



# **Survey on the implementation of integrated surveillance of respiratory viruses with pandemic potential**

**Survey results from 29 European Union/European Economic Area (EU/EEA) countries**

# Introduction



- Moving into the next phase of the pandemic, it is critical that COVID-19 surveillance systems evolve to ensure Member States continue to be able to make informed policy decisions.
- As Member States reduce comprehensive testing, it is important to ensure that limited public health and laboratory resources are invested optimally to meet key surveillance objectives.
- It is important to bear in mind that SARS-CoV-2 will most likely continue to circulate, and that new variants may emerge.
- At the same time, sustainable systems will need to be built for integrated surveillance of COVID-19, influenza and other respiratory pathogens.

# Objectives of the survey



- To better understand the current national surveillance strategies and country-specific priorities
- To explore anticipated hurdles to the implementation of an integrated surveillance system
- To examine changes in testing strategies
- To better understand the current systems in place in relation to indicator-based surveillance, event-based surveillance and special studies.

# Methods



- Survey questions focus on four main sections:
  - General surveillance strategy
  - Indicator-based surveillance
  - Event-based surveillance
  - Special studies for emerging respiratory viruses.
- Each country was asked to submit a single consolidated response for the survey using the EU survey tool.
- Responses were submitted by 29 of the 30 EU/EEA countries between 15 March and 9 June 2022.

# Integrated sentinel surveillance



All 29 countries believe common objectives should be established for sentinel surveillance of respiratory viruses. Some countries indicated that there is still uncertainty as to how to best make the transition to integrated surveillance.

Has the integrated strategy been discussed?

| Response         | 29 | Countries  |
|------------------|----|--|
| Yes, a focus now | 16 | Belgium, Bulgaria, Cyprus, Denmark, France, Germany, Greece, Italy, Liechtenstein, Netherlands, Norway, Poland, Slovenia, Spain and Sweden |
| Yes, partially   | 12 | Austria, Croatia, Czechia, Finland, Hungary, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Portugal, Romania, and Slovakia              |
| No, not yet      | 1  | Malta  |

# Integrated sentinel surveillance



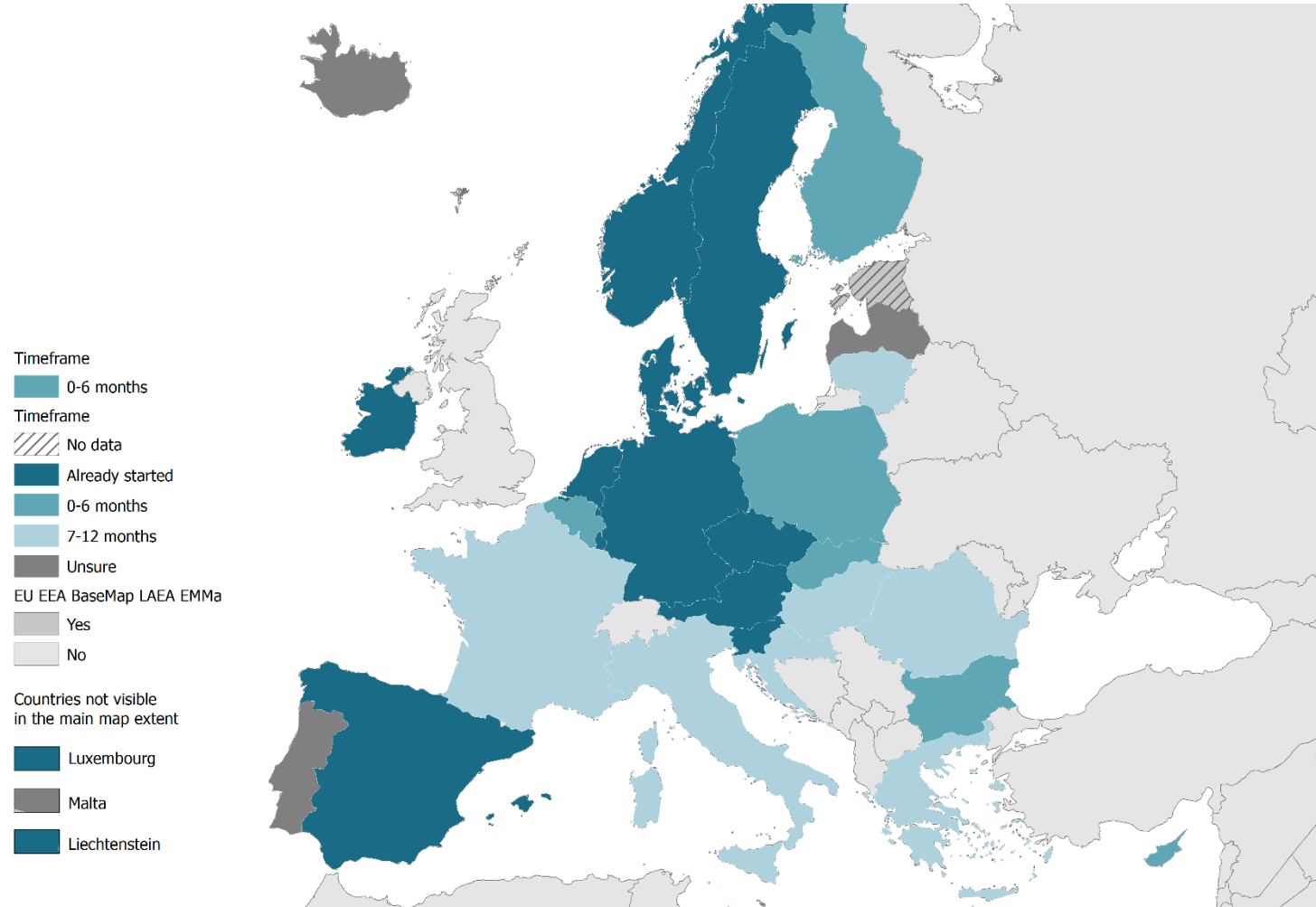
When do you envisage moving to integrated sentinel respiratory surveillance of influenza and SARS-CoV-2?

| Timeframe       | n  | Countries   |
|-----------------|----|---|
| Already started | 12 | Austria, Czechia, Denmark, Germany, Ireland, Liechtenstein, Luxembourg, Netherlands, Norway, Slovenia, Spain and Sweden |
| 0-6 months      | 6  | Belgium, Bulgaria, Cyprus, Finland, Poland and Slovakia   |
| 7-12 months     | 7  | Croatia, France, Greece, Hungary, Italy, Lithuania, and Romania   |
| Unsure          | 4  | Iceland, Latvia, Malta, and Portugal  |

In total, 79.3% of countries (23/29) envisage including respiratory viruses other than influenza and SARS-CoV-2 (e.g. Respiratory Syncytial Virus (RSV), adenoviruses, rhinoviruses and parainfluenza).

# Integrated sentinel surveillance

When do you envisage moving to integrated sentinel respiratory surveillance?



# Integrated surveillance objectives



## ECDC/WHO proposed as core objectives

| Objectives for integrated respiratory surveillance (n=29)  | Core       |
|--|------------|
| Signal onset and offset of influenza, SARS-CoV-2 and RSV community activity at defined thresholds.   | 29 (100%)  |
| Describe seasonality of SARS-CoV-2, influenza, RSV and other relevant respiratory viruses.   | 28 (96.6%) |
| Monitor circulating influenza, SARS-CoV-2 and RSV types/subtypes or lineages/sub-lineages at country-level   | 28 (96.6%) |
| Describe genetic characteristics of circulating influenza, SARS-CoV-2, RSV and other relevant respiratory viruses, where relevant, including their relationship to global and regional patterns. | 27 (93.1%) |
| Establish historic levels of activity for illness and severe disease with which to evaluate the intensity, seriousness and impact of each season/epidemic period and of future pandemic events.  | 26 (89.7%) |
| Rapidly detect, report and investigate unusual and unexpected events of public health importance such as respiratory outbreaks or epidemiological clusters, including zoonotic events.           | 25 (86.2%) |
| Assess the burden of respiratory disease in a timely manner to rapidly understand and prepare for the potential increased impact on healthcare.  | 23 (79.3%) |
| Provide candidate viruses for influenza and SARS-CoV-2 vaccine composition, production and risk assessment activities.   | 22 (75.9%) |
| Provide descriptive epidemiology of clinical syndromes associated with influenza, SARS-CoV-2, RSV and other relevant respiratory viruses.  | 14 (48.3%) |



# Integrated surveillance objectives



## ECDC/WHO proposed as optional objectives

| Objectives for integrated respiratory surveillance (n=29)  | Core       |
|--|------------|
| Describe antigenic characteristics of circulating influenza, SARS-CoV-2 and other relevant respiratory viruses, where feasible and relevant  | 22 (75.9%) |
| Identify and monitor groups at high risk of severe respiratory disease and mortality   | 20 (69%)   |
| Provide a platform to evaluate vaccine effectiveness and other interventions for influenza, SARS-CoV-2, RSV and other respiratory viruses  | 18 (62.1%) |
| Monitor influenza and SARS-CoV-2 viruses for susceptibility to antiviral drugs   | 18 (62.1%) |
| Assist in developing an understanding of the relationship of respiratory virus strains/genetic composition to disease severity   | 16 (55.2%) |
| Generate data that can contribute to modelling and economic evaluation studies to estimate respiratory disease and economic burden and help decision-makers prioritise resources and plan public health interventions, such as vaccination | 11 (37.9%) |
| Rapidly assess the characteristics and public health risk of newly emerging respiratory pathogens – including novel influenza viruses, SARS-CoV-2 variants of concern and other respiratory pathogens                                      | NA         |
| Monitor population immunity.   | NA         |

# Hurdles for implementation

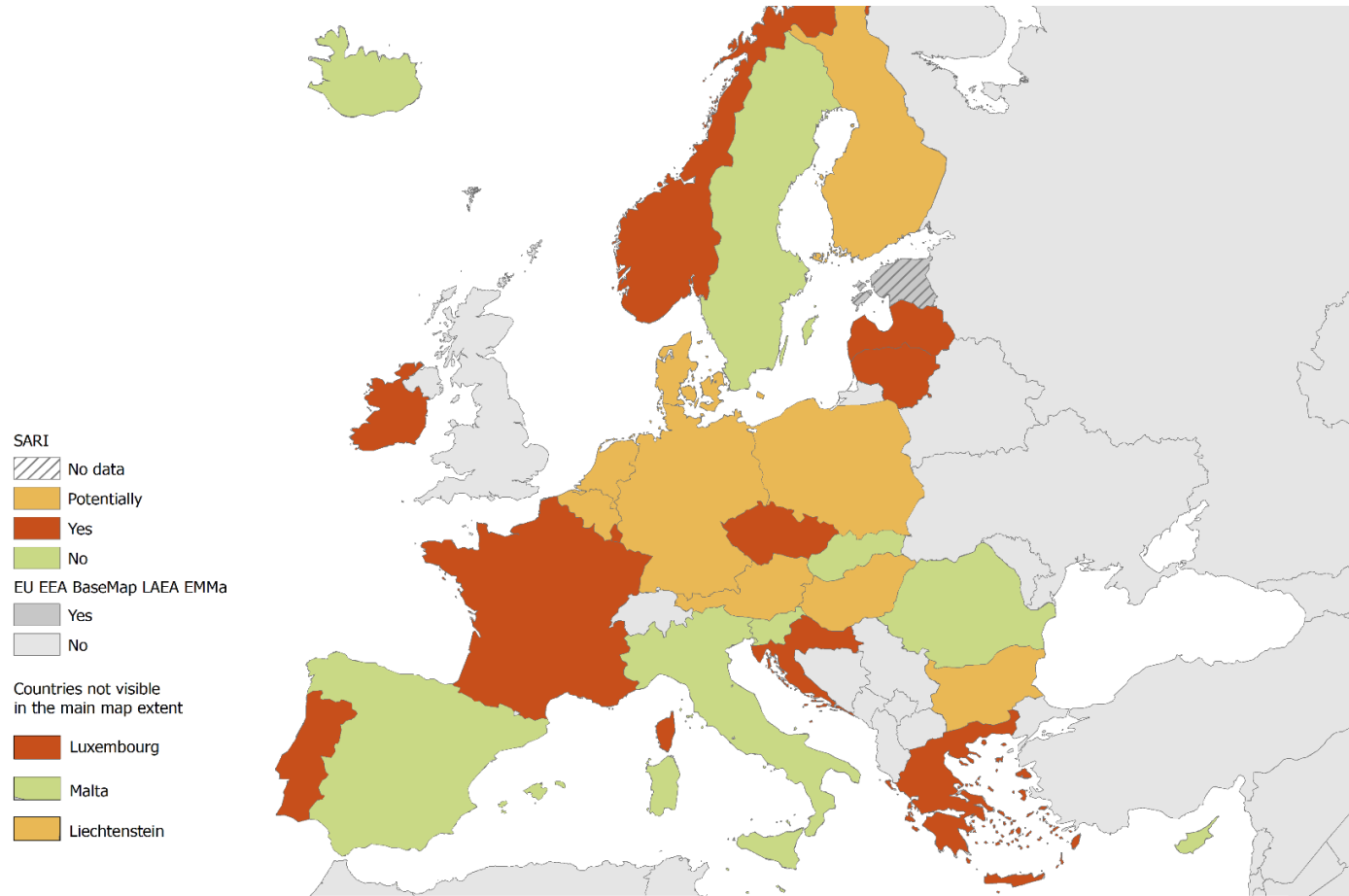


How many countries anticipate potential hurdles for implementation of case-based sentinel data?

- 72.4% of countries (21/29) for Severe Acute Respiratory Infection (SARI) surveillance
- 51.7% of countries (15/29) for primary care sentinel surveillance.

# Hurdles for implementation

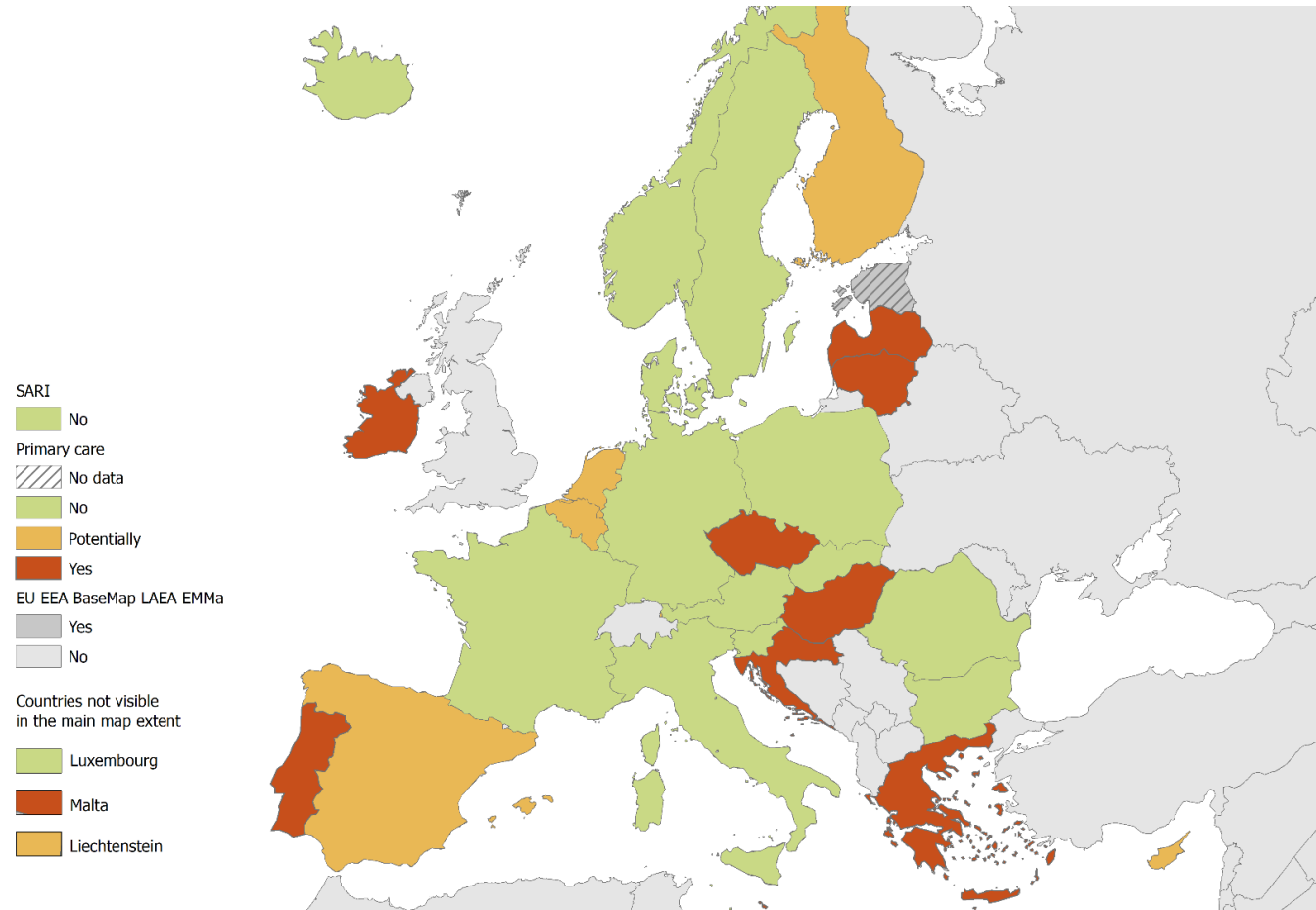
Countries that anticipate hurdles for collection of case-based sentinel data as part of SARI surveillance



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# Hurdles for implementation

Countries that anticipate hurdles for collection of case-based sentinel data as part of primary care sentinel surveillance



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# Hurdles for implementation

## Anticipated hurdles mentioned by countries

| Themes  | SARI, number (%) | Primary care number (%) |
|---|------------------|-------------------------|
| <b>Infrastructure</b> <ul style="list-style-type: none"><li>• Lack of tools</li><li>• Transporting of samples</li><li>• Electronic health records</li></ul> | 11 (37.9%)       | 12 (41.4%)              |
| <b>Resources</b> <ul style="list-style-type: none"><li>• Financial</li><li>• Human (GPs, workload)</li><li>• IT</li></ul>                                   | 12 (41.4%)       | 9 (31.0%)               |
| <b>Legislative</b> <ul style="list-style-type: none"><li>• Lack of framework</li><li>• Limited political support</li><li>• GDPR</li></ul>                   | 5 (17.2%)        | 5 (17.2%)               |
| <b>Data quality</b> <ul style="list-style-type: none"><li>• New system</li></ul>  | 1 (3.4%)         | 3 (10.3%)               |

<sup>1</sup>Note that the following results are collected through open-answered text responses and therefore they may not capture the situation in all countries.

# Changes in testing strategy

How many countries foresee or have already implemented changes in COVID-19 testing strategies?

- 72.4% of countries (21/29) for community testing

Austria, Cyprus, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Latvia, Liechtenstein, Luxembourg, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden.

- 41.4% of countries (12/29) specifically for testing of mild cases

Denmark, Finland, Germany, Iceland, Ireland, Latvia, Netherlands, Norway, Poland, Slovenia, Spain, Sweden.

# Changes in testing strategy

| Measures   | n | Countries   |
|--|---|---|
| Reduction of test centres/tests offered                              | 9 | Austria, Denmark, Iceland, Luxembourg, Netherlands, Poland, Slovakia, Spain, Sweden |
| Testing targets symptomatic or asymptomatic risk population          | 8 | Austria, Finland, France, Greece, Iceland, Poland, Romania, Spain                   |
| Increase Rapid Antigen Test testing                                  | 8 | Finland, France, Germany, Iceland, Luxembourg, Norway, Poland, Slovenia             |
| At home self-testing for non-risk mild cases                         | 6 | Finland, Ireland, Netherlands, Norway, Poland, Slovenia                             |
| Stopping or reducing screening programmes (e.g. schools, care homes) | 4 | Cyprus, Germany, Luxembourg, Poland   |
| Testing of outpatients only by referral/at GP clinics.               | 3 | Cyprus, Iceland, Latvia.  |

<sup>1</sup>Note that the following results are collected through open-answered text responses and therefore they may not capture the situation in all countries.

# Indicator-based surveillance (IBS)

For influenza, SARS-CoV-2, and RSV, each country could select the following options for a list of IBS-related topics:

|   |                                      |
|---|--------------------------------------|
| 1 | Implemented                          |
| 2 | Plan to implement                    |
| 3 | Implemented but plans to stop        |
| 4 | Not implemented and no plan to start |
| - | Not applicable                       |

- Integrated surveillance in primary care (ILI/ARI)
- Integrated surveillance in hospital sentinel SARI systems
- Genomic surveillance for emerging respiratory pathogens
- Non-sentinel respiratory virus monitoring
- Excess mortality monitoring
- Primary care syndromic surveillance system
- Secondary care syndromic surveillance
- Antiviral/therapeutic sensitivity for (re)emerging respiratory pathogens
- Vaccine effectiveness (primary)
- Vaccine effectiveness (SARI)
- Participatory community surveillance (e.g. InfluenzaNet).



# Integrated surveillance in primary care (ILI/ARI) (n=29)

| Country       | Influenza | SARS-CoV-2 | RSV |
|---------------|-----------|------------|-----|
| Portugal      | 1         | 1          | 1   |
| Denmark       | 1         | 1          | 1   |
| Belgium       | 1         | 1          | 1   |
| Liechtenstein | 1         | 1          | 1   |
| Netherlands   | 1         | 1          | 1   |
| Slovakia      | 1         | 1          | 1   |
| Italy         | 1         | 1          | 1   |
| Spain         | 1         | 1          | 1   |
| Luxembourg    | 1         | 1          | 1   |
| Ireland       | 1         | 1          | 1   |
| France        | 1         | 1          | 1   |
| Germany       | 1         | 1          | 1   |
| Czechia       | 1         | 1          | 1   |
| Bulgaria      | 1         | 1          | 1   |
| Slovenia      | 1         | 1          | 1   |
| Sweden        | 1         | 1          | 1   |
| Norway        | 1         | 1          | -   |
| Greece        | 1         | 1          | 2   |
| Poland        | 1         | 1          | 2   |
| Austria       | 1         | 2          | 1   |
| Hungary       | 1         | 2          | 1   |
| Finland       | 1         | 2          | 1   |
| Romania       | 1         | 2          | 2   |
| Lithuania     | 1         | 2          | 2   |
| Iceland       | 1         | 2          | 2   |
| Croatia       | 2         | 2          | 2   |
| Cyprus        | 2         | 2          | 2   |
| Malta         | 2         | 4          | 1   |
| Latvia        | 2         | 2          | 4   |

- In total, 89.7% (26/29) of countries **implemented** or **plan to implement** for all three pathogens.

|   |                                      |
|---|--------------------------------------|
| 1 | Implemented                          |
| 2 | Plan to implement                    |
| 3 | Implemented but plans to stop        |
| 4 | Not implemented and no plan to start |
| - | Not applicable                       |

# Integrated surveillance in hospital sentinel SARI systems (n=29)

| Country       | Influenza | SARS-CoV-2 | RSV |
|---------------|-----------|------------|-----|
| Portugal      | 1         | 1          | 1   |
| Belgium       | 1         | 1          | 1   |
| Slovakia      | 1         | 1          | 1   |
| Spain         | 1         | 1          | 1   |
| Ireland       | 1         | 1          | 1   |
| Germany       | 1         | 1          | 1   |
| Bulgaria      | 1         | 1          | 1   |
| Slovenia      | 1         | 1          | 1   |
| France        | 1         | 1          | 2   |
| Romania       | 1         | 1          | 2   |
| Italy         | 1         | 2          | 1   |
| Finland       | 1         | 2          | 1   |
| Denmark       | 2         | 2          | 2   |
| Hungary       | 2         | 2          | 2   |
| Netherlands   | 2         | 2          | 2   |
| Greece        | 2         | 2          | 2   |
| Lithuania     | 2         | 2          | 2   |
| Iceland       | 2         | 2          | 2   |
| Croatia       | 2         | 2          | 2   |
| Cyprus        | 2         | 2          | 2   |
| Latvia        | 2         | 2          | 2   |
| Poland        | 2         | 2          | 2   |
| Norway        | 1         | 1          | -   |
| Liechtenstein | 1         | 1          | 4   |
| Czechia       | 1         | 4          | 4   |
| Luxembourg    | 4         | 1          | 4   |
| Malta         | 2         | 1          | 4   |
| Austria       | 2         | 2          | 4   |
| Sweden        | 4         | 4          | 4   |

- In total, 75.9% (22/29) of countries **implemented** or **plan to implement** for all three pathogens.

|   |                                      |
|---|--------------------------------------|
| 1 | Implemented                          |
| 2 | Plan to implement                    |
| 3 | Implemented but plans to stop        |
| 4 | Not implemented and no plan to start |
| - | Not applicable                       |

# Genomic surveillance of emerging respiratory pathogens/variants (n=29)

| Country       | Influenza | SARS-CoV-2 | RSV |
|---------------|-----------|------------|-----|
| Portugal      | 1         | 1          | 1   |
| Germany       | 1         | 1          | 1   |
| Slovenia      | 1         | 1          | 1   |
| Denmark       | 1         | 1          | 1   |
| Austria       | 1         | 1          | 1   |
| Hungary       | 1         | 1          | 1   |
| Netherlands   | 1         | 1          | 1   |
| Poland        | 1         | 1          | 1   |
| Slovakia      | 1         | 1          | -   |
| France        | 1         | 1          | -   |
| Italy         | 1         | 1          | -   |
| Belgium       | 1         | 1          | 4   |
| Liechtenstein | 1         | 1          | 4   |
| Luxembourg    | 1         | 1          | 4   |
| Ireland       | 1         | 1          | 4   |
| Romania       | 1         | 1          | 4   |
| Greece        | 1         | 1          | 4   |
| Latvia        | 1         | 1          | 4   |
| Sweden        | 1         | 1          | 4   |
| Spain         | 1         | 1          | 2   |
| Czechia       | 1         | 1          | 2   |
| Finland       | 1         | 1          | 2   |
| Norway        | 1         | -          | -   |
| Malta         | 4         | 1          | 4   |
| Bulgaria      | 2         | 1          | 2   |
| Lithuania     | 2         | 1          | 2   |
| Croatia       | 2         | 1          | 2   |
| Iceland       | 2         | 2          | 2   |
| Cyprus        | 2         | 2          | 2   |

- In total, 93.1% (27/29) of countries **implemented** or **plan to implement** for SARS-CoV-2 and influenza.
- In total, 55.2% (16/29) of countries **implemented** or **plan to implement** for RSV.

|   |                                      |
|---|--------------------------------------|
| 1 | Implemented                          |
| 2 | Plan to implement                    |
| 3 | Implemented but plans to stop        |
| 4 | Not implemented and no plan to start |
| - | Not applicable                       |

# Non-sentinel respiratory virus monitoring (n=29)

| Country       | Influenza | SARS-CoV-2 | RSV |
|---------------|-----------|------------|-----|
| Slovakia      | 1         | 1          | 1   |
| Norway        | 1         | 1          | 1   |
| Latvia        | 1         | 1          | 1   |
| France        | 1         | 1          | 1   |
| Germany       | 1         | 1          | 1   |
| Bulgaria      | 1         | 1          | 1   |
| Slovenia      | 1         | 1          | 1   |
| Denmark       | 1         | 1          | 1   |
| Hungary       | 1         | 1          | 1   |
| Netherlands   | 1         | 1          | 1   |
| Finland       | 1         | 1          | 1   |
| Lithuania     | 1         | 1          | 1   |
| Iceland       | 1         | 1          | 1   |
| Sweden        | 1         | 1          | 1   |
| Poland        | 1         | 1          | 1   |
| Portugal      | 1         | 1          | -   |
| Liechtenstein | 1         | 1          | 4   |
| Luxembourg    | 1         | 1          | 4   |
| Romania       | 1         | 1          | 4   |
| Spain         | 1         | 2          | 1   |
| Croatia       | 1         | 1          | 2   |
| Cyprus        | 2         | 2          | 2   |
| Belgium       | 1         | 4          | 4   |
| Ireland       | 1         | 4          | 1   |
| Malta         | 1         | 4          | 1   |
| Czechia       | 1         | -          | 1   |
| Greece        | 4         | 4          | 4   |
| Austria       | -         | 1          | -   |
| Italy         | -         | 1          | 1   |

- In total, 62.1% (18/29) of countries **implemented** or **plan to implement** for all three pathogens.

|   |                                      |
|---|--------------------------------------|
| 1 | Implemented                          |
| 2 | Plan to implement                    |
| 3 | Implemented but plans to stop        |
| 4 | Not implemented and no plan to start |
| - | Not applicable                       |

# Excess mortality monitoring (n=29)

| Country       | Influenza | SARS-CoV-2 | RSV |
|---------------|-----------|------------|-----|
| Portugal      | 1         | 1          | 4   |
| Belgium       | 1         | 1          | 1   |
| Liechtenstein | 1         | 1          | 4   |
| Slovakia      | 1         | 1          | -   |
| Spain         | 1         | 1          | 1   |
| Norway        | 1         | 1          | -   |
| Luxembourg    | 1         | 1          | 1   |
| Ireland       | 1         | 1          | 1   |
| France        | 1         | 1          | 1   |
| Germany       | 1         | 1          | -   |
| Slovenia      | 1         | 1          | 1   |
| Malta         | 1         | 1          | 4   |
| Denmark       | 1         | 1          | 1   |
| Austria       | 1         | 1          | 4   |
| Netherlands   | 1         | 1          | 1   |
| Finland       | 1         | 1          | 1   |
| Greece        | 1         | 1          | 1   |
| Iceland       | 1         | 1          | 1   |
| Sweden        | 1         | 1          | 1   |
| Romania       | 2         | 2          | 2   |
| Bulgaria      | 2         | 2          | 4   |
| Croatia       | 2         | 2          | 2   |
| Cyprus        | 2         | 2          | 2   |
| Latvia        | 2         | 2          | -   |
| Lithuania     | 4         | 1          | 4   |
| Czechia       | 4         | -          | 4   |
| Italy         | -         | 1          | -   |
| Hungary       | -         | -          | -   |
| Poland        | -         | 4          | -   |

- In total, 82.8% (24/29) of countries **implemented** or **plan to implement** for SARS-CoV-2 and influenza
- In total, 51.7% (15/29) of countries **implemented** or **plan to implement** for RSV.

|   |                                      |
|---|--------------------------------------|
| 1 | Implemented                          |
| 2 | Plan to implement                    |
| 3 | Implemented but plans to stop        |
| 4 | Not implemented and no plan to start |
| - | Not applicable                       |

# Primary care syndromic surveillance system (n=29)



| Country       | Influenza | SARS-CoV-2 | RSV |
|---------------|-----------|------------|-----|
| Germany       | 1         | 1          | 1   |
| Netherlands   | 1         | 1          | 1   |
| Italy         | 1         | 1          | 1   |
| Sweden        | 1         | 1          | 1   |
| Portugal      | 1         | 1          | 4   |
| Norway        | 1         | 1          | 4   |
| France        | 1         | 1          | 4   |
| Croatia       | 1         | 1          | 4   |
| Ireland       | 1         | 1          | -   |
| Greece        | 1         | 1          | -   |
| Hungary       | 1         | 2          | 1   |
| Slovakia      | 1         | -          | 1   |
| Latvia        | 1         | -          | -   |
| Poland        | 1         | 1          | 2   |
| Finland       | 2         | 1          | 2   |
| Belgium       | 2         | 2          | 2   |
| Cyprus        | 2         | 2          | 2   |
| Slovenia      | 2         | 2          | 4   |
| Malta         | 2         | 4          | 4   |
| Spain         | 2         | 4          | 4   |
| Liechtenstein | 4         | 4          | 4   |
| Luxembourg    | 4         | 4          | 4   |
| Romania       | 4         | 4          | 4   |
| Bulgaria      | 4         | 4          | 4   |
| Czechia       | 4         | 4          | 4   |
| Austria       | 4         | 4          | 4   |
| Lithuania     | 4         | 4          | 4   |
| Iceland       | 4         | 4          | 4   |
| Denmark       | -         | -          | -   |

- In total, 55.2% (16/29) of countries **implemented** or **plan to implement** for SARS-CoV-2 and influenza.
- In total, 34.5% (10/29) of countries **implemented** or **plan to implement** for RSV.

|   |                                      |
|---|--------------------------------------|
| 1 | Implemented                          |
| 2 | Plan to implement                    |
| 3 | Implemented but plans to stop        |
| 4 | Not implemented and no plan to start |
| - | Not applicable                       |

# Secondary care syndromic surveillance (n=29)

| Country       | Influenza | SARS-CoV-2 | RSV |
|---------------|-----------|------------|-----|
| Portugal      | 1         | 1          | 2   |
| Slovakia      | 1         | 1          | 1   |
| Norway        | 1         | 1          | 1   |
| Ireland       | 1         | 1          | 4   |
| France        | 1         | 1          | 1   |
| Germany       | 1         | 1          | 1   |
| Italy         | 1         | 1          | 2   |
| Greece        | 1         | 1          | -   |
| Sweden        | 1         | 1          | 3   |
| Croatia       | 1         | 2          | 2   |
| Lithuania     | 1         | 4          | 4   |
| Latvia        | 1         | -          | -   |
| Denmark       | 2         | 1          | 1   |
| Netherlands   | 2         | 1          | 2   |
| Finland       | 2         | 1          | 2   |
| Belgium       | 2         | 2          | 2   |
| Bulgaria      | 2         | 2          | 2   |
| Hungary       | 2         | 2          | 2   |
| Cyprus        | 2         | 2          | 2   |
| Liechtenstein | 4         | 1          | 4   |
| Austria       | 4         | 2          | 4   |
| Spain         | 4         | 4          | 4   |
| Luxembourg    | 4         | 4          | 4   |
| Romania       | 4         | 4          | 4   |
| Slovenia      | 4         | 4          | 4   |
| Malta         | 4         | 4          | 4   |
| Czechia       | 4         | 4          | 4   |
| Iceland       | 4         | 4          | 4   |
| Poland        | 4         | 4          | 4   |

- In total, 48.3% (14/29) of countries **implemented** or **plan to implement** for all three pathogens.

|   |                                      |
|---|--------------------------------------|
| 1 | Implemented                          |
| 2 | Plan to implement                    |
| 3 | Implemented but plans to stop        |
| 4 | Not implemented and no plan to start |
| - | Not applicable                       |

# Antiviral/therapeutic sensitivity for (re)emerging respiratory pathogens (n=29)

| Country       | Influenza | SARS-CoV-2 | RSV |
|---------------|-----------|------------|-----|
| Spain         | 1         | 1          | 1   |
| Germany       | 1         | 1          | 1   |
| Austria       | 1         | 1          | 1   |
| Netherlands   | 1         | 1          | 1   |
| Poland        | 1         | 1          | 1   |
| Czechia       | 1         | 1          | 2   |
| Belgium       | 1         | 1          | 4   |
| Romania       | 1         | 1          | 4   |
| Greece        | 1         | 1          | 4   |
| Sweden        | 1         | 1          | 4   |
| France        | 1         | 1          | -   |
| Portugal      | 1         | 2          | -   |
| Norway        | 1         | 2          | -   |
| Denmark       | 1         | 2          | -   |
| Finland       | 1         | 4          | 4   |
| Italy         | 1         | -          | -   |
| Lithuania     | 2         | 2          | 4   |
| Bulgaria      | 2         | 2          | -   |
| Slovenia      | 2         | 4          | 4   |
| Liechtenstein | 4         | 4          | 4   |
| Luxembourg    | 4         | 4          | 4   |
| Ireland       | 4         | 4          | 4   |
| Malta         | 4         | 4          | 4   |
| Iceland       | 4         | 4          | 4   |
| Croatia       | 4         | 4          | 4   |
| Cyprus        | 4         | 4          | 4   |
| Latvia        | 4         | -          | -   |
| Slovakia      | -         | -          | -   |
| Hungary       | -         | -          | -   |

- In total, 55.2% (16/29) of countries **implemented** or **plan to implement** for SARS-CoV-2 and influenza.
- In total, 20.7% (6/29) of countries **implemented** or **plan to implement** for RSV.

|   |                                      |
|---|--------------------------------------|
| 1 | Implemented                          |
| 2 | Plan to implement                    |
| 3 | Implemented but plans to stop        |
| 4 | Not implemented and no plan to start |
| - | Not applicable                       |



# Vaccine effectiveness (primary) (n=29)

| Country       | Influenza | SARS-CoV-2 | RSV |
|---------------|-----------|------------|-----|
| Portugal      | 1         | 1          | -   |
| Slovakia      | 1         | 1          | -   |
| Spain         | 1         | 1          | -   |
| France        | 1         | 1          | -   |
| Denmark       | 1         | 1          | -   |
| Netherlands   | 1         | 1          | -   |
| Sweden        | 1         | 1          | -   |
| Belgium       | 1         | 1          | 4   |
| Ireland       | 1         | 1          | 4   |
| Germany       | 1         | 1          | 2   |
| Austria       | 1         | -          | -   |
| Italy         | 1         | -          | -   |
| Croatia       | 2         | 2          | -   |
| Lithuania     | 2         | 2          | 2   |
| Luxembourg    | 4         | 2          | -   |
| Liechtenstein | 4         | 4          | -   |
| Latvia        | 4         | 4          | -   |
| Romania       | 4         | 4          | 4   |
| Bulgaria      | 4         | 4          | 4   |
| Slovenia      | 4         | 4          | 4   |
| Malta         | 4         | 4          | 4   |
| Czechia       | 4         | 4          | 4   |
| Hungary       | 4         | 4          | 4   |
| Finland       | 4         | 4          | 4   |
| Greece        | 4         | 4          | 4   |
| Iceland       | 4         | 4          | 4   |
| Cyprus        | 4         | 4          | 4   |
| Poland        | 4         | 4          | 4   |
| Norway        | 4         | -          | -   |

- In total, 41.4% (12/29) of countries **implemented** or **plan to implement** for SARS-CoV-2 and influenza.

|   |                                      |
|---|--------------------------------------|
| 1 | Implemented                          |
| 2 | Plan to implement                    |
| 3 | Implemented but plans to stop        |
| 4 | Not implemented and no plan to start |
| - | Not applicable                       |

# Vaccine effectiveness (SARI) (n=29)

| Country       | Influenza | SARS-CoV-2 | RSV |
|---------------|-----------|------------|-----|
| Portugal      | 1         | 1          | -   |
| Slovakia      | 1         | 1          | -   |
| Spain         | 1         | 1          | -   |
| France        | 1         | 1          | -   |
| Denmark       | 1         | 1          | -   |
| Belgium       | 1         | 1          | 4   |
| Ireland       | 1         | 1          | 4   |
| Germany       | 1         | 1          | 2   |
| Netherlands   | 2         | 2          | -   |
| Bulgaria      | 2         | 2          | 2   |
| Croatia       | 2         | 4          | -   |
| Malta         | 4         | 1          | 4   |
| Luxembourg    | 4         | 2          | -   |
| Liechtenstein | 4         | 4          | -   |
| Latvia        | 4         | 4          | -   |
| Sweden        | 4         | 4          | -   |
| Romania       | 4         | 4          | 4   |
| Slovenia      | 4         | 4          | 4   |
| Czechia       | 4         | 4          | 4   |
| Hungary       | 4         | 4          | 4   |
| Finland       | 4         | 4          | 4   |
| Greece        | 4         | 4          | 4   |
| Lithuania     | 4         | 4          | 4   |
| Iceland       | 4         | 4          | 4   |
| Cyprus        | 4         | 4          | 4   |
| Poland        | 4         | 4          | 4   |
| Norway        | 4         | -          | -   |
| Austria       | -         | -          | -   |
| Italy         | -         | -          | -   |

- In total, 34.5% (10/29) of countries **implemented** or **plan to implement** for SARS-CoV-2 and influenza.

|   |                                      |
|---|--------------------------------------|
| 1 | Implemented                          |
| 2 | Plan to implement                    |
| 3 | Implemented but plans to stop        |
| 4 | Not implemented and no plan to start |
| - | Not applicable                       |

# Participatory community surveillance – for example InfluenzaNet (n=29)

| Country       | Influenza | SARS-CoV-2 | RSV |
|---------------|-----------|------------|-----|
| Slovakia      | 1         | 1          | 1   |
| Germany       | 1         | 1          | 1   |
| Sweden        | 1         | 1          | 1   |
| Norway        | 1         | 1          | 4   |
| France        | 1         | 1          | 4   |
| Denmark       | 1         | 1          | 4   |
| Netherlands   | 1         | 1          | 2   |
| Belgium       | 1         | 4          | 4   |
| Italy         | 1         | -          | -   |
| Portugal      | 2         | 2          | 2   |
| Spain         | 2         | 2          | 2   |
| Croatia       | 4         | 4          | -   |
| Latvia        | 4         | 4          | -   |
| Liechtenstein | 4         | 4          | 4   |
| Luxembourg    | 4         | 4          | 4   |
| Ireland       | 4         | 4          | 4   |
| Romania       | 4         | 4          | 4   |
| Bulgaria      | 4         | 4          | 4   |
| Slovenia      | 4         | 4          | 4   |
| Malta         | 4         | 4          | 4   |
| Czechia       | 4         | 4          | 4   |
| Finland       | 4         | 4          | 4   |
| Greece        | 4         | 4          | 4   |
| Lithuania     | 4         | 4          | 4   |
| Iceland       | 4         | 4          | 4   |
| Cyprus        | 4         | 4          | 4   |
| Poland        | 4         | 4          | 4   |
| Hungary       | -         | -          | -   |
| Austria       | -         | -          | 4   |

- In total, 31.0% (9/29) of countries **implemented** or **plan to implement** for SARS-CoV-2 and influenza.
- In total, 20.7% (6/29) of countries **implemented** or **plan to implement** for RSV.

|   |                                      |
|---|--------------------------------------|
| 1 | Implemented                          |
| 2 | Plan to implement                    |
| 3 | Implemented but plans to stop        |
| 4 | Not implemented and no plan to start |
| - | Not applicable                       |

# Event-based surveillance (EBS)

For influenza, SARS-CoV-2, and RSV, each country could select the following options for a list of EBS-related topics:

|   |                                      |
|---|--------------------------------------|
| 1 | Implemented                          |
| 2 | Plan to implement                    |
| 3 | Implemented but plans to stop        |
| 4 | Not implemented and no plan to start |
| - | Not applicable                       |

- International Health Regulations (IHR)/Early Warning and Response System (EWRS)/EpiPulse notifications of unusual respiratory outbreaks.
- Human-animal interface event monitoring
- Media monitoring on respiratory virus related events.

# IHR/EWRS/EpiPulse notifications of unusual respiratory outbreaks (n=29)



| Country       | Influenza | SARS-CoV-2 | RSV |
|---------------|-----------|------------|-----|
| Portugal      | 1         | 1          | 1   |
| Belgium       | 1         | 1          | 1   |
| Spain         | 1         | 1          | 1   |
| Norway        | 1         | 1          | 1   |
| Ireland       | 1         | 1          | 1   |
| France        | 1         | 1          | 1   |
| Romania       | 1         | 1          | 1   |
| Slovenia      | 1         | 1          | 1   |
| Malta         | 1         | 1          | 1   |
| Denmark       | 1         | 1          | 1   |
| Austria       | 1         | 1          | 1   |
| Hungary       | 1         | 1          | 1   |
| Netherlands   | 1         | 1          | 1   |
| Italy         | 1         | 1          | 1   |
| Finland       | 1         | 1          | 1   |
| Greece        | 1         | 1          | 2   |
| Poland        | 1         | 1          | 2   |
| Lithuania     | 1         | 1          | 1   |
| Iceland       | 1         | 1          | 1   |
| Croatia       | 1         | 1          | 1   |
| Cyprus        | 1         | 1          | 1   |
| Latvia        | 1         | 1          | 1   |
| Sweden        | 1         | 1          | 1   |
| Germany       | 1         | 1          | -   |
| Slovakia      | 1         | 1          | -   |
| Luxembourg    | 1         | 1          | 4   |
| Czechia       | 1         | 1          | 4   |
| Liechtenstein | 4         | 1          | 4   |
| Bulgaria      | 4         | 4          | 4   |

- In total, 79.3% (23/29) of countries **implemented** or **plan to implement** for all three pathogens.

|   |                                      |
|---|--------------------------------------|
| 1 | Implemented                          |
| 2 | Plan to implement                    |
| 3 | Implemented but plans to stop        |
| 4 | Not implemented and no plan to start |
| - | Not applicable                       |

# Human-animal interface event monitoring (n=29)



| Country       | Influenza | SARS-CoV-2 | RSV |
|---------------|-----------|------------|-----|
| Portugal      | 1         | 1          | 1   |
| Spain         | 1         | 1          | 1   |
| Italy         | 1         | 1          | 1   |
| Latvia        | 1         | 1          | 1   |
| Norway        | 1         | 1          | -   |
| France        | 1         | 1          | -   |
| Romania       | 1         | 1          | -   |
| Germany       | 1         | 1          | -   |
| Slovenia      | 1         | 1          | -   |
| Denmark       | 1         | 1          | -   |
| Hungary       | 1         | 1          | -   |
| Netherlands   | 1         | 1          | -   |
| Sweden        | 1         | 1          | -   |
| Lithuania     | 1         | 1          | -   |
| Croatia       | 1         | 1          | -   |
| Poland        | 1         | 1          | -   |
| Finland       | 1         | 1          | 4   |
| Ireland       | 1         | 1          | 4   |
| Czechia       | 1         | 4          | 4   |
| Austria       | 1         | 4          | -   |
| Bulgaria      | 2         | 2          | -   |
| Belgium       | 2         | -          | -   |
| Slovakia      | 2         | -          | 4   |
| Liechtenstein | 4         | 4          | 4   |
| Luxembourg    | 4         | 4          | 4   |
| Malta         | 4         | 4          | 4   |
| Greece        | 4         | 4          | 4   |
| Iceland       | 4         | 4          | 4   |
| Cyprus        | 4         | 4          | 4   |

- In total, 65.5% (19/29) of countries **implemented** or **plan to implement** for SARS-CoV-2 and influenza.

|   |                                      |
|---|--------------------------------------|
| 1 | Implemented                          |
| 2 | Plan to implement                    |
| 3 | Implemented but plans to stop        |
| 4 | Not implemented and no plan to start |
| - | Not applicable                       |

# Media monitoring on respiratory virus related events (n=29)

| Country       | Influenza | SARS-CoV-2 | RSV |
|---------------|-----------|------------|-----|
| Portugal      | 1         | 1          | 1   |
| Spain         | 1         | 1          | 1   |
| Norway        | 1         | 1          | 1   |
| Romania       | 1         | 1          | 1   |
| Germany       | 1         | 1          | 1   |
| Netherlands   | 1         | 1          | 1   |
| Italy         | 1         | 1          | 1   |
| Lithuania     | 1         | 1          | -   |
| Croatia       | 1         | 1          | 1   |
| Latvia        | 1         | 1          | 1   |
| Sweden        | 1         | 1          | 1   |
| Bulgaria      | 2         | 2          | 4   |
| Hungary       | 2         | 2          | 2   |
| France        | 4         | 1          | -   |
| Belgium       | 4         | 4          | 4   |
| Liechtenstein | 4         | 4          | 4   |
| Slovakia      | 4         | 4          | 4   |
| Luxembourg    | 4         | 4          | 4   |
| Slovenia      | 4         | 4          | 4   |
| Malta         | 4         | 4          | 4   |
| Czechia       | 4         | 4          | 4   |
| Denmark       | 4         | 4          | 4   |
| Finland       | 4         | 4          | 4   |
| Greece        | 4         | 4          | 4   |
| Iceland       | 4         | 4          | 4   |
| Cyprus        | 4         | 4          | 4   |
| Ireland       | -         | -          | -   |
| Austria       | -         | -          | 4   |
| Poland        | 4         | 4          | 4   |

- In total, 37.9% (11/29) of countries **implemented** or **plan to implement** for all three pathogens.

|   |                                      |
|---|--------------------------------------|
| 1 | Implemented                          |
| 2 | Plan to implement                    |
| 3 | Implemented but plans to stop        |
| 4 | Not implemented and no plan to start |
| - | Not applicable                       |

# Integrated special studies



For influenza, SARS-CoV-2, and RSV, each country could select the following options for a list of topics:

|   |                                      |
|---|--------------------------------------|
| 1 | Implemented                          |
| 2 | Plan to implement                    |
| 3 | Implemented but plans to stop        |
| 4 | Not implemented and no plan to start |
| - | Not applicable                       |

- Risk factors for severe disease/outcome
- Modelling/forecasting/economic evaluation
- First Few X/Household studies
- Population seroprevalence.



# Risk factors for severe disease or outcome (n=29)

| Country       | Influenza | SARS-CoV-2 | RSV |
|---------------|-----------|------------|-----|
| Belgium       | 1         | 1          | 1   |
| Denmark       | 1         | 1          | 1   |
| France        | 1         | 1          | 4   |
| Germany       | 1         | 1          | 1   |
| Ireland       | 1         | 1          | 4   |
| Italy         | 1         | 1          | 1   |
| Romania       | 1         | 1          | 2   |
| Spain         | 1         | 1          | 1   |
| Netherlands   | 2         | 1          | 2   |
| Sweden        | 2         | 1          | 4   |
| Austria       | 2         | 2          | 4   |
| Hungary       | 2         | 2          | 2   |
| Norway        | 2         | 3          | -   |
| Portugal      | 2         | 4          | 4   |
| Czechia       | 4         | 1          | 4   |
| Finland       | 4         | 1          | 2   |
| Croatia       | 4         | 2          | 4   |
| Luxembourg    | 4         | 2          | 4   |
| Slovakia      | 4         | 2          | 4   |
| Bulgaria      | 4         | 4          | 4   |
| Cyprus        | 4         | 4          | 4   |
| Greece        | 4         | 4          | 4   |
| Iceland       | 4         | 4          | 4   |
| Latvia        | 4         | 4          | 4   |
| Liechtenstein | 4         | 4          | 4   |
| Malta         | 4         | 4          | 4   |
| Slovenia      | 4         | 4          | 4   |
| Poland        | 4         | 4          | -   |
| Lithuania     | -         | -          | -   |

- In total, 41.4% (12/29) of countries **implemented** or **plan to implement** for SARS-CoV-2 and influenza.
- In total, 31.0% (9/29) of countries **implemented** or **plan to implement** for RSV.

|   |                                      |
|---|--------------------------------------|
| 1 | Implemented                          |
| 2 | Plan to implement                    |
| 3 | Implemented but plans to stop        |
| 4 | Not implemented and no plan to start |
| - | Not applicable                       |

# Modelling/forecasting/economic evaluation (n=29)

| Country       | Influenza | SARS-CoV-2 | RSV |
|---------------|-----------|------------|-----|
| France        | 1         | 1          | 4   |
| Germany       | 1         | 1          | 1   |
| Netherlands   | 1         | 1          | 1   |
| Italy         | 1         | 1          | 2   |
| Belgium       | 2         | 1          | 4   |
| Sweden        | 2         | 1          | 4   |
| Norway        | 2         | 1          | -   |
| Ireland       | 2         | 1          | 4   |
| Finland       | 2         | 1          | 1   |
| Spain         | 2         | 2          | 2   |
| Austria       | 2         | 2          | 4   |
| Portugal      | 4         | 1          | 4   |
| Denmark       | 4         | 1          | 4   |
| Greece        | 4         | 1          | 4   |
| Slovakia      | 4         | 2          | 4   |
| Slovenia      | 4         | 2          | 2   |
| Luxembourg    | 4         | 3          | 4   |
| Liechtenstein | 4         | 4          | 4   |
| Romania       | 4         | 4          | 4   |
| Bulgaria      | 4         | 4          | 4   |
| Malta         | 4         | 4          | 4   |
| Czechia       | 4         | 4          | 4   |
| Iceland       | 4         | 4          | 4   |
| Croatia       | 4         | 4          | 4   |
| Cyprus        | 4         | 4          | 4   |
| Latvia        | 4         | 4          | 4   |
| Poland        | -         | 4          | -   |
| Lithuania     | -         | 1          | -   |
| Hungary       | -         | -          | -   |

- In total, 37.9% (11/29) of countries **implemented** or **plan to implement** for SARS-CoV-2 and influenza.
- In total, 20.7% (6/29) of countries **implemented** or **plan to implement** for RSV.

|   |                                      |
|---|--------------------------------------|
| 1 | Implemented                          |
| 2 | Plan to implement                    |
| 3 | Implemented but plans to stop        |
| 4 | Not implemented and no plan to start |
| - | Not applicable                       |

# First Few X/Household studies (n=29)

| Country       | Influenza | SARS-CoV-2 | RSV |
|---------------|-----------|------------|-----|
| Romania       | 1         | 1          | 4   |
| Netherlands   | 1         | 1          | 4   |
| Lithuania     | 1         | 1          | -   |
| Germany       | 1         | 2          | -   |
| Sweden        | 2         | 1          | 4   |
| Italy         | 1         | -          | -   |
| Bulgaria      | 2         | 2          | 2   |
| Denmark       | 2         | 2          | 2   |
| Austria       | 2         | 2          | 4   |
| Hungary       | 2         | 2          | 4   |
| Norway        | 2         | 3          | -   |
| France        | 4         | 1          | 4   |
| Portugal      | 4         | 2          | 4   |
| Finland       | 4         | 3          | 4   |
| Belgium       | 4         | 4          | 4   |
| Liechtenstein | 4         | 4          | 4   |
| Slovakia      | 4         | 4          | 4   |
| Spain         | 4         | 4          | 4   |
| Luxembourg    | 4         | 4          | 4   |
| Ireland       | 4         | 4          | 4   |
| Slovenia      | 4         | 4          | -   |
| Malta         | 4         | 4          | 4   |
| Czechia       | 4         | 4          | 4   |
| Greece        | 4         | 4          | 4   |
| Iceland       | 4         | 4          | 4   |
| Croatia       | 4         | 4          | 4   |
| Cyprus        | 4         | 4          | 4   |
| Latvia        | 4         | 4          | 4   |
| Poland        | 4         | 4          | -   |

- In total, 31.0% (9/29) of countries **implemented** or **plan to implement** for SARS-CoV-2 and influenza.
- In total, 6.9% (2/29) of countries **implemented** or **plan to implement** for RSV.

|   |                                      |
|---|--------------------------------------|
| 1 | Implemented                          |
| 2 | Plan to implement                    |
| 3 | Implemented but plans to stop        |
| 4 | Not implemented and no plan to start |
| - | Not applicable                       |

# Population seroprevalence (n=29)

| Country       | Influenza | SARS-CoV-2 | RSV |
|---------------|-----------|------------|-----|
| Portugal      | 1         | 1          | 4   |
| Norway        | 1         | 1          | -   |
| Romania       | 1         | 1          | 4   |
| Belgium       | 2         | 1          | 4   |
| Ireland       | 2         | 1          | 4   |
| France        | 2         | 1          | 4   |
| Sweden        | 2         | 1          | 4   |
| Netherlands   | 2         | 1          | 1   |
| Lithuania     | -         | 1          | -   |
| Austria       | 2         | 2          | 4   |
| Poland        | 4         | 1          | -   |
| Slovakia      | 4         | 1          | 4   |
| Spain         | 4         | 1          | 4   |
| Germany       | 4         | 1          | 4   |
| Czechia       | 4         | 1          | 4   |
| Denmark       | 4         | 1          | 4   |
| Hungary       | 4         | 1          | 4   |
| Finland       | 4         | 1          | 4   |
| Iceland       | 4         | 1          | 4   |
| Croatia       | 4         | 1          | 4   |
| Slovenia      | 4         | 2          | -   |
| Luxembourg    | 4         | 3          | 4   |
| Malta         | 4         | 3          | 4   |
| Liechtenstein | 4         | 4          | 4   |
| Bulgaria      | 4         | 4          | 4   |
| Greece        | 4         | 4          | 4   |
| Cyprus        | 4         | 4          | 4   |
| Latvia        | 4         | 4          | 4   |
| Italy         | -         | -          | -   |

- In total, 72.4% (21/29) of countries **implemented** or **plan to implement** for SARS-CoV-2.
- In total, 31.0% (9/29) of countries **implemented** or **plan to implement** for influenza.

|   |                                      |
|---|--------------------------------------|
| 1 | Implemented                          |
| 2 | Plan to implement                    |
| 3 | Implemented but plans to stop        |
| 4 | Not implemented and no plan to start |
| - | Not applicable                       |

# Limitations



- These results represent a snapshot at a particular moment in time. National strategies, including testing strategies, continue to be discussed and may change.
- The survey responses reflect a self-assessment by each country and data quality has not been cross-verified.
- Some hurdles may only become apparent once implementation has begun and therefore plans may change at national level in the future.
- A single survey response was submitted by each country which means that some sub-national variations may not be accounted for.

# Results in brief



- Member States were in unanimous agreement that common objectives should be established for sentinel surveillance of respiratory viruses.
- Overall, countries agree with the proposed ECDC/WHO core objectives for an integrated surveillance of respiratory viruses with pandemic potential (>70% for 8/9 core objectives).
- Most countries are in the process of discussing, planning, or implementing integrated surveillance at national level.
- Hurdles to the implementation of integrated surveillance are anticipated, particularly as regards the availability of necessary infrastructure and resources.
- Changes in testing strategies for community testing have been implemented, or are expected to be implemented, in the majority of the countries.

# Results in brief



- Most countries have implemented or are planning to implement integrated sentinel surveillance (primary care (ILI/ARI) and SARI) and non-sentinel surveillance for influenza, SARS-CoV-2 and RSV.
- In contrast to the primary care sentinel surveillance, for SARI 42% countries are still in the process of implementing surveillance systems.
- Genomic surveillance has been implemented in 93% countries for SARS-CoV-2, 79% countries for influenza and 28% countries for RSV.
- Only a selected number of countries are currently monitoring vaccine effectiveness in primary and secondary care.
- IHR/EWRS/EpiPulse notifications and the monitoring of human-animal interface are being actively used by the majority of countries for SARS-CoV-2 and influenza.
- Approximately 40% of countries have implemented special studies for SARS-CoV-2 and influenza.