

Towards effective and sustainable European surveillance systems for acute respiratory infections: if not now, when?

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Declaration of interests



This presentation is done in total independence from the event organizer.

I have no conflict of interest to declare regarding the current presentation.

Key questions

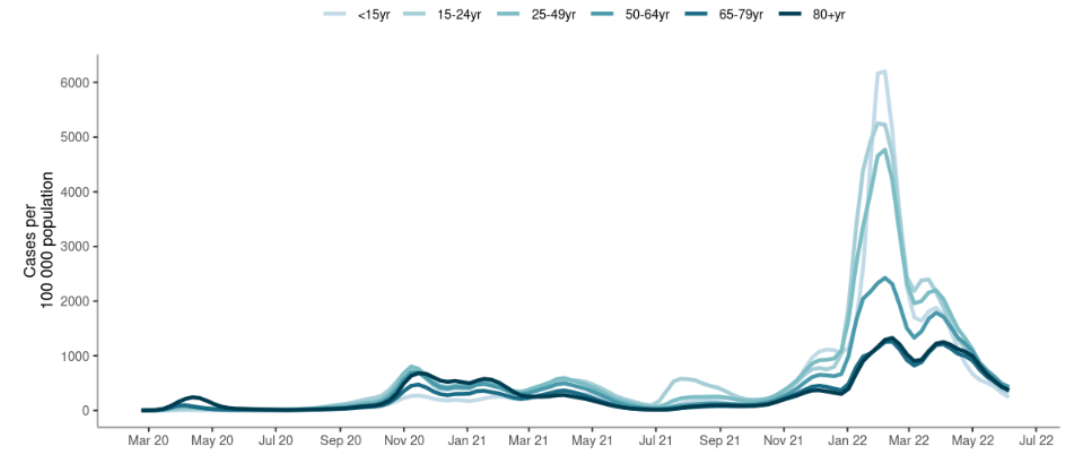
1. What needs to be done for EU/EEA Member States not to face the same challenges of Spring 2020?
2. What are the characteristics of sustainable and effective surveillance systems for COVID-19 and influenza?
3. What health systems infrastructural investments are essential and how much time and resources are needed to put them in place?

Overall pandemic trends

- Initially a lack of diagnostic capacity which meant that the majority of cases identified were hospitalized
- Diagnostic capacity is now high but high number of tests performed is unsustainable in the future
- Countries have started to change testing strategies with many focusing testing on at-risk groups
- But, all pandemic waves started among younger individuals and older age groups have been affected at a later stage

--> We risk not knowing what is happening until it is too late if a variant emerges with considerable immune escape properties

EU/EEA: 14-day age-specific COVID-19 case notification rate



EU/EEA: weekly testing rate



Common objectives for integrated surveillance of respiratory viruses in Europe



1. Monitor the intensity, geographical spread and seasonal activity of influenza, SARS-CoV-2 and other respiratory viruses to inform mitigation measures.
2. Monitor severity, risk factors for severe disease and assess the impact on health care systems of influenza, SARS-CoV-2 and other respiratory viruses to inform mitigation measures.
3. Monitor characteristics of circulating and emerging viruses as well as viral changes of influenza, SARS-CoV-2 and other respiratory viruses to inform treatment, drug and vaccine development.
4. Assess vaccine effectiveness against influenza, SARS-CoV-2 and other respiratory viruses to inform vaccine programmes
5. Describe the burden of disease associated with influenza, SARS-CoV-2 and other respiratory viruses to prioritise interventions

Core principles for integrated disease surveillance

Future disease surveillance should comprise well integrated national systems based on five principles:

	Benefits	Implementation requirement
Population-based	Denominators for mortality rates and disease burden	CRVS or sample registration system
Laboratory confirmation	Cases accurately tracked	Capacity to scale testing and sequence pathogens
Digital data	Systems interconnected and privacy protected	Unique health identifiers, standard metadata, web accessible
Data transparency	Visibility of all national threats by NPHIs and by WHO for transnational threats	Automated reporting to NPHI with a subset to WHO and regional bodies
Adequate financing	Sustainable country-owned systems	Invest US\$1–4 per capita annually

Registry-based/comprehensive

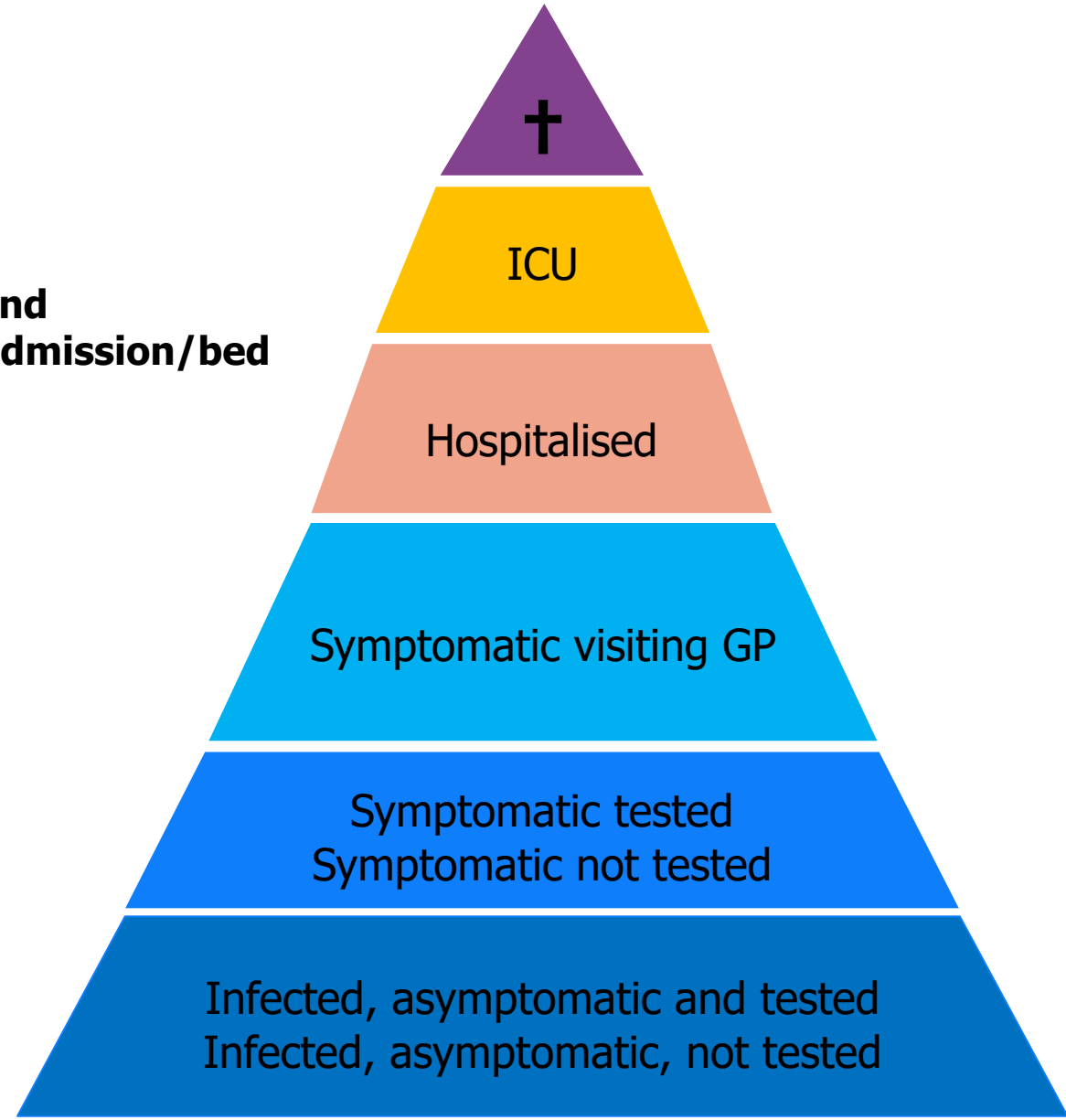
(Excess) mortality monitoring

Secondary care surveillance (SARI) and quantitative/qualitative indicators (admission/bed occupancy)

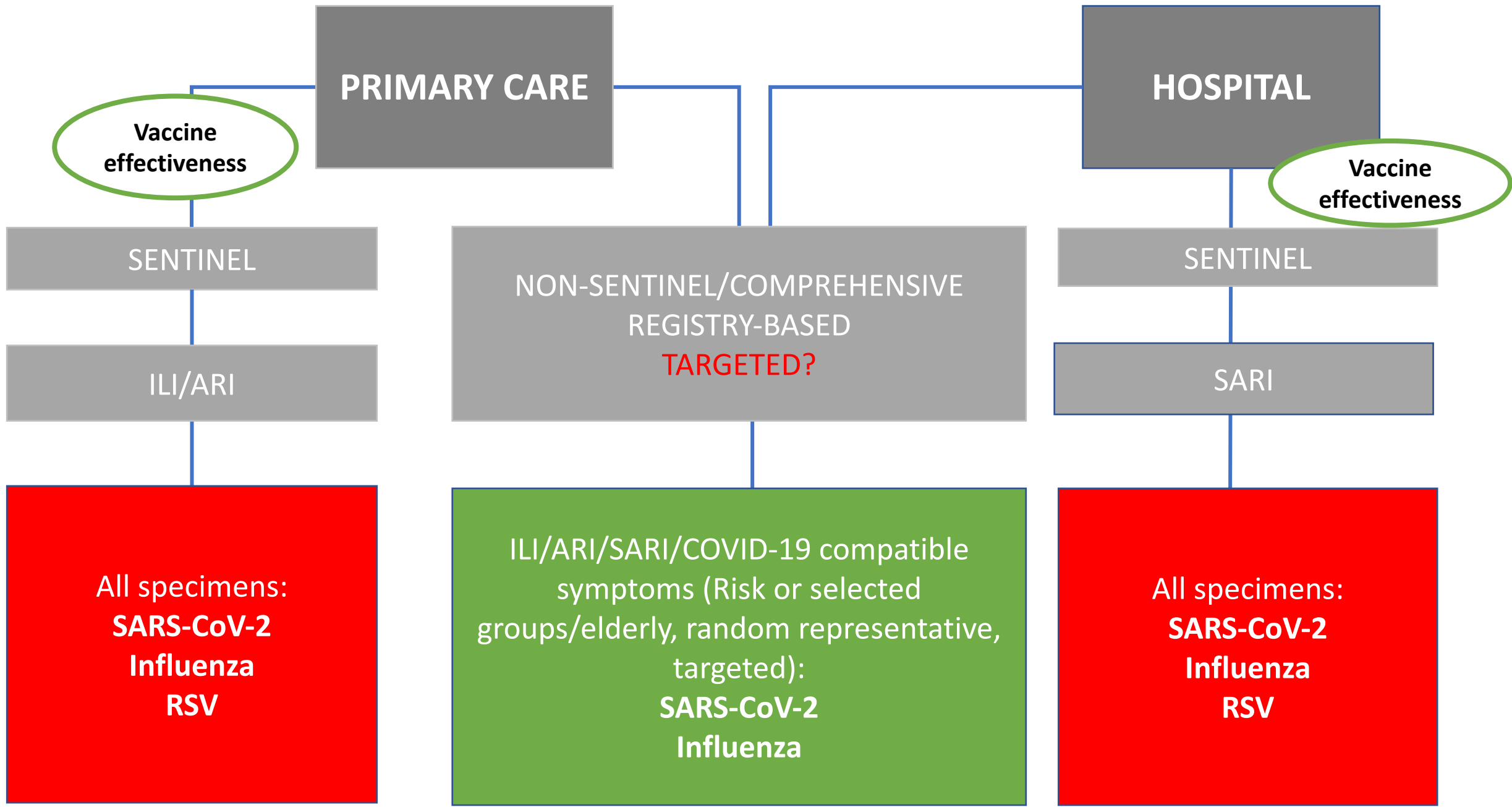
Primary care syndromic

Participatory syndromic

**Wastewater
Seroprevalence
Point-prevalence**



Virus characterisation



Survey to better understand the current situation in Member States



- **Objective of the survey** is to better understand the current surveillance status/strategy, any foreseeable potential barriers to this approach, and country-specific priorities
- **Response** submission by 29 of the 30 EU/EEA countries between March 15 and June 9 2022

Survey results in brief

- MS showed a unanimous agreement on the fact that common objectives should be established for sentinel surveillance of respiratory viruses.
- Overall countries agree with the proposed objectives for an integrated surveillance for respiratory viruses with pandemic potential (>70% agreement on core objectives).
- Most countries are in the process of discussing, planning, or implementing integrated surveillance at a national level.
- Hurdles in the implementation of integrated surveillance are foreseen particularly in availability of necessary infrastructure and resources.
- Changes in testing strategies have been implemented or foresee to be implemented for the majority of the countries for community testing.

Integrated surveillance sentinel systems (n=29)

Primary care (ILI/ARI)

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

Hospital sentinel SARI

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

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

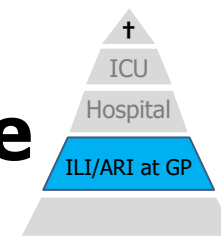
89.7% (26/29) of countries **implemented** or **plan to implement** for all three pathogens

75.9% (22/29) of countries **implemented** or **plan to implement** for all three pathogens

Key messages

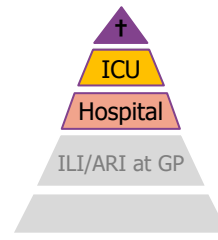
- Upcoming ECDC/WHO guidance on integrated surveillance systems for respiratory infection
- Sentinel systems remain the standard surveillance method for acute respiratory infections.
- Prioritize, expand and develop sentinel systems to make them fit for purpose.
- Continue to collect data from non-sentinel sources
- Continue to sequence all positive tested specimens from sentinel and a representative subset from non-sentinel positive samples
- Integrate genomic monitoring in overall respiratory virus monitoring strategies.
- Maintain year-round primary and secondary care sentinel syndromic, virological monitoring and TESSy reporting.

Sentinel primary care respiratory surveillance



- Shift to more sensitive ARI case definition, record proportion of ILI among ARI cases.
- Increase the number of tested specimens from sentinel sites
- Test sentinel samples for influenza and SARS-CoV-2 viruses, and possibly for other respiratory viruses.
- Perform genetic and/or antigenic characterisation and antiviral resistance testing for all positive sentinel specimens.

Hospital and SARI surveillance



- Countries should continue their efforts to improve SARI surveillance
- All SARI cases should be tested for influenza and SARS-CoV-2 simultaneously.
- Continue collect COVID-19-specific hospital and ICU admissions and occupancy data and expand where possible to influenza (non sentinel systems).

Additional systems

- Registry-based
- Event-based monitoring (EpiPulse, EI)
- Wastewater
- Participatory data (InfluenzaNet, WHO global guidance)
- Qualitative indicators e.g. PISA (transmissibility, seriousness and impact)
- LTCF outbreak and routine
- Seroprevalence
- Special studies (FFX, house-hold, severity, transmission,...)

Priority areas for building surveillance capacity

- Plan for expansion of sentinel sites for syndromic surveillance
 - Digitalisation of all healthcare levels with integrated surveillance processes
 - Automatic use of electronic data
 - Guided specimens collection, testing, characterisation and reporting
 - Resilience during crises
- Plan for high volume, representative, year-round genomic surveillance
 - Supported by ECDC and Commission National Grants
- Plan for investing upcoming resources from EU4Health (2024-27)

Thank you

