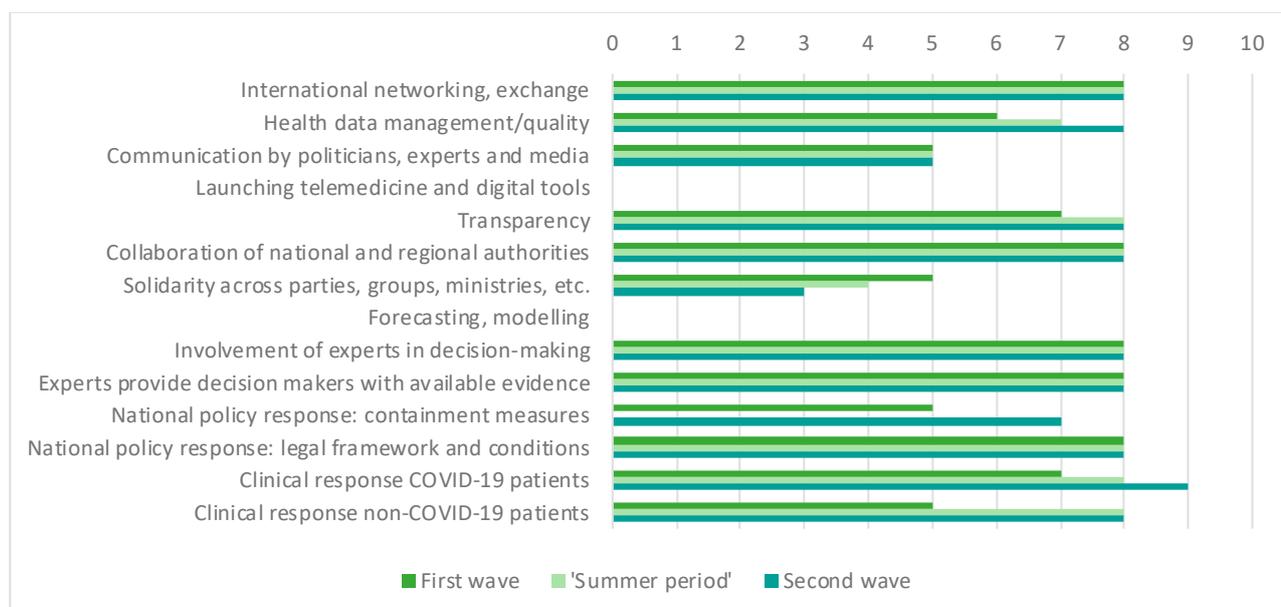
Table 22: Priority topics - Spain

| Rank | Top 10 current priority topics ES | Top 10 future priority topics ES |
|------|---|--|
| 1 | Impacts of pandemic on (non-COVID) health (e.g. medication use, chronic care, mental health, routine care, conditions like heart attacks, strokes, cancer, childhood vaccination) | Foresight/forecast, preparedness, implementation of modelling |
| 2 | Monitoring of effectiveness and harms of policy/containment measures | Collaboration between institutions/authorities |
| 3 | Vaccination strategies (availability, distribution, implementation, documentation) | Mitigation of economic and social consequences |
| 4 | Protection of vulnerable groups | Impact of pandemic on education |
| 5 | Effectiveness and safety of vaccines | Relaxing/ease of containment measures |
| 6 | Communication between actors/players | Refine/strengthen the role of the EU in pandemic management |
| 7 | Communication towards population | Infodemic |
| 8 | Use of telemedicine | Monitoring of effectiveness and harms of policy/containment measures |
| 9 | Long COVID (long-term clinical effects; health monitoring of individuals who recovered from infection) | National continuous COVID-19 testing strategies |
| 10 | Strengthen skills and address potential shortage of health professionals | Surveillance of seroprevalence and associated immunity |

Additional future priority topic: Populism and pandemics

Rating - first wave, summer period and second wave

Figure 23: Rating - Spain



There was response on the three time periods in the categories "Launching telemedicine and digital tools" and "Forecasting, modelling" and for the Summer period in the category "National policy response: containment measures", therefore no bars are displayed for the respective time periods/categories.

w) Sweden

Number of responses: 1
 Participating organization: Government authority

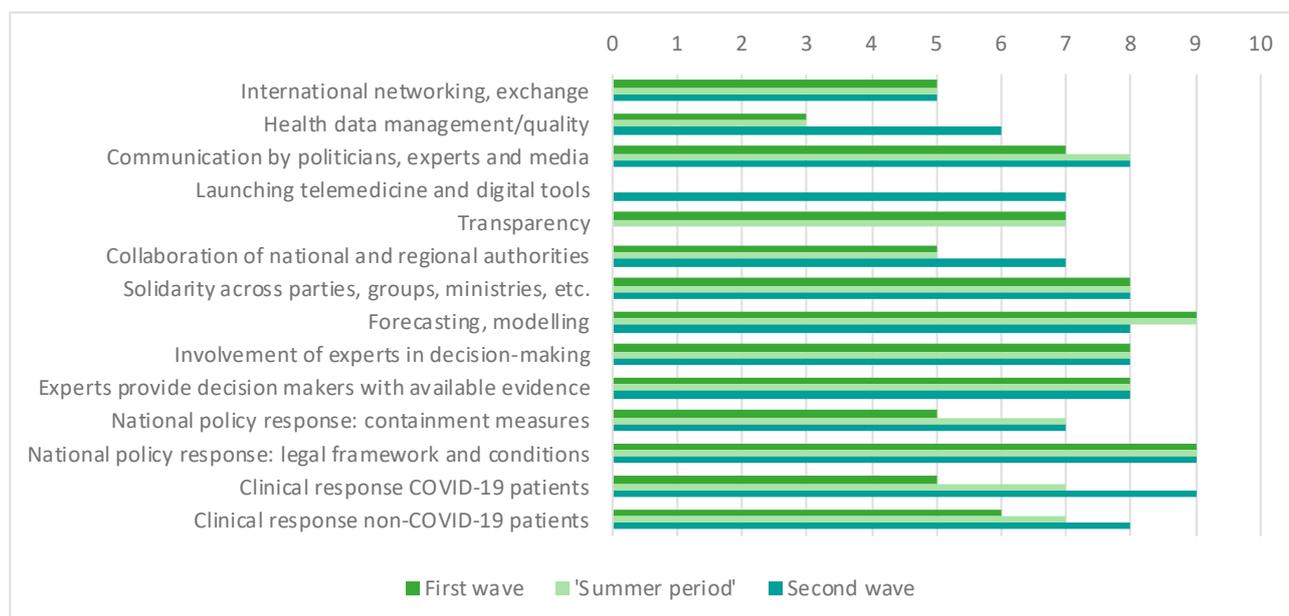
Top 10 current and future priority topics

Table 23: Priority topics – Sweden

| Rank | Top 10 current priority topics SE | Top 10 future priority topics SE |
|------|--|--|
| 1 | Vaccination strategies (availability, distribution, implementation, documentation) | Foresight/forecast, preparedness, implementation of modelling |
| 2 | Effectiveness and safety of vaccines | Long COVID (long-term clinical effects; health monitoring of individuals who recovered from infection) |
| 3 | Foresight/forecast, preparedness, implementation of modelling | Surveillance of seroprevalence and associated immunity |
| 4 | | |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |
| 9 | | |
| 10 | | |

Rating - first wave, summer period and second wave

Figure 24: Rating - Sweden



Sweden did not rate the periods "First wave" and "Summer period" in the category "Launching telemedicine and digital tools" nor the period "Second wave" in the category "Transparency", therefore no bars are displayed for the respective time periods/categories.

x) United Kingdom

Number of responses: 2
Participating organizations: Public Health Institute
 University

Top 10 current and future priority topics

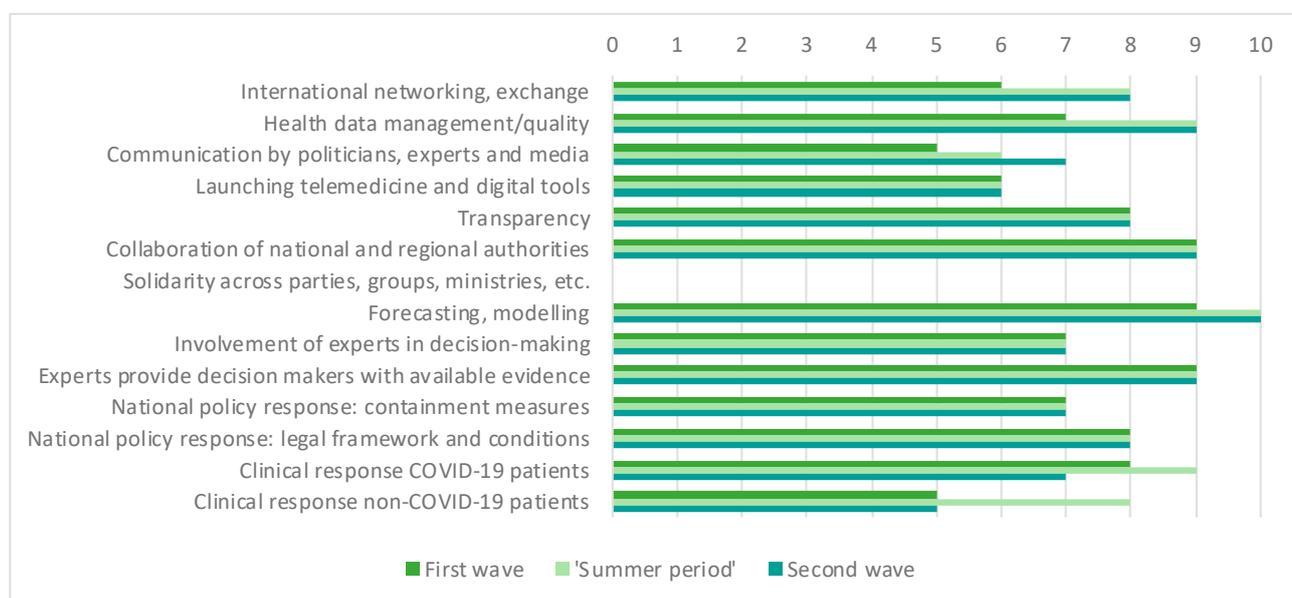
Table 24: Priority topics – United Kingdom

| Rank | Top 10 current priority topics UK | Top 10 future priority topics UK |
|------|---|---|
| 1 | Protection of vulnerable groups | Monitoring of effectiveness and harms of policy/containment measures |
| 2 | Vaccination strategies (availability, distribution, implementation, documentation) | Effectiveness and safety of vaccines |
| 3 | Effectiveness and safety of vaccines | Protection of care facilities |
| 4 | Protection of care facilities | Impact of voluntary (partial) self-isolation on society and individuals (e.g. transmission, social contacts, effect on economy) |
| 5 | Long COVID (long-term clinical effects; health monitoring of individuals who recovered from infection) | Long COVID (long-term clinical effects; health monitoring of individuals who recovered from infection) |
| 6 | Management of (COVID-19) health data | Collaboration between institutions/authorities |
| 7 | Collaboration between institutions/authorities | Impacts of pandemic on (non-COVID) health (e.g. medication use, chronic care, mental health; routine care, conditions like heart attacks, strokes, cancer, childhood vaccination) |
| 8 | Monitoring of effectiveness and harms of policy/containment measures | Foresight/forecast, preparedness, implementation of modelling |
| 9 | Impacts of pandemic on (non-COVID) health (e.g. medication use, chronic care, mental health, routine care, conditions like heart attacks, strokes, cancer, childhood vaccination) | Vaccination strategies (availability, distribution, implementation, documentation) |
| 10 | Hospital capacities (ICU and non-ICU) and primary care capacities (non-COVID-19) | Strengthen skills and address potential shortage of health professionals |

Additional future priority topic: Analysis of COVID-19 cases and deaths by persons educational level, profession, country of origin, etc.

Rating - first wave, summer period and second wave

Figure 25: Rating – United Kingdom



Of the two participating institutions from the United Kingdom, only one assessed the specified categories, with no assessment for all three time periods in the category "Solidarity across parties, groups, ministries, sections of the population, ...". Therefore, the mentioned bars are missing in the chart above.

2. Good practices

Regarding good practices and lessons learned that countries would like to share with other countries, Table 25 provides an overview of responses received.

Table 25: Good practices of participating countries

| Country | What kind of activities/approaches/strategies of your national COVID-19 emergency response worked well in your country that you would like to share with others as good practice? |
|----------------|---|
| Albania | Involvement of family doctors in pandemic management |
| Austria | Communication (of risks, developments, measures, recommendations, ...) by politicians worked well in Austria; The secretary of health held regular press conferences informing the public about activities, risks and measures related to COVID-10 pandemic, and also involved renown experts to the respective topic; However, with the duration of the crisis we observed that diverging opinions evolved among those experts. |
| Belgium | Health data management which is managed first by public health professionals and not first by IT professional: very difficult to save the quality of data results when first by IT professionals |
| | Inter-hospital transport and specific COVID transport |
| Croatia | Surveillance system: http://www.cmj.hr/default.aspx?id=13245&issue=yes |
| Estonia | Management of infodemic- change of spokesperson. Increasing credibility of COVID-19 politics among population. |
| Finland | Quick action, collaboration at national and regional level |
| Germany | Raising awareness among the population; infection prevention and control, e.g. by consistently observing rules of distance and hygiene - also outdoors -, by ventilating indoor spaces and, where indicated, by wearing a community mask correctly and use the Corona Warn App. |
| Hungary | Lockdown and curfew implementation was quite effective. |
| Malta | Shielding of the vulnerable and nursing care homes in the first wave |
| Netherlands | We started a Behavioural Insights Unit |
| | Collaboration between health care sectors and beyond |
| Norway | Transparency and full confidence in advice from public health experts |
| Poland | School lockdown and switching to online work (where it was possible) have reduced the mobility of society and the spread of the virus SARS-CoV-2. |
| | Another way to reduce the spread of the virus was to standardize the dates of winter holidays for each region and to close down ski resorts and hotels. |
| Portugal | The engagement of public health experts |
| | The response by the scientific community |
| | The response by Universities and School to adapt to online classes |
| | The response by the National Primary Healthcare Centers Network |
| Spain | As a quasi-federal country, health authorities constant exchange and agreement within the Interterritorial Council of the National Health Services; |
| | Health services quick adaptation and rapid response to tackle new surges of cases |
| | rather transparent management of the crisis |
| United Kingdom | Linked data across many different datasets |

3. Lessons learned - potential for improvement

Besides good practices, countries indicated lessons learned and, hence, potential for improvement of national COVID-19 emergency response and pandemic management. Table 26 provides an overview of responses received.

Table 26: Lessons learned - potential for improvement of national COVID-19 emergency response

| Country | In which areas do you see the biggest potential for improvement of the national COVID-19 emergency response in your country? |
|---------------------|---|
| Albania | Data transparency |
| Austria | Central and decentral pandemic management because of the federal structure of the state; These structural aspects required regular alignment meetings with the local health authorities and also posed challenges to collection of harmonized data. |
| Belgium | The new government who seems to give more solidarity between all parties than the first one and who seems to pay more attention on public health advices. |
| | Clear definition of role, more centralized management |
| | Surveillance of seroprevalence and associated immunity; management of anti-vaxxers |
| | Collaboration between institutions/authorities |
| | Collaboration between communities and federal government |
| Croatia | Communication strategy, informed decisions and equal distribution of resources |
| Finland | Slow action in some areas due to complex multi-layer administration, especially in local and regional level |
| | Unclear mandates between different authorities |
| Hungary | Test methods (accelerate process and use digital solutions to implement better coordination) |
| | Healthcare services for non-COVID 19 patients |
| Italy | Vaccination, restriction measures |
| Malta | Escalation and de-escalation plans |
| Nether-lands | Capacity of health care personnel |
| | Consideration of broader impacts |
| Norway | Better communication towards citizens |
| Poland | The greatest potential is probably in vaccinating the public |
| Portugal | Communication with the population |
| | Response to non-covid-19 health situations/organization of the National Health Service |
| | Preparedness |
| Romania | Solving the problem of health personnel shortage, both for surveillance and for healthcare |
| Serbia | Transparency of data |
| | Improving data quality |
| | Delivering health care to non-COVID patient |
| | Transparency in spending related to COVID |
| | Data management |
| | Communication of risks, developments, measures, recommendations between all actors |
| Slovakia | Registering COVID cases, registering testing, registering vaccination |
| | Collaboration with domestic & foreign experts |
| | non-political management of the crisis |
| | Risk communication |
| | Data digitalization |
| Spain | Communications of risks |
| | Political divide |
| | Telemedicine |

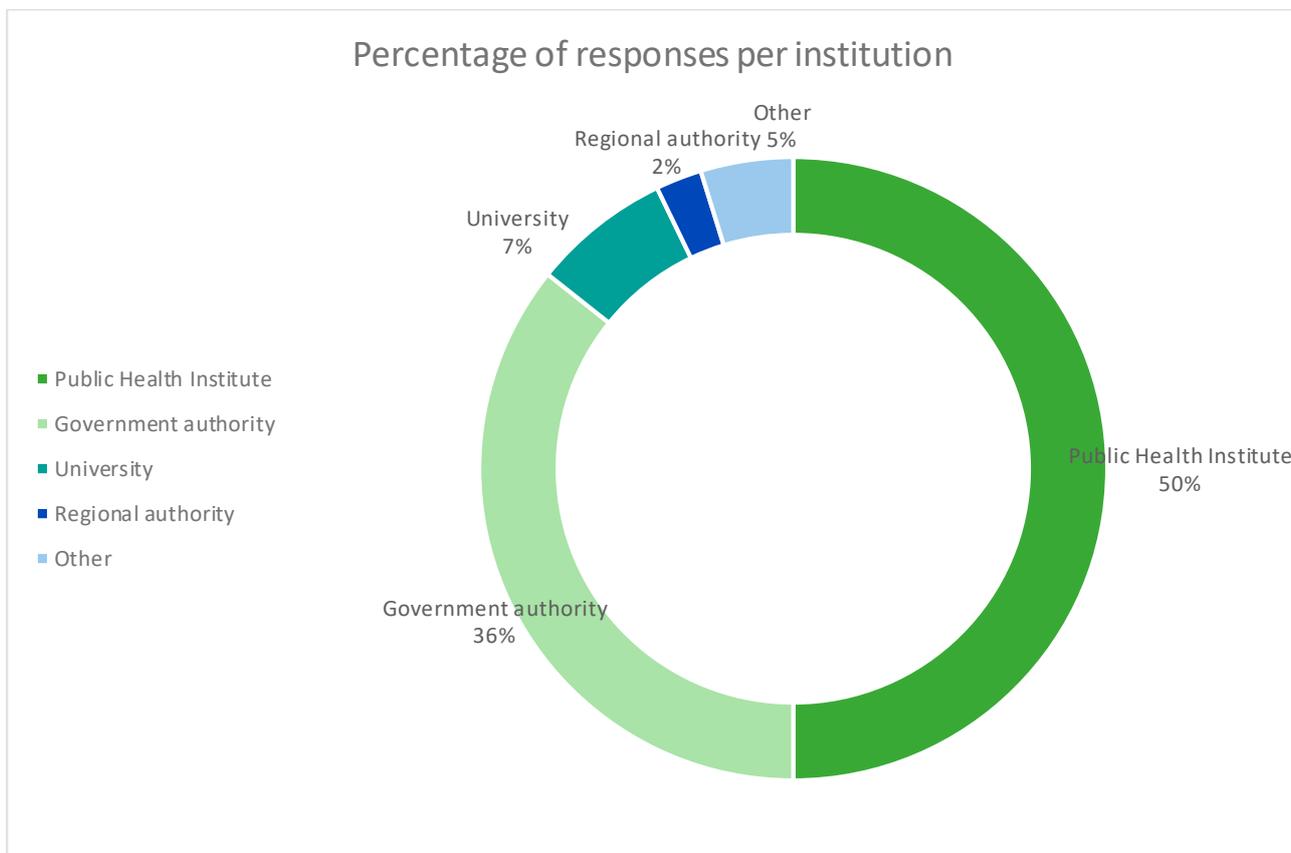
B. Institutions

Based on the 42 responses received, 5 different types of institutions participated in the first needs assessment. As illustrated in Table 27 and Figure 26, 86% of participants represent public health institutes (21, 50%) and government authorities (14, 36%). Other types of institutions included Administration of Regional Public Health (1) and E-health and health statistical governance institution (1).

Table 27: Type of institutions participated

| Type of institution participated | Number of responses per institution |
|----------------------------------|-------------------------------------|
| Public Health Institute | 21 |
| Government authority | 15 |
| University | 3 |
| Regional authority | 1 |
| Other | 2 |

Figure 26: Pie chart of institutions participated



Responses were aggregated by the type of institution. An overview of the top 10 current and future priority topics by the type of institution is available in Table 28 to Table 32.

1. Government authority

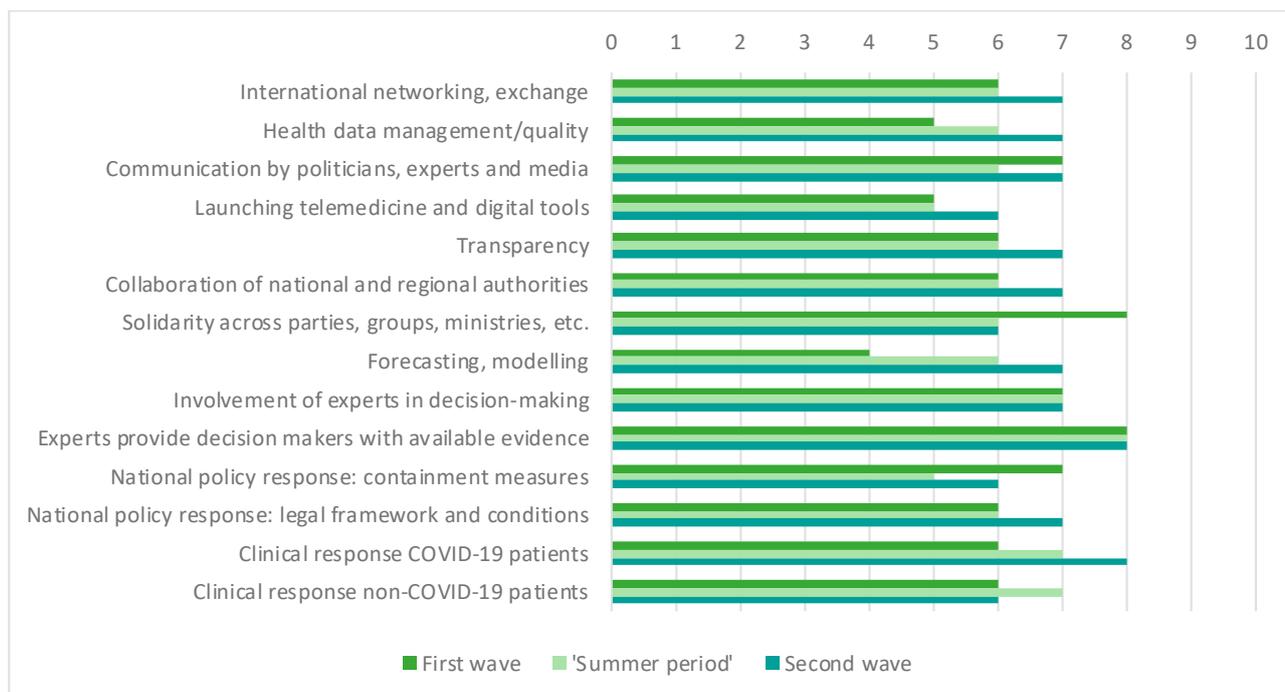
Top 10 current and future priority topics

Table 28: Priority topics – Government authorities

| Government authority | | |
|----------------------|--|---|
| Rank | Current | Future |
| 1 | Vaccination strategies (availability, distribution, implementation, documentation) | Vaccination strategies (availability, distribution, implementation, documentation) |
| 2 | Protection of vulnerable groups | Mitigation of economic and social consequences |
| 3 | National continuous COVID-19 testing strategies | Surveillance of seroprevalence and associated immunity |
| 4 | Protection of hospitals | Impacts of pandemic on (non-COVID) health (e.g. medication use, chronic care, mental health; routine care, conditions like heart attacks, strokes, cancer, childhood vaccination) |
| 5 | Hospital capacities (ICU and non-ICU) and primary care capacities (non-COVID-19) | Management of (COVID-19) health data |
| 6 | Mass testing approaches | Protection of vulnerable groups |
| 7 | Protection of care facilities | National continuous COVID-19 testing strategies |
| 8 | Communication towards population | Relaxing/ease of containment measures |
| 9 | Impact of pandemic on education | Monitoring of effectiveness and harms of policy/containment measures |
| 10 | Mitigation of economic and social consequences | Foresight/forecast, preparedness, implementation of modelling |

Rating - first wave, summer period and second wave

Figure 27: Rating - Government authorities



2. Public Health Institute

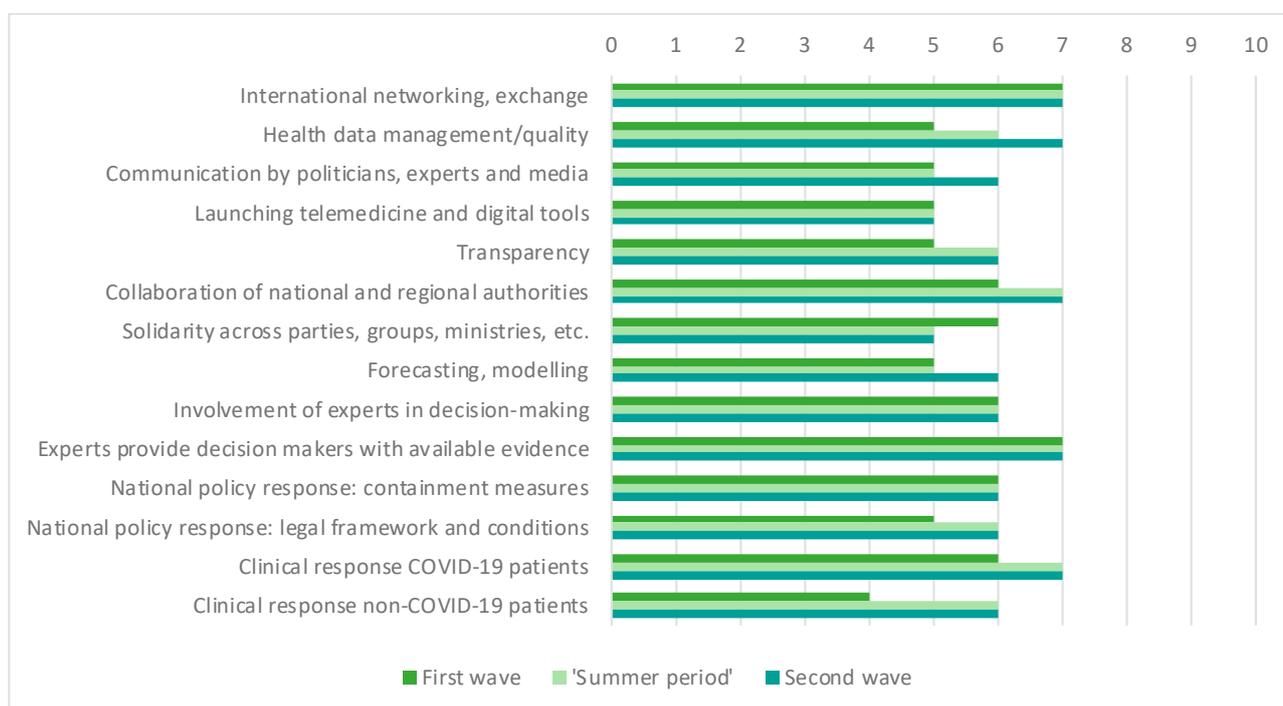
Top 10 current and future priority topics

Table 29: Priority topics – Public health institutes

| Public Health Institute | | |
|-------------------------|---|---|
| Rank | Current | Future |
| 1 | Vaccination strategies (availability, distribution, implementation, documentation) | Effectiveness and safety of vaccines |
| 2 | Hospital capacities (ICU and non-ICU) and primary care capacities (non-COVID-19) | Long COVID (long-term clinical effects; health monitoring of individuals who recovered from infection) |
| 3 | National continuous COVID-19 testing strategies | Monitoring of effectiveness and harms of policy/containment measures |
| 4 | Protection of vulnerable groups | Impacts of pandemic on (non-COVID) health (e.g. medication use, chronic care, mental health; routine care, conditions like heart attacks, strokes, cancer, childhood vaccination) |
| 5 | Effectiveness and safety of vaccines | Vaccination strategies (availability, distribution, implementation, documentation) |
| 6 | Protection of care facilities | Protection of vulnerable groups |
| 7 | Communication towards population | National continuous COVID-19 testing strategies |
| 8 | Impacts of pandemic on (non-COVID) health (e.g. medication use, chronic care, mental health, routine care, conditions like heart attacks, strokes, cancer, childhood vaccination) | Relaxing/ease of containment measures |
| 9 | Public Health concepts for balancing between protection from virus and protection of personal freedom | Public health concepts for balancing between protection from virus and protection of personal freedom |
| 10 | Monitoring of effectiveness and harms of policy/containment measures | Changes in lifestyle due to the pandemic |

Rating - first wave, summer period and second wave

Figure 28: Rating – Public health institutes



3. University

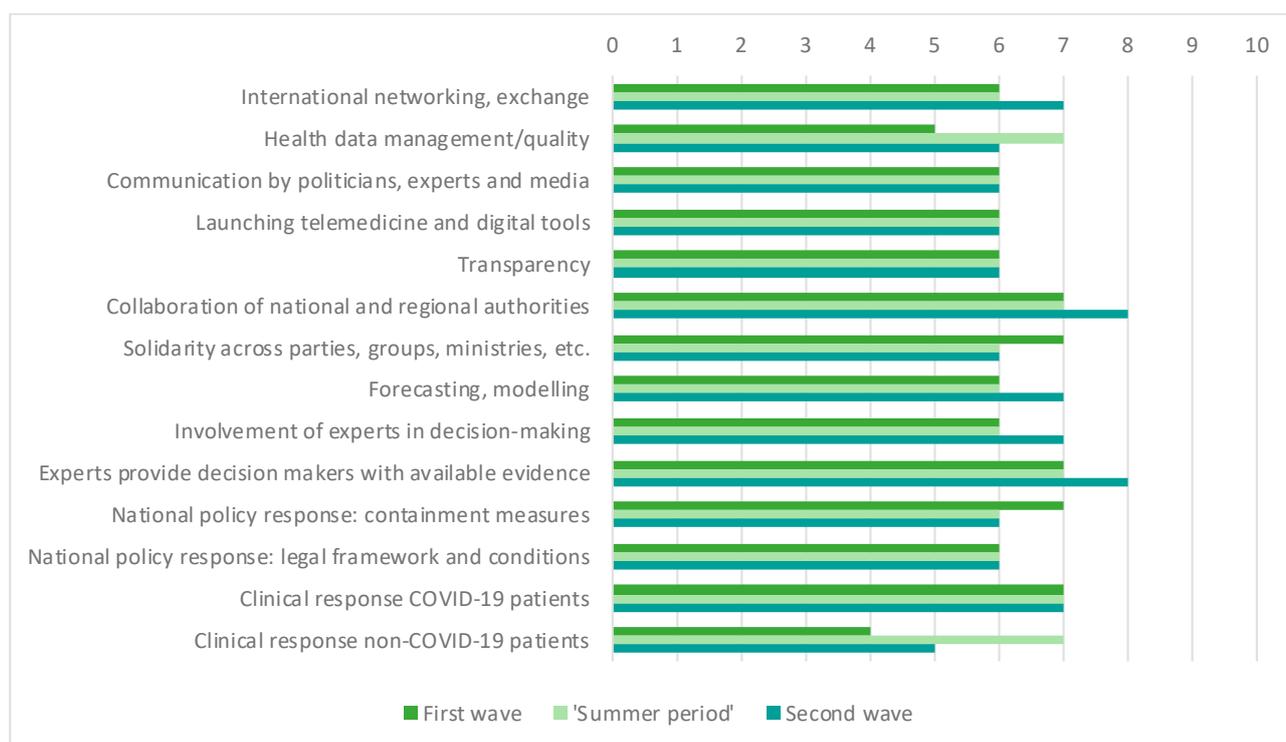
Top 10 current and future priority topics

Table 30: Priority topics – Universities

| University | | |
|------------|---|---|
| Rank | Current | Future |
| 1 | Protection of vulnerable groups | Changes in lifestyle due to the pandemic |
| 2 | Impacts of pandemic on (non-COVID) health (e.g. medication use, chronic care, mental health, routine care, conditions like heart attacks, strokes, cancer, childhood vaccination) | Effectiveness and safety of vaccines |
| 3 | Monitoring of effectiveness and harms of policy/containment measures | Impacts of pandemic on (non-COVID) health (e.g. medication use, chronic care, mental health; routine care, conditions like heart attacks, strokes, cancer, childhood vaccination) |
| 4 | Effectiveness and safety of vaccines | Mass testing approaches |
| 5 | Mass testing approaches | Surveillance of seroprevalence and associated immunity |
| 6 | Vaccination strategies (availability, distribution, implementation, documentation) | Monitoring of effectiveness and harms of policy/containment measures |
| 7 | National continuous COVID-19 testing strategies | Protection of vulnerable groups |
| 8 | Changes in lifestyle due to the pandemic | Long COVID (long-term clinical effects; health monitoring of individuals who recovered from infection) |
| 9 | Management of (COVID-19) health data | Centralised vs. de-centralised pandemic management |
| 10 | Impact of pandemic on education | Collaboration between institutions/authorities |

Rating - first wave, summer period and second wave

Figure 29: Rating - Universities



4. Regional authority

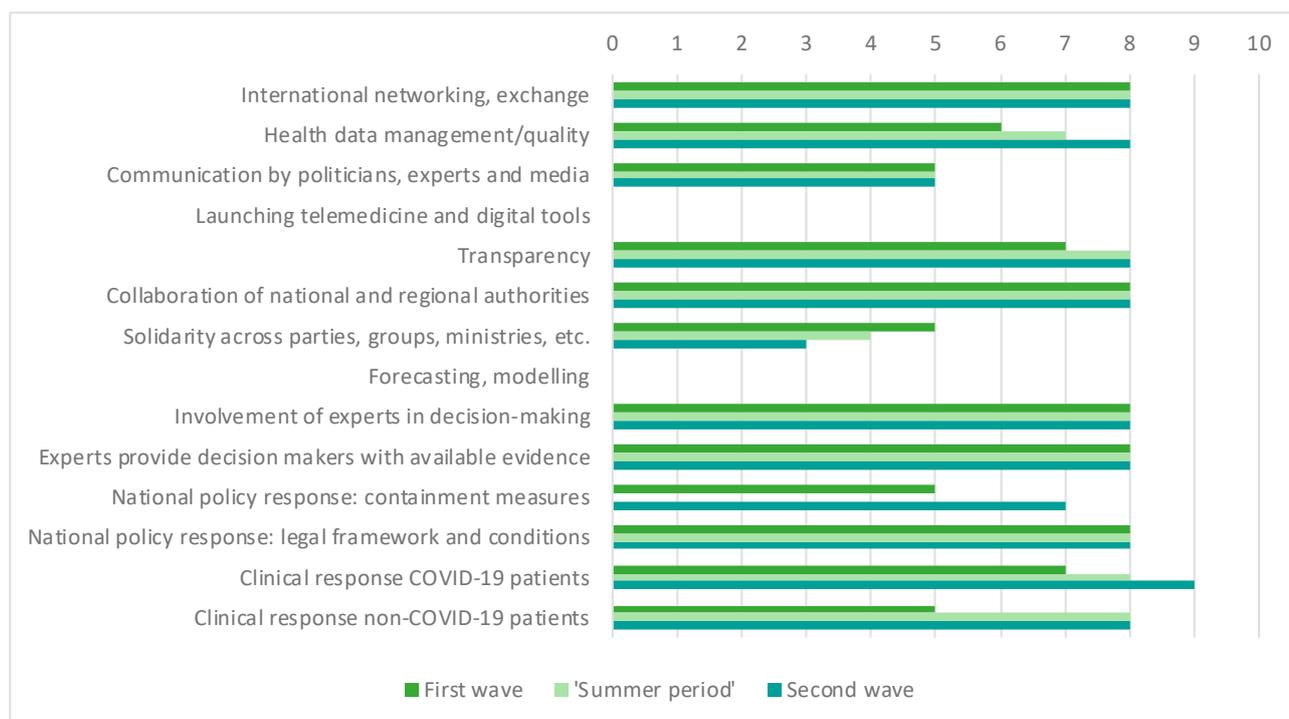
Top 10 current and future priority topics

Table 31: Priority topics – Regional authority

| Regional authority | | |
|--------------------|---|--|
| Rank | Current | Future |
| 1 | Impacts of pandemic on (non-COVID) health (e.g. medication use, chronic care, mental health, routine care, conditions like heart attacks, strokes, cancer, childhood vaccination) | Foresight/forecast, preparedness, implementation of modelling |
| 2 | Monitoring of effectiveness and harms of policy/containment measures | Collaboration between institutions/authorities |
| 3 | Vaccination strategies (availability, distribution, implementation, documentation) | Mitigation of economic and social consequences |
| 4 | Protection of vulnerable groups | Impact of pandemic on education |
| 5 | Effectiveness and safety of vaccines | Relaxing/ease of containment measures |
| 6 | Communication between actors/players | Refine/strengthen the role of the EU in pandemic management |
| 7 | Communication towards population | Infodemic |
| 8 | Use of telemedicine | Monitoring of effectiveness and harms of policy/containment measures |
| 9 | Long COVID (long-term clinical effects; health monitoring of individuals who recovered from infection) | National continuous COVID-19 testing strategies |
| 10 | Strengthen skills and address potential shortage of health professionals | Surveillance of seroprevalence and associated immunity |

Rating - first wave, summer period and second wave

Figure 30: Rating - Regional authority



5. Other

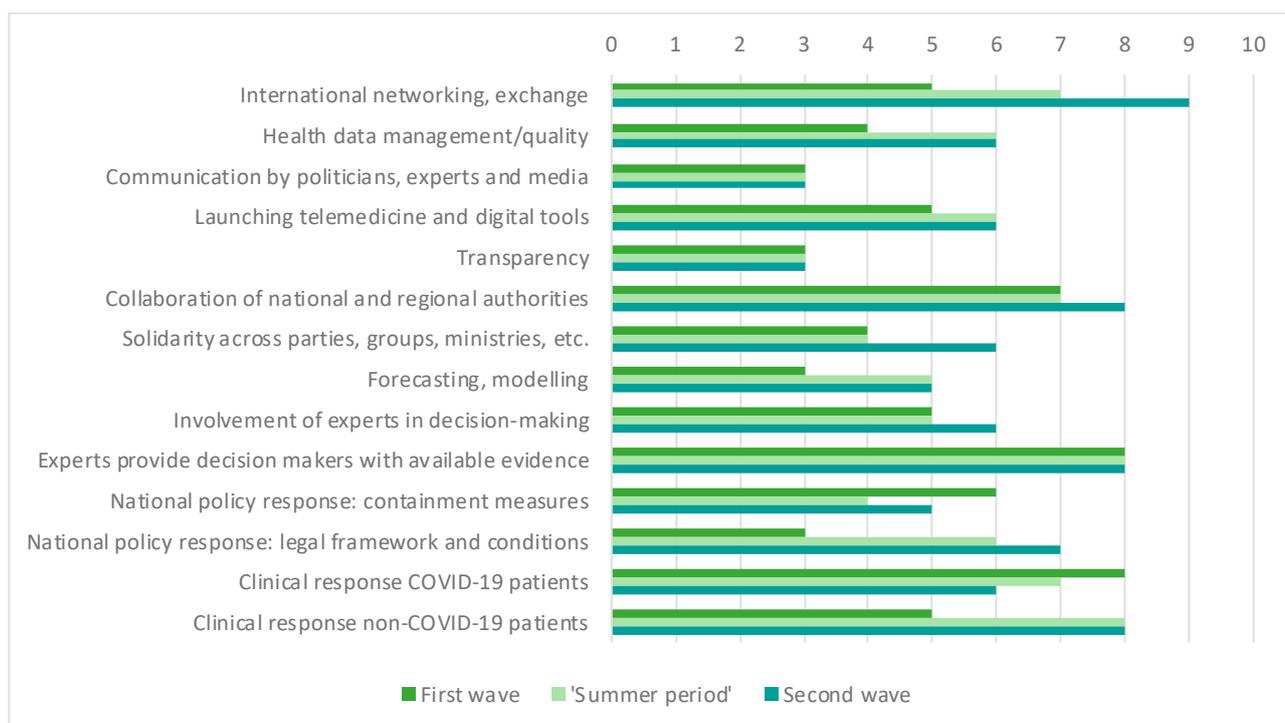
Top 10 current and future priority topics

Table 32: Priority topics – Other institutions

| Other: Administration of Regional Public Health and ehealth and health statistical governance | | |
|---|--|---|
| Rank | Current | Future |
| 1 | National continuous COVID-19 testing strategies | National continuous COVID-19 testing strategies |
| 2 | Vaccination strategies (availability, distribution, implementation, documentation) | Surveillance of seroprevalence and associated immunity |
| 3 | Communication between actors/players | Accuracy and usability of different test methods |
| 4 | Mass testing approaches | Mass testing approaches |
| 5 | Communication towards population | Impacts of pandemic on (non-COVID) health (e.g. medication use, chronic care, mental health; routine care, conditions like heart attacks, strokes, cancer, childhood vaccination) |
| 6 | Protection of hospitals | Protection of hospitals |
| 7 | Protection of care facilities | Changes in lifestyle due to the pandemic |
| 8 | Hospital capacities (ICU and non-ICU) and primary care capacities (non-COVID-19) | Protection of care facilities |
| 9 | Protection of essential infrastructures | Mitigation of economic and social consequences |
| 10 | COVID-19 training provided for specific target groups | Protection of vulnerable groups |

Rating - first wave, summer period and second wave

Figure 31: Rating - Other institutions



C. European level

Additional to an analysis at institutional level, survey responses were analyzed at EU level. An overview of the top 10 current and future priority topics at EU level can be found in Table 33 and an overview of the rating regarding the first wave, summer period and second wave in Figure 1.

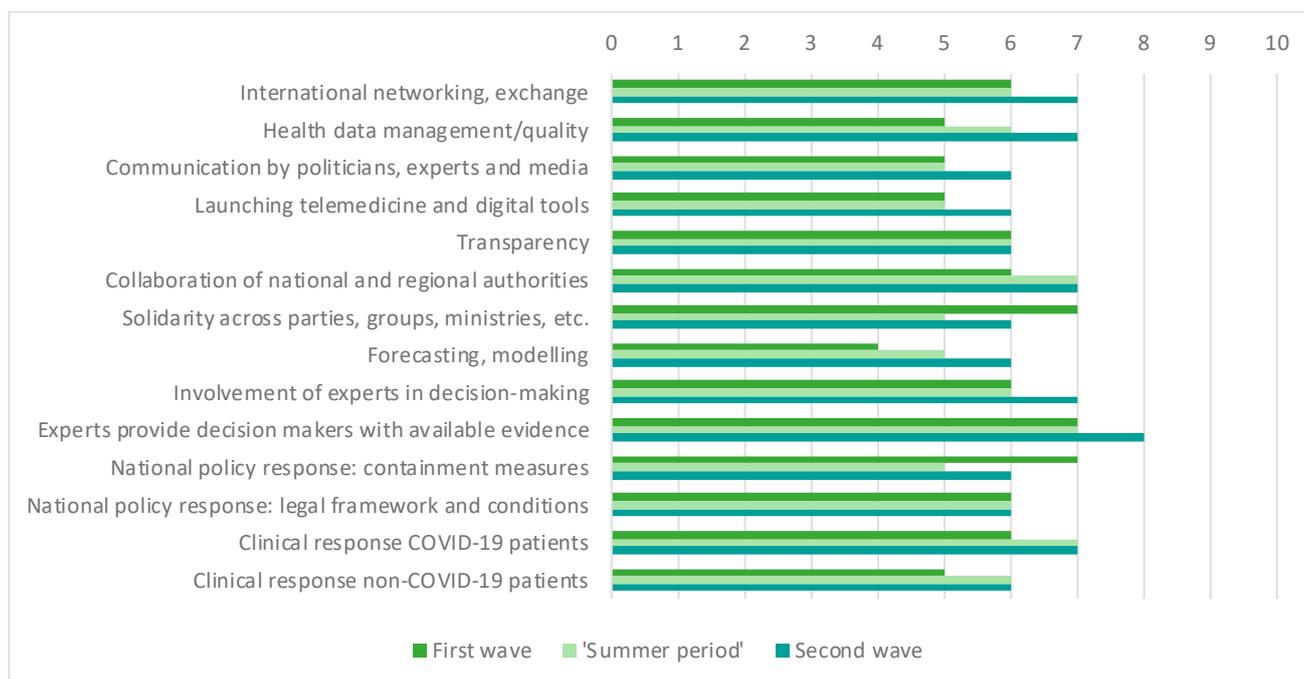
Top 10 current and future priority topics at EU level

Table 33: Priority topics – EU level

| Rank | Current | Future |
|------|---|---|
| 1 | Vaccination strategies (availability, distribution, implementation, documentation) | Vaccination strategies (availability, distribution, implementation, documentation) |
| 2 | Protection of vulnerable groups | Impacts of pandemic on (non-COVID) health (e.g. medication use, chronic care, mental health; routine care, conditions like heart attacks, strokes, cancer, childhood vaccination) |
| 3 | National continuous COVID-19 testing strategies | Mitigation of economic and social consequences |
| 4 | Hospital capacities (ICU and non-ICU) and primary care capacities (non-COVID-19) | Surveillance of seroprevalence and associated immunity |
| 5 | Effectiveness and safety of vaccines | Protection of vulnerable groups |
| 6 | Protection of care facilities | Monitoring of effectiveness and harms of policy/containment measures |
| 7 | Communication towards population | National continuous COVID-19 testing strategies |
| 8 | Protection of hospitals | Long COVID (long-term clinical effects; health monitoring of individuals who recovered from infection) |
| 9 | Monitoring of effectiveness and harms of policy/containment measures | Relaxing/ease of containment measures |
| 10 | Impacts of pandemic on (non-COVID) health (e.g. medication use, chronic care, mental health, routine care, conditions like heart attacks, strokes, cancer, childhood vaccination) | Effectiveness and safety of vaccines |

Rating – first wave, summer period and second wave

Figure 32: Rating – EU level (average of all participants)



V. Implications and limitations

The major limitation of the needs assessment is that the input of participating countries is subjective and represents the personal/institutional opinion of one or more participating institute/s and expert/s per country.

Furthermore, it must be taken into account that the responses on some of the specific predefined categories of the rating of national pandemic management and the ranking of current and future priorities depend on the structure of national health care systems, i.e. centralised vs. decentralised.

Another limitation is that in most cases (16 out of 24), only one response was received per country (AL, EE, FI, DE, HU, IE, IT, LT, MT, NO, PL, PT, RO, SI, ES, SE). However, up to 4 responses of different institutions in other countries (BE, NL, SK, AT, BA, HR, RS, UK) were received. As a result, the comparability and generalizability of country responses, and hence of the priorities could be biased. The comparability of country responses is also limited due to the diverging epidemiological situation in European countries and, thus, the chronological sequence of different phases of the pandemic ('waves') in each country.

Considering the results grouped by type of institution, it should be noticed that the combined share of responses from government authorities and public health institutes (in total 86 percent of all responses) is higher than those from universities, regional authorities and other institutions together. Potential reasons are that governmental authorities are more likely to be directly involved in pandemic management than other target groups and that the snowball effect, i.e. the dissemination of the survey at national level to relevant target groups, was limited due to the challenging epidemiological situation. The remaining participating institutions (universities, regional authorities and other institutions) account for 14 percent of responses.

A general limitation of the needs assessment is the timeframe. It was conducted between mid-December 2020 and the end of February 2021. The period for responding had to be extended due to a low country response rate. It can be assumed, that the responses were low in general due to the especially demanding times for the health sector in the given period.

VI. Conclusions and recommendations

The primary aim of the needs assessment was to receive a comprehensive overview of the most relevant current and future priority topics and a retrospective rating of aspects of national pandemic management of each participating country (see section IV.A). The intention is to provide an orientation and guidance for countries, institutions, and experts to seek cross-country exchange on good practices and lessons learned and to show differences and similarities between national current and future priority topics.

Most likely due to the period of the first needs assessment and the corresponding development of the COVID-19 pandemic, one of the main current priorities across countries was 'vaccination strategies'. This priority topic was one of the highest ranked priority topics at that time at country, institutional and EU level. In contrast to current priorities, indicated future priorities were more mixed among the countries and include priorities in the areas of testing, data, monitoring, and vaccination.

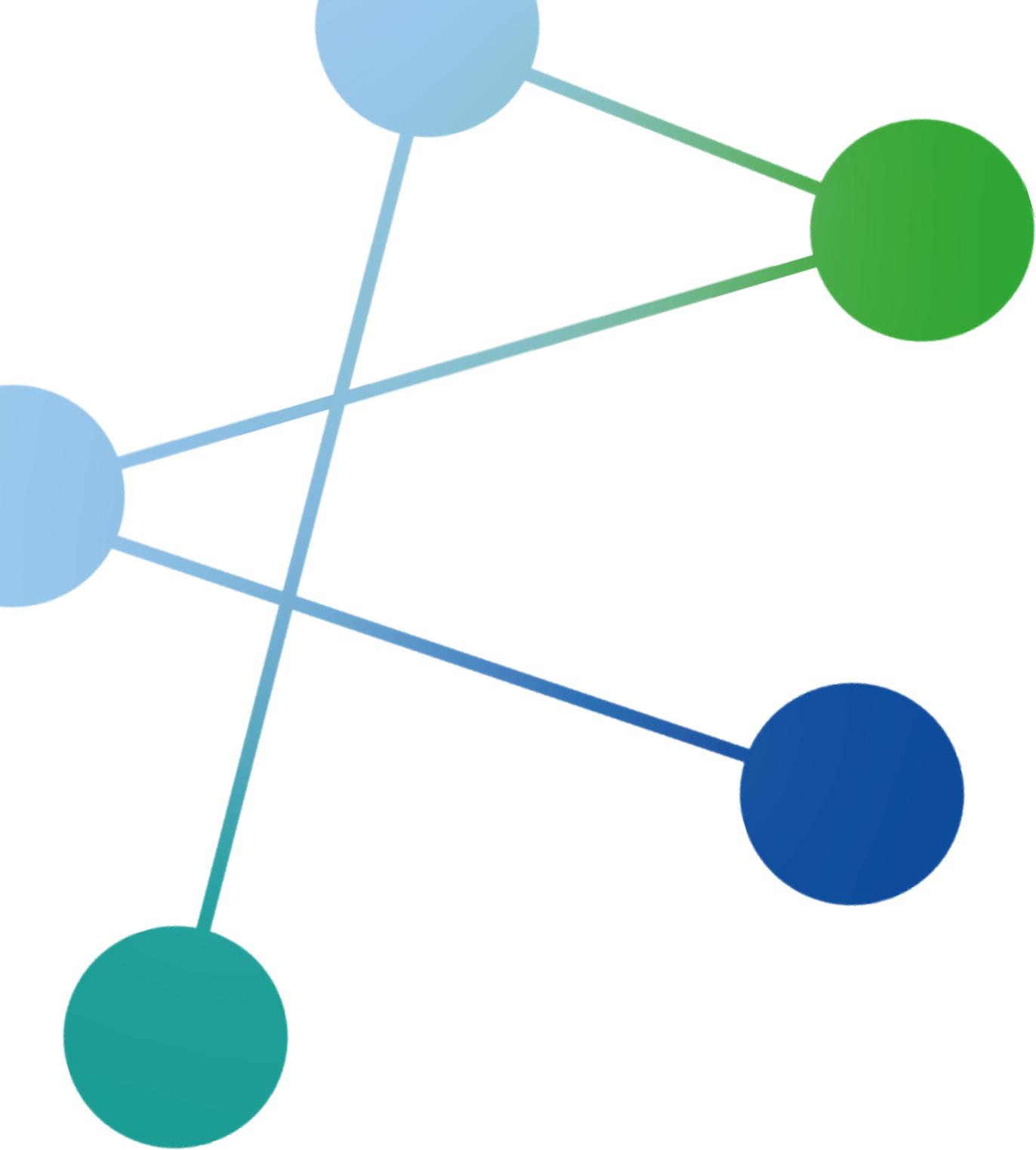
Overall, there seems to be a relatively homogenous response in some predefined areas of the rating of national pandemic management. The rating for three defined periods (first wave, summer period, second wave) shows mainly positive developments in the countries, especially in the categories 'health data management' and 'forecasting and modelling'. However, there seem to be wider overall

disparities between the countries in some selective categories, such as 'transparency' and 'solidarity', as well as 'national policy response: containment measures', which could indicate potential needs for improvement.

Based on the good practices and lessons learned, cross-country exchange will be fostered by actively integrating countries' practices in the REF meetings.

When comparing the participating institutions, it is interesting that in general vaccination strategies were rather stated as priority topic from government authorities and public health institutes. The current priority focus of universities and regional authorities rather focused on specific settings (e.g. vulnerable groups) and monitoring.

In the meantime, the results of the needs assessment have been fed into the "pipeline" of questions that are addressed in the bi-weekly REF and have been covered to some extent. Concrete questions are drafted one week before a meeting and made available for selection by majority vote from the participants.



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