

European Centre for Disease Prevention and Control

Pandemic preparedness and response in the EU: lessons learned from COVID and priorities for research and training- ECDC

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European Centre for Disease Prevention and Control



- An agency of the European Union founded in 2005, located in Solna, Sweden
- In 2023, 331 employees, from 24 EU nationalities
- Budget 2023 90 million Euro

ECDC mission & role

To identify, assess and communicate current and emerging threats to human health posed by infectious diseases.

Disease
Surveillance &
Epidemic
intelligence

Response support
& Risk assessments
Preparedness &
capacity
strengthening

Scientific advice &
guidance

EU and external
stakeholders &
Country support

Public health
training

Communication

Vaccine-preventable diseases
and Immunisation

Sexually transmitted
infections, Blood-Borne Viruses
and Tuberculosis

Antimicrobial resistance and
healthcare-associated
infections

Emerging, Food and vector-
borne diseases

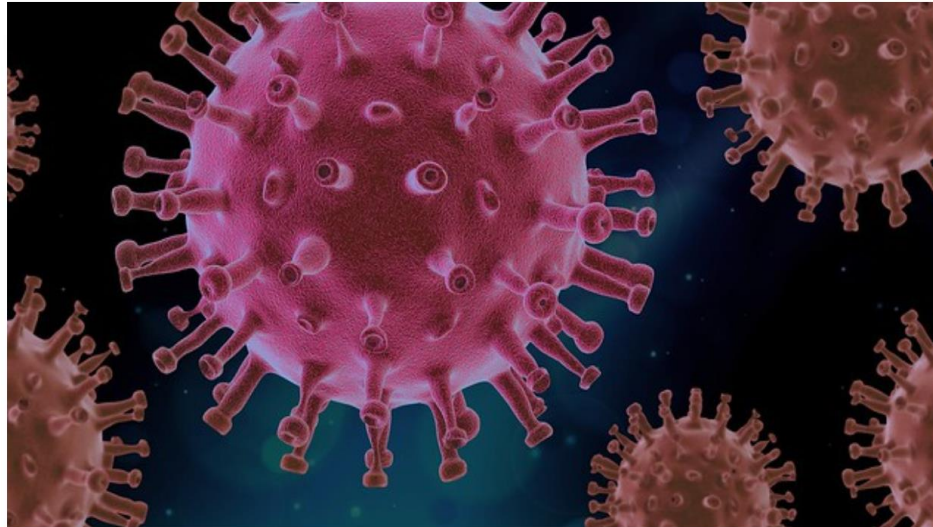
COVID-19: Our biggest challenge

- Organisational infrastructure, resource allocation and operational routines.
- Types of outputs as well as how regularly these were updated.
- Managing scientific uncertainties and political needs during different pandemic moments.

Timeline of ECDC's response to the Covid-19 pandemic



Available [here](#)

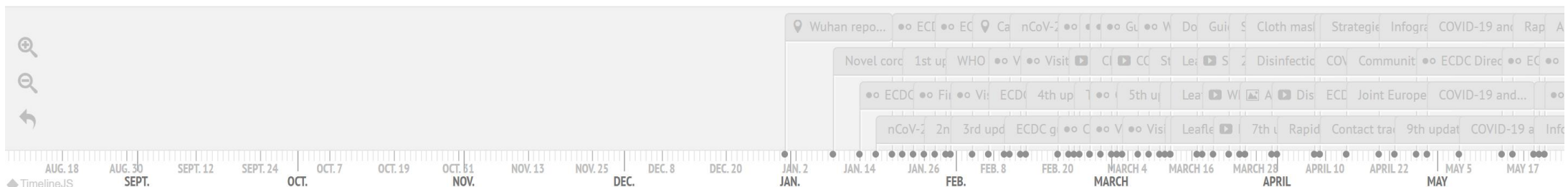


European Centre for Disease Prevention and Control

Coronavirus Image by PIRO4D from Pixabay CC0

ECDC RESPONSE TO THE COVID-19 PANDEMIC

This timeline shows the steps the European Centre for Disease Prevention and Control has taken from the beginning of the COVID-19 pandemic. You will find here the risk assessments, technical reports, advice and information ECDC has published on the portal.



4:38

ATLANTA

17:38

BEIJING

9:38

LONDON

PHE Level 2 Acute Phase

1168

Key activities during the early phase of the COVID-19 PHE response



- Establishment of a new, dedicated coronavirus surveillance and laboratory network, to facilitate interaction with Member States.
- Surveillance and Epidemic Intelligence efforts to monitor global cases and deaths, setting up automated web-scraping of available public data on hospital and ICU indicators. Expanded over time to include data on multiple indicators and areas.
- Implementation of laboratory activities around diagnostics to support SARS-CoV-2 detection.
- Integration of available information into a range of guidance documents, which included regular Rapid Risk Assessment updates.

Country Overview Report



Surveillance summary

Regional indicators

Variants

Vaccination

Countries ▼

Notes

ECDC COVID-19 landing page

Overall situation

Key indicators, week 13

Virus variants

Vaccine uptake

Long-term care facilities

Summary of epidemiological indicators: current value as of 2 April 2023 and observed trend (▲ or ▼) compared to the previous week

	Tests per 100k	14-day case rate per 100k	Test positivity (%)	14-day case rate per 100k (65+ years)	Hospital admissions per 100k	Hospital occupancy per 100k	ICU admissions per 100k	ICU occupancy per 100k	14-day death rate per million
EU/EEA	468	78.7 ▼	7.0 ▼	132 ▼	2.6 ▼	10.8	0.2	0.8	4.6 ▼
Austria	1 799					9.9 ▼		0.5 ▼	
Belgium	278 ▼	104 ▼	7.9 ▼	261 ▼	2.8 ▼	17.0		1.0	4.9 ▼
Bulgaria	208	26.2 ▲	6.4 ▲			4.3		0.4	3.5
Croatia	482	107	10.8	121					12.2 ▲
Cyprus	6 025	204 ▼	1.6	40.1 ▼					0.0
Czechia	196	76.1 ▼	16.2 ▼	152 ▼	2.4	5.2 ▼	0.3	0.4	7.9 ▼
Denmark	153	48.3	13.8 ▼	104					6.0 ▼
Estonia		54.9		140 ▲	12.2 ▲	11.3	0.1	0.5	10.5 ▼
Finland	69.1								
France	478	165 ▲	17.6	229 ▲	4.0	19.5	0.3 ▼	1.1	5.6 ▲
Germany		66.0 ▼		129 ▼				1.3 ▼	3.9 ▼
Greece	3 479 ▼	138	2.0	197	6.4		0.1		10.8 ▼
Hungary	101	13.4	6.3	26.0					
Iceland	87.2	17.3	11.3	65.6 ▲	2.1				
Ireland	176	48.1 ▲	12.8	118 ▲	4.1 ▼	5.6	0.1	0.1	0.8
Italy	741	62.5 ▼	3.4 ▼	80.8 ▼	1.3		0.1		3.8 ▼
Latvia	47.0	22.3	22.6	49.3	12.0 ▲		0.7	0.2	14.9 ▲
Liechtenstein	148 ▲	5.1 ▼	1.7 ▼	26.5 ▼					50.9 ▼
Lithuania	248	90.7 ▼	16.6	120 ▼		3.4	0.1		2.1
Luxembourg	519 ▼	401 ▼	30.2 ▼	375 ▼		2.8		0.0	
Malta		45.1		99.9	3.3 ▲		0.2	0.0	1.9 ▼
Netherlands	28.7	16.5 ▼	21.1		2.3 ▼	3.7 ▼	0.2	0.2	
Norway	133	21.6 ▲	8.9 ▲	62.9 ▲					
Poland	120	65.2 ▼	20.4 ▼						6.0
Portugal	143								
Romania	397	75.4	8.7 ▼	121		8.6		0.8 ▲	3.0
Slovakia	278	35.3 ▼	5.8 ▼	111 ▼	3.1 ▼		0.0		0.9
Slovenia	824	258 ▼	13.8 ▼	228 ▼		2.3		0.3	12.8 ▼
Spain	128	22.8 ▼	5.6 ▼	60.1 ▼	0.7	4.3	0.0	0.2	2.0
Sweden	71.0	19.7	13.7	74.8			0.1		4.8 ▼

Level of current value, coloured by class breaks defined per indicator:

- 14-day case notification rate per 100k: <40, 40-100, 100-300, 300 or higher

- Test positivity (%): <2%, 2-4%, 4-10%, 10% or higher

- 14-day case rate per 100k (65+ years): <20, 20-50, 50-150, 150 or higher

- Hospital or ICU admissions per 100k (as % of historical country peak rate): <10%, 10-25%, 25-50%, 50% or higher

- Hospital or ICU occupancy per 100k (as % of historical country peak rate): <25%, 25-50%, 50-75%, 75% or higher

- 14-day death rate per million: <20, 20-40, 40-100, 100 or higher



- Established in summer 2020.
- Integrated summary of epidemiological trends and forecasts for the EU/EEA and individual countries.
- Multiple data streams.
- Updated on a weekly basis.

Level of concern based on the epidemiological situation

Weekly COVID-19 epidemiological category by country, weeks 25 to 39 2021

Composite score (1-10) based on value and trend of five indicators. Categories are derived from score quintiles.

Level of concern

- very low: (1 - 2.8)
- low: (2.8 - 4.6)
- moderate: (4.6 - 6.4)
- high: (6.4 - 8.2)
- very high: (8.2 - 10)

	2021-W25	2021-W26	2021-W27	2021-W28	2021-W29	2021-W30	2021-W31	2021-W32	2021-W33	2021-W34	2021-W35	2021-W36	2021-W37	2021-W38	2021-W39	
1.2	3.5	4.5	6.0	6.0	6.0	5.3	5.0	5.0	5.0	4.7	4.2	4.2	4.3	4.2	EU/EEA	
1.7	2.0	2.0	2.7	3.3	3.7	3.7	4.7	5.0	5.0	5.7	5.7	6.3	4.0	3.7	Austria	
2.0	3.2	4.7	4.7	5.3	5.3	5.7	5.7	6.3	5.0	5.3	4.8	4.7	4.5	5.0	Belgium	
1.2	1.2	2.2	1.5	2.4	2.8	5.0	6.0	6.5	7.5	7.2	6.7	6.8	7.7	8.0	Bulgaria	
2.2	2.3	3.2	3.2	3.8	4.7	4.3	4.7	6.0	6.0	6.7	7.3	7.7	6.8	7.7	Croatia	
5.0	7.0	7.3	7.7	8.0	6.5	6.0	6.0	6.3	5.7	5.3	5.2	3.8	3.5	3.2	Cyprus	
1.7	2.0	2.7	2.7	2.0	1.7	2.0	2.0	2.0	2.0	2.7	3.7	3.7	4.0	4.0	Czechia	
2.2	3.3	4.0	4.7	4.3	4.0	4.7	5.3	4.7	4.3	3.5	3.8	2.8	2.5	4.3	Denmark	
1.8	1.8	2.5	3.3	5.0	6.0	6.0	6.7	6.7	7.3	7.7	7.3	6.8	8.7	8.7	Estonia	
2.8	2.7	3.7	3.7	4.0	5.0	5.3	5.0	4.2	3.5	4.7	4.7	4.0	4.7	5.0	Finland	
2.0	2.3	3.2	5.7	6.3	7.3	7.3	6.8	6.7	5.7	5.0	3.5	3.5	3.2	3.2	France	
1.3	1.3	1.7	2.8	3.0	3.3	4.3	5.0	5.0	5.7	5.7	5.3	4.5	4.5	4.0	Germany	
2.2	3.0	4.2	5.2	6.3	6.0	5.7	8.0	7.7	6.7	6.5	5.3	5.0	5.0	5.2	Greece	
1.5	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.7	3.3	3.3	3.7	4.7	5.0	5.3	Hungary	
2.0	2.0	2.3	3.3	6.0	7.3	7.7	5.3	4.5	5.2	3.3	3.5	3.8	4.2	4.8	Iceland	
4.0	5.3	5.3	6.0	6.5	6.3	7.0	7.0	8.0	6.3	6.2	5.7	5.2	6.2	7.0	Ireland	
1.3	1.5	2.5	4.0	5.0	5.3	5.7	6.3	5.3	5.0	4.8	4.0	3.5	2.7	2.5	Italy	
2.8	2.2	1.8	1.3	2.3	3.0	4.0	4.0	4.3	5.8	5.7	6.0	7.7	8.3	9.0	Latvia	
3.0	4.0	4.0	3.0	2.3	2.7	4.0	4.5	6.2	5.0	5.7	6.7	5.3	4.3	4.5	Liechtenstein	
1.5	1.3	2.5	2.7	4.0	5.0	6.3	6.3	6.7	6.7	8.3	9.0	8.2	8.0	8.7	Lithuania	
2.0	4.0	6.0	4.3	3.8	3.5	3.3	4.3	4.3	6.3	4.0	4.0	4.7	4.8	4.3	Luxembourg	
2.0	2.7	5.3	7.0	6.3	5.8	5.5	5.0	4.8	4.2	4.5	3.8	3.3	2.5	2.3	Malta	
2.0	2.7	5.3	6.7	6.8	5.2	4.0	4.2	5.0	5.3	5.0	4.8	3.7	3.5	4.0	Netherlands	
2.7	2.5	2.7	2.7	2.7	3.7	4.3	4.7	4.7	5.0	6.0	6.0	7.0	4.2	3.7	Norway	
2.0	2.2	2.2	2.2	2.2	1.8	1.8	2.7	2.3	2.3	3.0	3.3	3.3	3.7	4.0	Poland	
5.3	6.0	7.7	7.0	7.3	5.2	5.3	5.3	5.5	5.7	4.2	3.7	3.0	3.3	2.8	Portugal	
2.5	2.7	2.5	1.8	2.0	2.0	3.0	3.3	4.3	5.3	5.7	7.3	8.3	9.3	10.0	Romania	
1.3	1.7	2.0	2.0	2.7	2.7	2.7	2.7	3.0	3.3	5.0	6.3	6.7	6.0	6.8	Slovakia	
1.3	1.5	2.7	2.7	2.0	3.7	4.0	4.7	5.3	6.3	6.5	7.7	8.0	6.3	6.2	Slovenia	
4.2	6.0	7.3	8.0	8.0	6.5	6.0	6.2	6.0	4.8	4.2	4.2	3.8	3.0	2.7	Spain	
2.3	1.7	1.7	2.7	4.0	4.3	5.0	5.7	5.3	4.8	4.8	5.5	4.5	3.2	3.0	Sweden	

Deployment of new resources

Laboratory and sequencing support:

- Establishment of SARS-CoV-2 Virus Characterisation Working Group and SARS-CoV-2 sero-epidemiological network.
- WGS infrastructure support for 24 MS with 77M EUR (HERA Incubator)
- Supported sequencing of 240 500 specimens with 26M EUR.
- Sharing of updates, methods for diagnostics, and data validation.

Expanded bioinformatics capacity

- Regular analysis of sequence data from GISAID and other data repositories.
- Weekly horizon scanning to detect new variant threats.
- Development of standardised variant analysis pipelines.
- Zoonotic analyses



ECDC's work on COVID-19 & support to the EU Institutions and Member States

- Daily updates, maps and tables
- Risk assessments with options for response
- Guidance and material for EU Member States, and country missions upon request
- Support in preparedness actions
 - Laboratory capacity
 - Hospital preparedness
- Template leaflets for national authorities to translate and customise
- E-learning for public health professionals
- Briefings for EU-Institutions and stakeholders
- Participation in events & interviews

Strategic Analysis of Variants in Europe working group



- Identify, assess the risk and respond to variant threats proactively by routinely integrating information collected across a range of internal teams and from external sources.
- Provide all the necessary evidence before taking a joint decision on classification (as a Variant of Concern, Variant of Interest, or Variant Under Monitoring), with each of these classifications corresponding to a set of internal and external stakeholder actions.
- The Variant of Concern classification served as an important communication tool for alerting EU/EEA countries and broadly aligned with WHO's system for variant classification at inception.
- The arrival of Omicron, and its many sub-lineages represented a challenge for variant classification, with ECDC opting to deviate from WHO by assessing risk and classifying individual Omicron sub-lineages, in order to distinguish them from the broad umbrella of Omicron.

COVID-19 modelling

2021:

- European COVID-19 Forecast hub with 20+ modelling teams globally forecasting COVID-19 outcomes in Europe to inform policy advice.
- Focus on short-term forecasts over 1-4 weeks; ensemble forecasts from multiple models performed reliably.

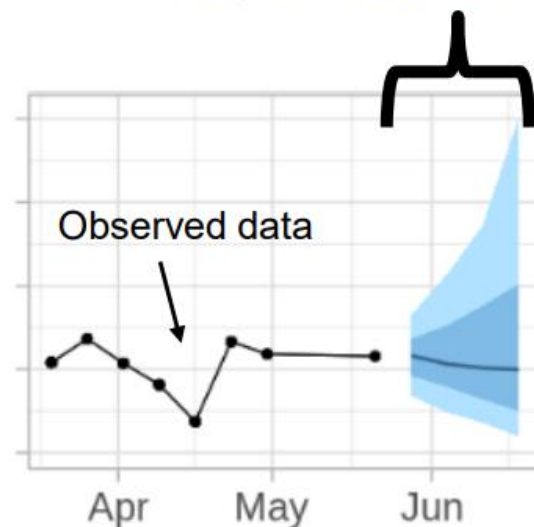
2022:

- European COVID-19 Scenario hub for longer term projections of scenarios over 6-12 months to explore leading causes of uncertainty about future COVID-19 outcomes.
- Both hubs have focussed on building a collaborative community of modellers



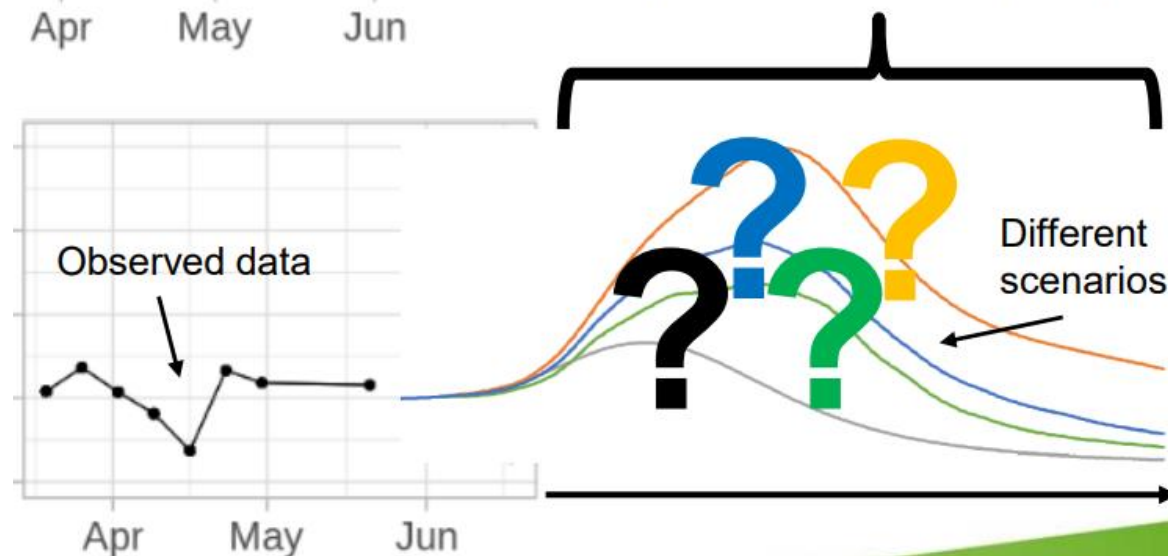
European COVID-19
ForecastHub

<https://covid19forecasthub.eu>

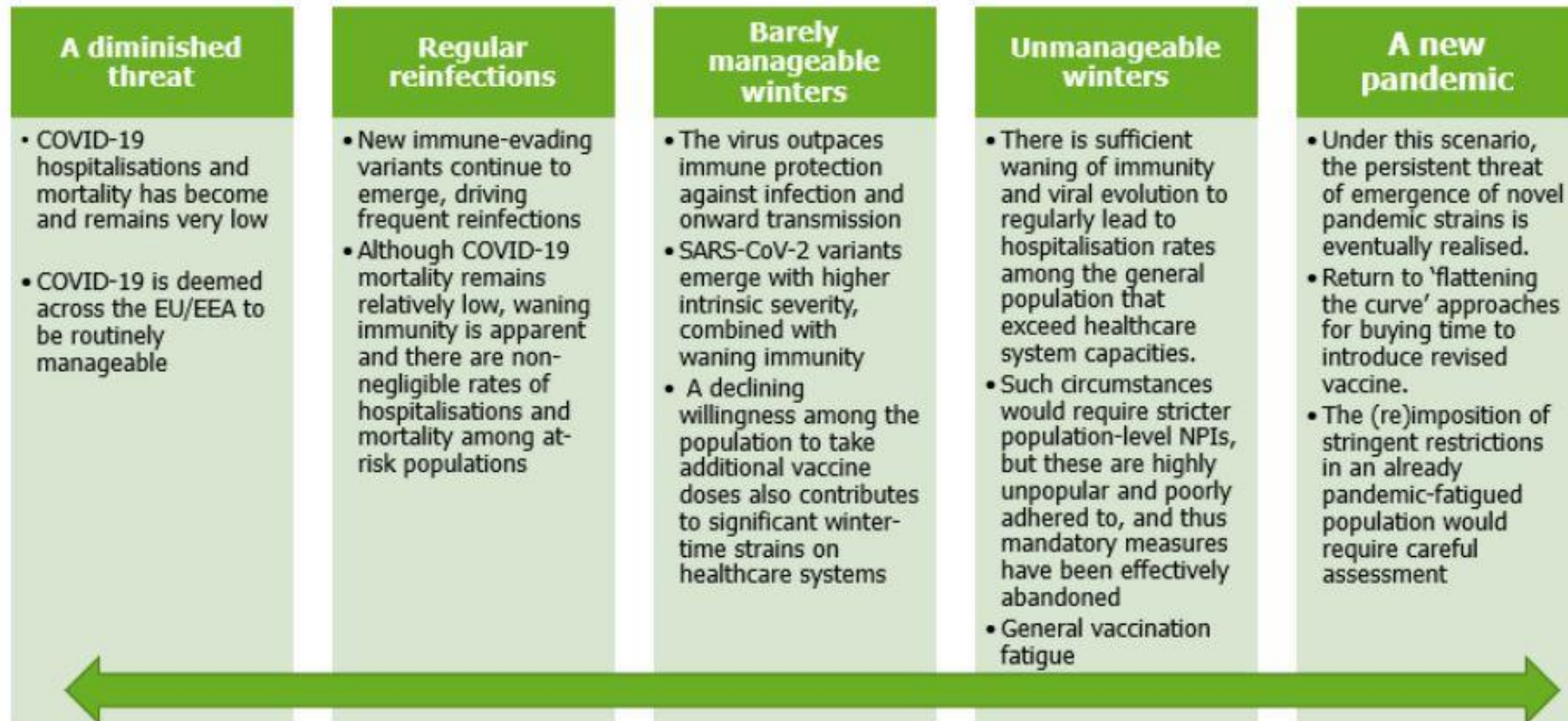


European COVID-19
ScenarioHub

<https://covid19scenariohub.eu>

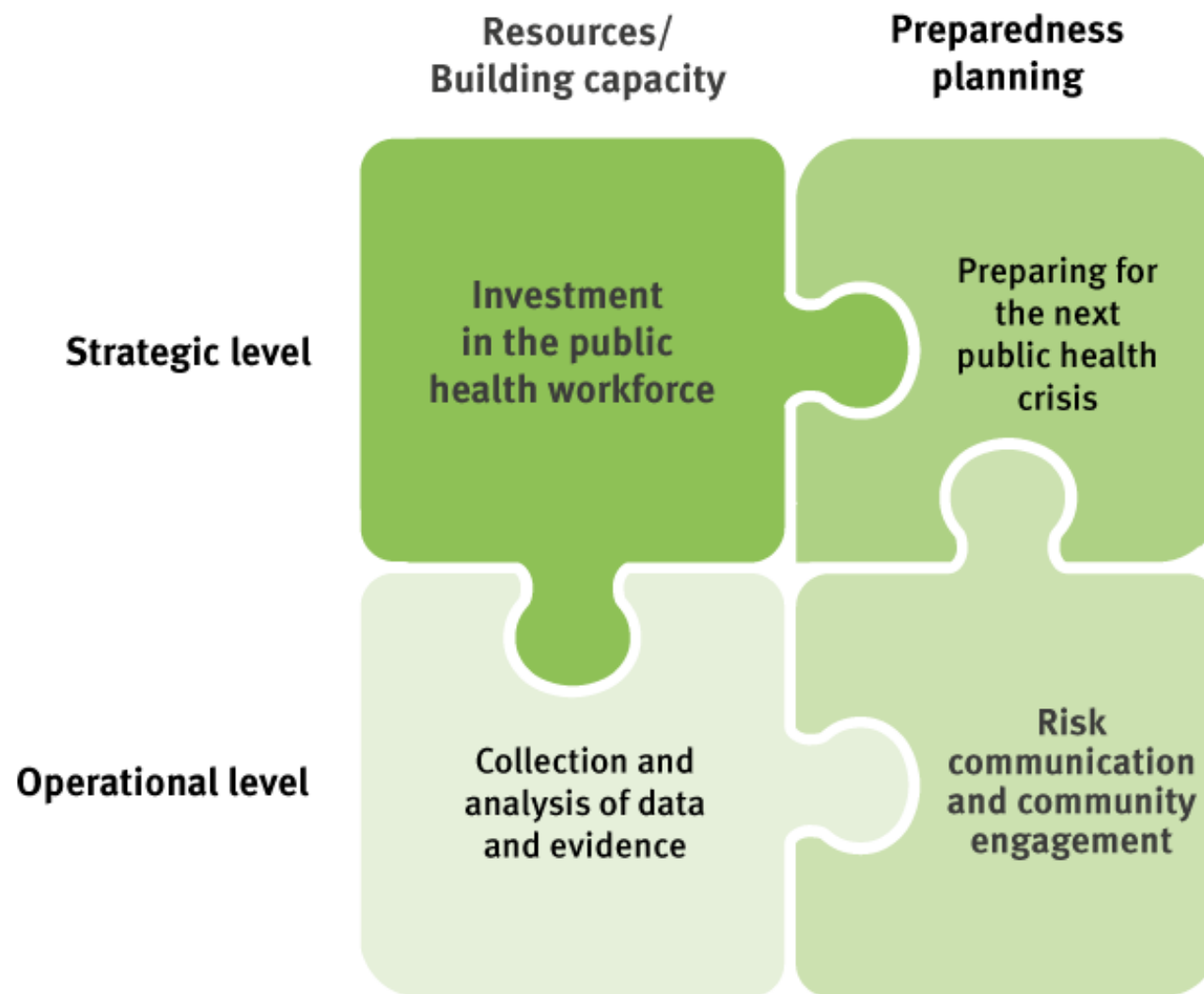


Qualitative long-term scenarios of the COVID-19 pandemic



ECDC lessons from COVID-19 pandemic

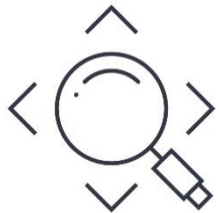
- Four major lesson areas
- Lessons collated from different ECDC activities
- Focused on the public health sector



Some lessons learned from the COVID-19 pandemic

1

Review actions



What worked and didn't
Specificities
Similarities
Ad-hoc decisions
No reinventing the wheel

2

Invest in Public Health systems



PH Workforce
Systems
Capacity building
Emergency responses
Vaccination campaigns

3

Improve Surveillance + Preparedness



On-going basis
Potential of data
Digitalisation and AI
Faster decision-making
Cost-savings

4

Enhance community engagement



Risk communication
General public
Other target groups
Not passive receivers
but key actors

5

Embrace collaboration



Countries, regions.
Organisations
Data + expertise
Building by sharing
Global burden

Thank you!

