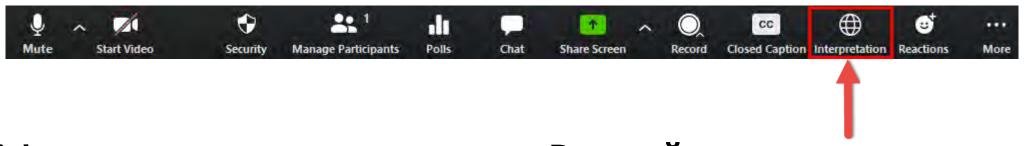
### Choose language - Выберите язык



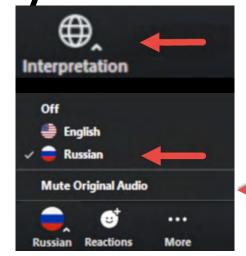




**English** 



Русский



Щелкните на Mute
Original Audio, чтобы
слышать только
русскую речь.





# **Start of season Respiratory Virus Surveillance Network Webinar**

18 September 2025

## Agenda





Item	Presenter
1. Welcome and opening remarks	Marc-Alain Widdowson, WHO/Europe and Edoardo Colzani, ECDC
2. Southern Hemisphere Respiratory season	Patrick Reading, WHO Collaborating Centre for Reference and Research on Influenza, Melbourne, Australia
3. Review of 2025 summer period	Chair: Edoardo Colzani Overview: Nick Bundle, ECDC Malta: Maria-Louise Borg, Health Promotion and Disease Prevention, Department for Health Regulation Scotland: Ross McQueenie, Vaccine Effectiveness and Respiratory Inequalities, Public Health Scotland Spain: Susana Monge, National Centre of Epidemiology, Institute of Health Carlos III (ISCIII)
4. EpiPulse Cases – reporting PISA to RESPIQUAL	Chair: Edoardo Colzani PISA: Piers Mook, WHO/Europe Timeline and Metadata: Luisa Hallmaier-Wacker, ECDC Demo: Claudiu Stancut, ECDC
5. Closing remarks	Edoardo Colzani, ECDC

## Upcoming schedule – 2025/2026 season





### **Webinar**

Topic	Timing
Start-of-season	September 2025 (today)
Mid-season webinar	January- February 2025
Late/End-of-season	April-May 2025
Additional webinars on specific topics (e.g. EPC metadata)	TBD

### **ERVISS**

Publication week for 2025/2026 season	Publication
W52 (Dec 26)	No ERVISS
W01 (Jan 2)	Publication moved to Monday 5 Jan 2026
W14 (Apr 3)	No ERVISS
W18 (May 1)	Publication moved to Monday 4 May 2026
W20 (May 15)	No ERVISS



# Update on the influenza season in the Southern Hemisphere in 2025

### **Prof. Patrick Reading**

Director, WHO Collaborating Centre for Reference and Research on Influenza At the Peter Doherty Institute for Infection and Immunity

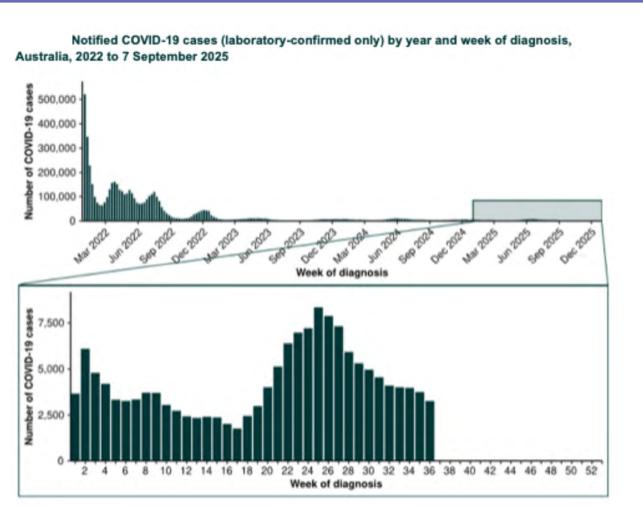
patrick.reading@influenzacentre.org







### SARS-CoV-2 in Australia

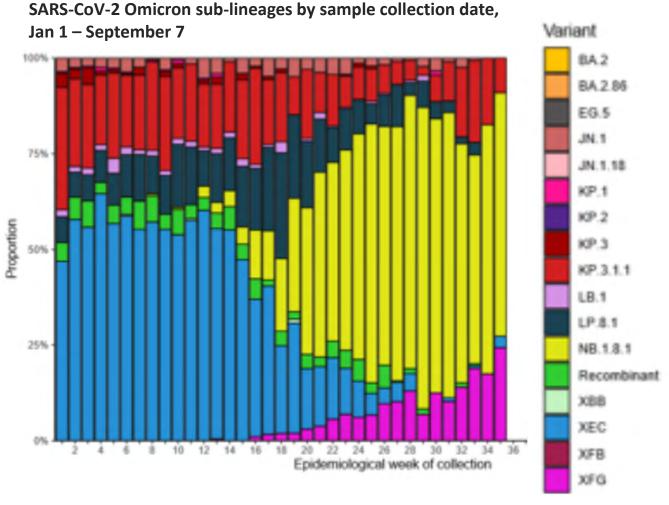


National Notifiable Diseases Surveillance System (NNDSS)

- VIDRL at Doherty Institute is a reference laboratory in the WHO Coronavirus Network
- •COVID-19 vaccines are free to all people under the National COVID-19 Vaccine Program

• Less adults have received COVID-19 vaccines in the last 12 months (11.1% compared to 13.9% in prior 12months), with decreased vaccine coverage across all age groups

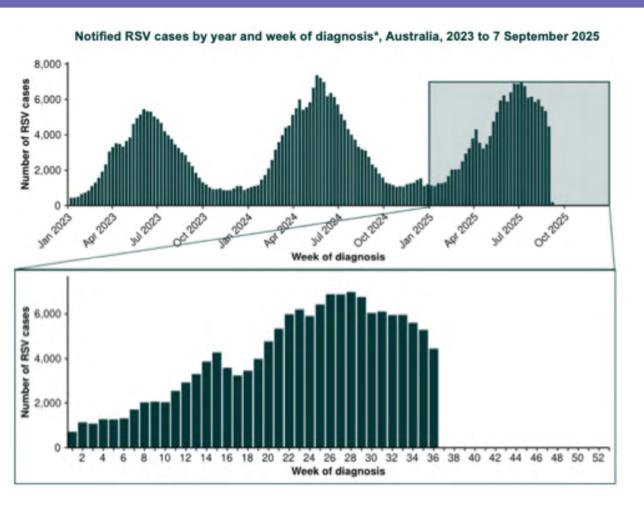
### **SARS-CoV-2** – variants circulating in Australia?



• **NB.1.8.1** is <u>dominant sub-lineage</u> in Australia in last month, >55% of all sequences

Source: AusTrakka, NNDSS

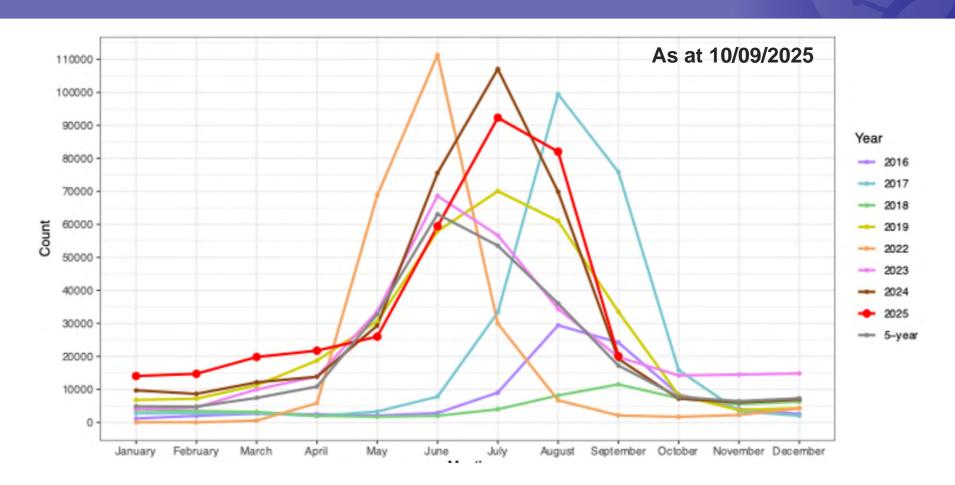
### What about RSV in Australia?



- WHO CC Melbourne is a WHO reference laboratory for RSV
- In Australia, the maternal RSV vaccine (Abrysvo®) is free under the National Immunisation Program (recommended for women at 28–36 weeks)
- Recommended for other groups

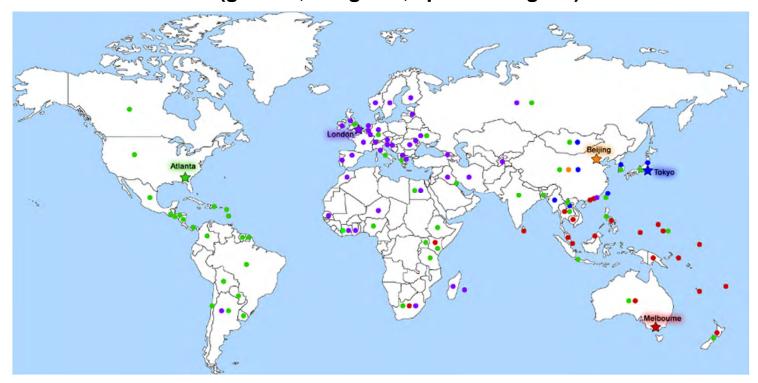
**Source: NNDSS** 

### **Influenza notifications in Australia**



### Receipt and analysis of influenza samples at WHO CC, Melbourne

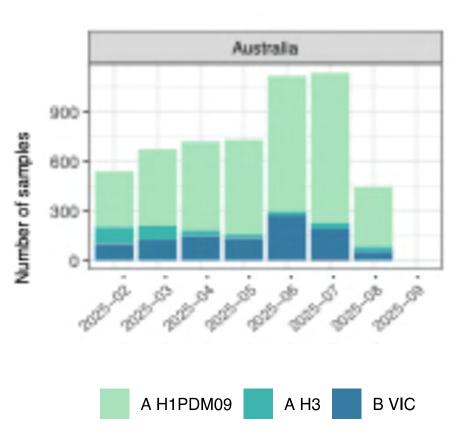
## Receipt of samples by WHO CCs for detailed analysis (genetic, antigenic, epidemiological)



Sample receipt WHO CC Melbourne Feb 1 – Sept 16, 2025

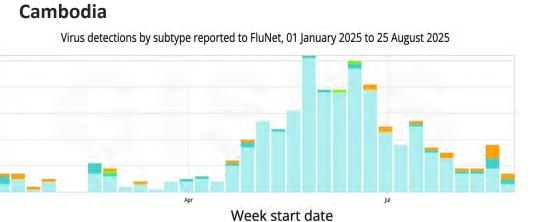
Country	No of Samples Received
Australia	7585
Bhutan	37
Brunei	60
Cambodia	45
Cook Islands	2
Fiji	21
Nepal	36
New Caledonia	73
New Zealand	144
Papua New Guinea	42
Singapore	74
Solomon Islands	6
South Africa	26
Sri Lanka	54
Thailand	21
Vanuatu	2
Total	8,228

### What viruses have been circulating in Australia in 2025?



- So far this year, most viruses are A/H1N1pdm or influenza B viruses
- In depth characterisation at WHO CCRRI indicates that the majority of recently circulating viruses are reasonably well matched to the current influenza vaccine
- The A/H3N2 component of the seasonal influenza vaccine was updated for the Southern Hemisphere vaccine (SH) at the last WHO Recommendation Meeting for the SH vaccine

### What about other countries in Asia or the Southern hemisphere?



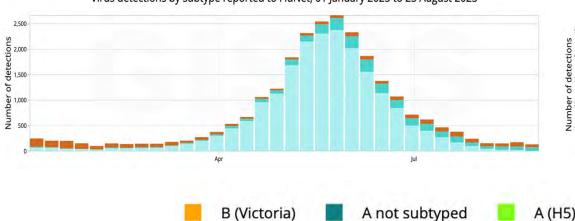
### **Bhutan**

Virus detections by subtype reported to FluNet, 01 January 2025 to 25 August 2025



#### **Brazil**

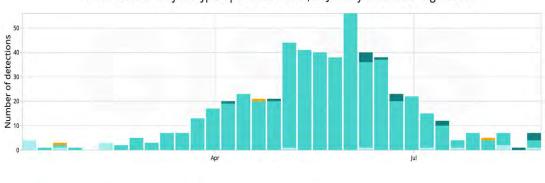
Virus detections by subtype reported to FluNet, 01 January 2025 to 25 August 2025



### **South Africa**

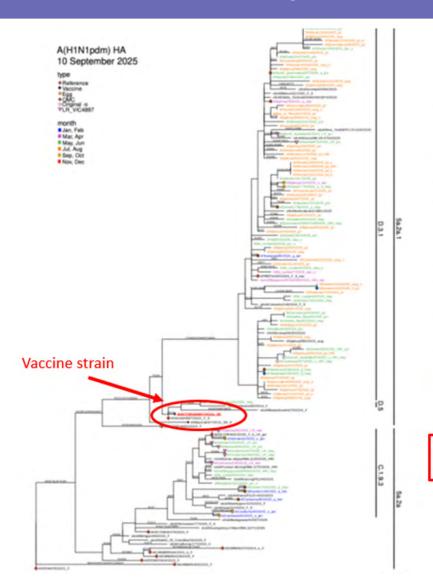
A (H3)

Virus detections by subtype reported to FluNet, 01 January 2025 to 25 August 2025



A (H1N1)pdm09

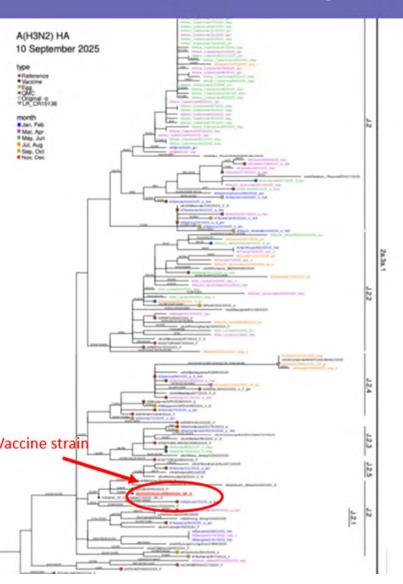
### A quick look at recent A/H1N1pdm viruses



Antisera against	<4-fold	4-fold	>4-fold	Total
A/Canberra/4/2024 (C.1.8) cell	2174 (94%)	96 (4%)	43 (2%)	2313
A/Canberra/651/2024 (C.1.9.3) QMC	265 (74%)	78 (22%)	16 (4%)	359
A/Darwin/1015/2025 (D.3.1) cell	326 (91%)	32 (9%)	1 (0%)	359
A/Darwin/328/2024 (C.1.8) cell	1901 (86%)	226 (10%)	85 (4%)	2212
A/Darwin/370/2024 (C.1.8) cell	1865 (81%)	388 (17%)	60 (3%)	2313
A/Darwin/463/2023 (C.1.7.1) cell	2307 (100%)	4 (0%)	2 (0%)	2313
A/Perth/456/2025 (D.3.1) cell	1067 (93%)	68 (6%)	16 (1%)	1151
A/Singapore/SAR3644/2024 (C.1.9.3) egg	258 (72%)	60 (17%)	41 (11%)	359
A/Sydney/124/2025 (D.3.1) egg	256 (98%)	6 (2%)	0	262
A/Sydney/5/2021 (C.1) cell	323 (98%)	3 (1%)	2 (1%)	328
A/Sydney/604/2023 (C.1) cell	2271 (98%)	27 (1%)	15 (1%)	2313
A/Victoria/376/2024 (C.1.9) cell	2641 (99%)	21 (1%)	10 (0%)	2672
A/Victoria/42/2025 (C.1.9.3+155E) cell	1383 (56%)	843 (34%)	265 (11%)	2491
A/Victoria/42/2025 (C.1.9.3+155E) egg	121 (18%)	312 (46%)	242 (36%)	675
A/Victoria/4897/2022 (D) cell	2642 (99%)	19 (1%)	11 (0%)	2672
A/Victoria/4897/2022 (D) egg	2557 (96%)	94 (4%)	21 (1%)	2672
A/Victoria/650/2023 (C.1) cell	1553 (95%)	67 (4%)	7 (0%)	1627
Pooled human sera (2024 cell - A/Victoria/4897/2022)	852 (100%)	0	0	852
Pooled human sera (2024 egg - A/Victoria/4897/2022)	1620 (100%)	7 (0%)	0	1627
Pooled human sera (2025 cell - A/Victoria/4897/2022)	1039 (99%)	7 (1%)	0	1046
Pooled human sera (2025 egg - A/Victoria/4897/2022)	1016 (97%)	27 (3%)	3 (0%)	1046

•A/Victoria/4897/2022-like virus, clade 5a.2a.1, subclade D.

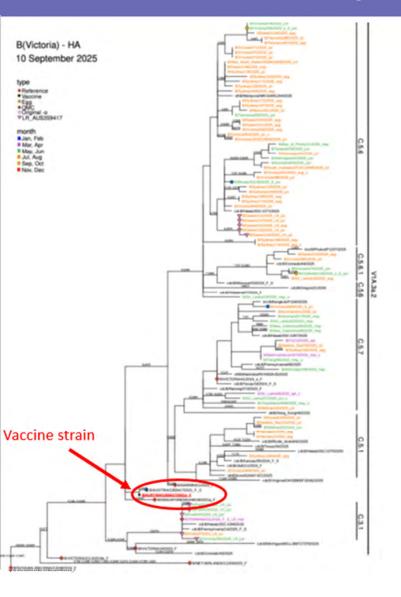
### A quick look at recent A/H3N2 viruses



Antisera against	<4-fold	4-fold	>4-fold	Tota
A/Canberra/327/2023 (J.1.1) cell	242 (63%)	95 (25%)	45 (12%)	382
A/Croatia/10136RV/2023 (J.2) cell	339 (89%)	31 (8%)	12 (3%)	382
A/Croatia/10136RV/2023 (J.2) egg	47 (12%)	127 (33%)	208 (54%)	382
A/Idaho/69/2023 (J.2+189R) cell	2 (25%)	6 (75%)	0	8
A/Nepal/N042/2025 (J.2.4) egg	40 (15%)	22 (8%)	209 (77%)	271
A/Netherlands/10685/2024 (J.2.3) cell	2 (1%)	11 (4%)	289 (96%)	302
A/Perth/722/2024 (J.2.2) cell	211 (91%)	17 (7%)	4 (2%)	232
A/Perth/815/2024 (J.2+189R) cell	323 (86%)	49 (13%)	2 (1%)	374
A/Perth/836/2024 (J.2.2) QMC	314 (89%)	26 (7%)	11 (3%)	351
A/Perth/836/2024 (J.2.2) cell	31 (100%)	0	0	31
A/Sydney/1359/2024 (J.2.4) cell	49 (13%)	29 (8%)	296 (79%)	374
A/Sydney/856/2023 (J.1) cell	10 (12%)	54 (68%)	16 (20%)	80
A/Thailand/8/2022 (J) cell	23 (10%)	124 (53%)	85 (37%)	232
A/Thailand/8/2022 (J) egg	1 (1%)	8 (10%)	71 (89%)	80
A/Victoria/488/2024 (J.2) cell	2 (1%)	7 (2%)	342 (97%)	351
A/Victoria/488/2024 (J.2) egg	1 (3%)	1 (3%)	29 (94%)	31
A/Victoria/979/2024 (J.2.2) QMC	30 (97%)	0	1 (3%)	31
A/Victoria/979/2024 (J.2.2) cell	300 (85%)	10 (3%)	41 (12%)	351
Pooled human sera (2024 cell - A/Thailand/8/2022)	191 (82%)	40 (17%)	1 (0%)	232
Pooled human sera (2024 egg - A/Thailand/8/2022)	59 (74%)	20 (25%)	1 (1%)	80
Pooled human sera (2025 cell - A/Croatia/10136RV/2023)	90 (60%)	34 (23%)	27 (18%)	151
Pooled human sera (2025 egg - A/Croatia/10136RV/2023)	74 (49%)	52 (34%)	25 (17%)	151

•A/Croatia/10136RV/2023-like virus, clade 2a.3a.1, subclade J.2.

### A quick look at B/Victoria viruses



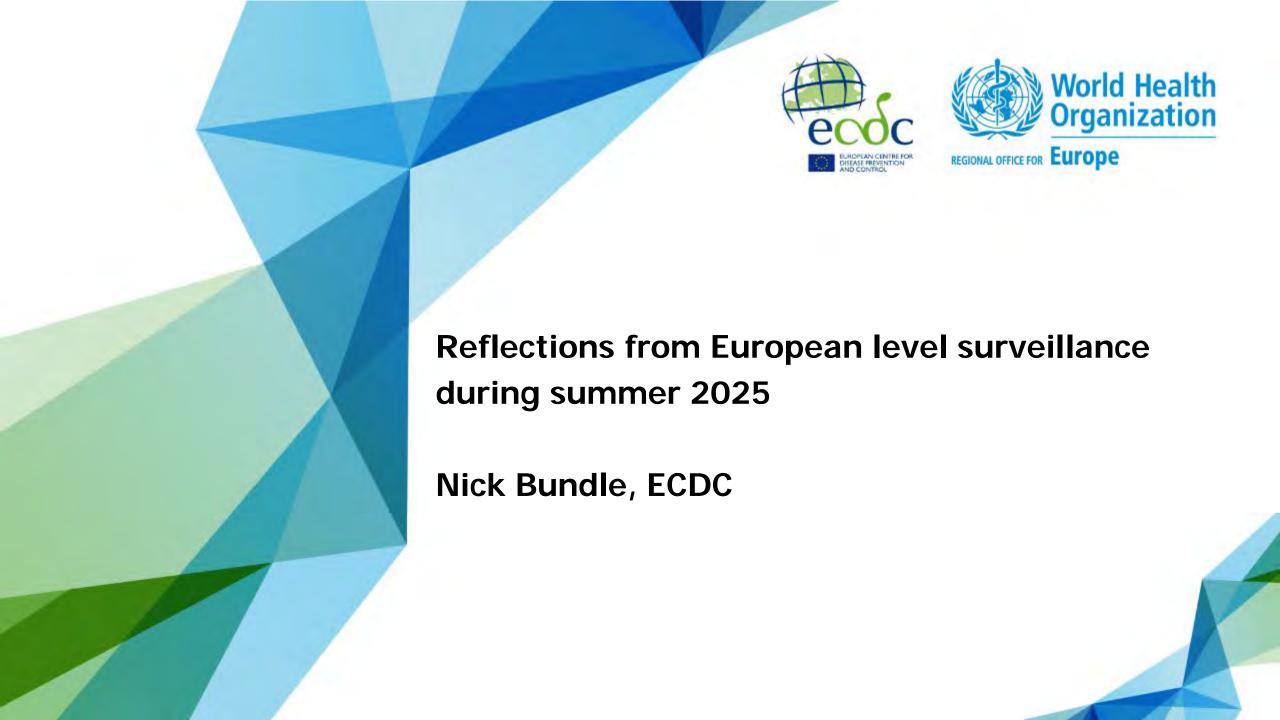
Antisera against	<4-fold	4-fold	>4-fold	Total
B/Austria/1359417/2021 (C) cell	640 (78%)	167 (20%)	13 (2%)	820
B/Austria/1359417/2021 (C) egg	788 (96%)	26 (3%)	6 (1%)	820
B/Darwin/58/2019 (Y3) cell	54 (7%)	252 (31%)	514 (63%)	820
B/Netherlands/11263/2022 (A.3.3) cell	331 (40%)	368 (45%)	121 (15%)	820
B/Sichuan-Jingyang/12048/2019 (A.3.1.1) egg	295 (36%)	281 (34%)	244 (30%)	820
B/Singapore/WUH4618/2021 (C) QMC	156 (99%)	0	1 (1%)	157
B/Singapore/WUH4618/2021 (C) egg	467 (63%)	259 (35%)	19 (3%)	745
B/Tasmania/31/2025 (C.3.1) cell	48 (16%)	129 (44%)	119 (40%)	296
B/Victoria/16/2023 (C.3) cell	803 (98%)	11 (1%)	6 (1%)	820
B/Victoria/2113/2019 (A.3.1) cell	604 (74%)	100 (12%)	116 (14%)	820
B/Victoria/41/2024 (C.5.7) egg	796 (97%)	19 (2%)	5 (1%)	820
Pooled human sera (2024 cell - B/Austria/1359417/2021)	444 (93%)	27 (6%)	7 (1%)	478
Pooled human sera (2024 egg - B/Austria/1359417/2021)	334 (96%)	11 (3%)	4(1%)	349
Pooled human sera (2025 cell - B/Austria/1359417/2021)	343 (99%)	4 (1%)	0	347
Pooled human sera (2025 egg - B/Austria/1359417/2021)	324 (93%)	19 (5%)	4 (1%)	347

•B/Austria/1359417/2021-like virus, clade V1A.3a.2, subclade C

### **Summary**

- In Australia, we have moved from winter to spring and levels of influenza, SARS-CoV-2 and RSV are starting to decline.
- The Australian influenza season saw predominantly A/H1N1pdm and lower levels of B/Victoria viruses. A/H3N2 was detected at low levels throughout the season.
- In general, A/H1N1pdm circulation was high in the Southern Hemisphere, noting that A/H3N2 predominated in South Africa in the winter months.
- Data from our WHO CC indicate that **recently circulating viruses are generally well covered** by current components of influenza vaccines for the Southern Hemisphere.
- The **WHO Consultation** on the Composition of Influenza Vaccines for the Southern Hemisphere in 2026 will be held **in Japan next week.**





## Reflections from European level summer surveillance 2025



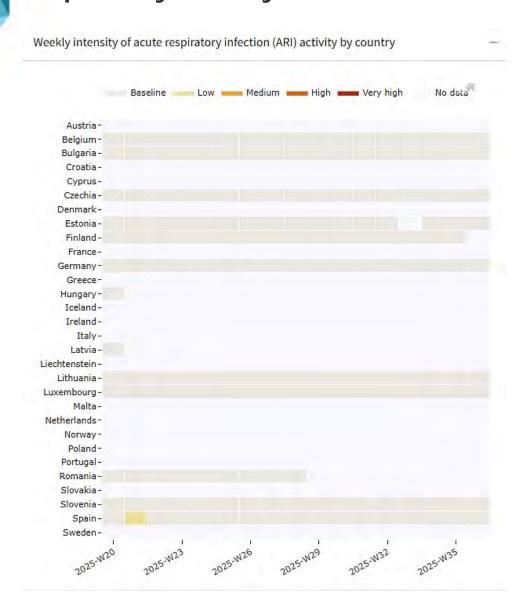


- 1. How best to assess the situation during periods of low respiratory activity?
- 2. What has been the impact of COVID-19 in secondary care over the summer?
- 3. Seasonality and thinking ahead

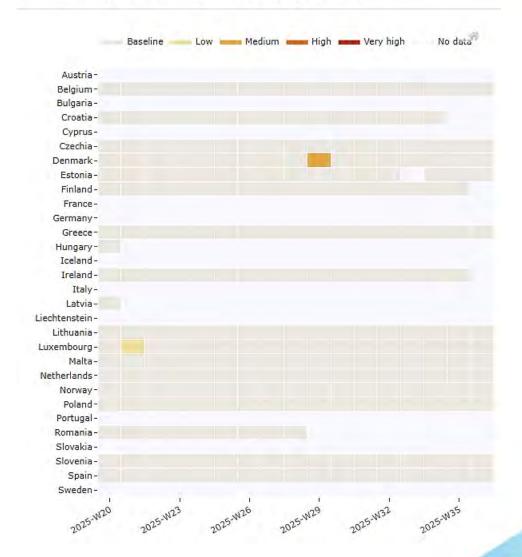
## 1. How best to assess the situation during periods of low respiratory activity?







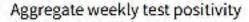


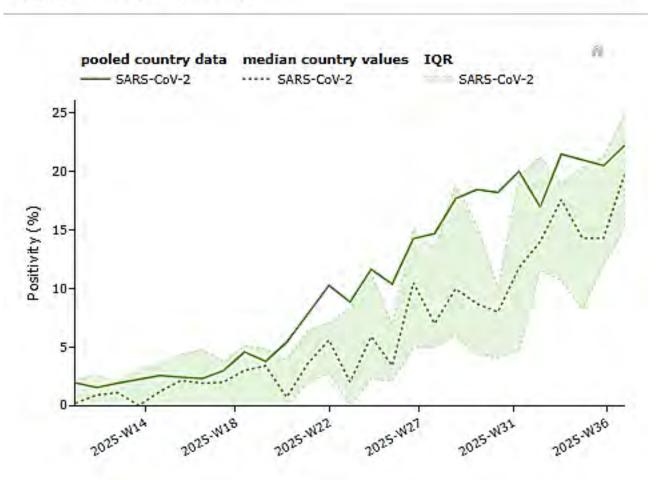


## 1. How best to assess the situation during periods of low respiratory activity?







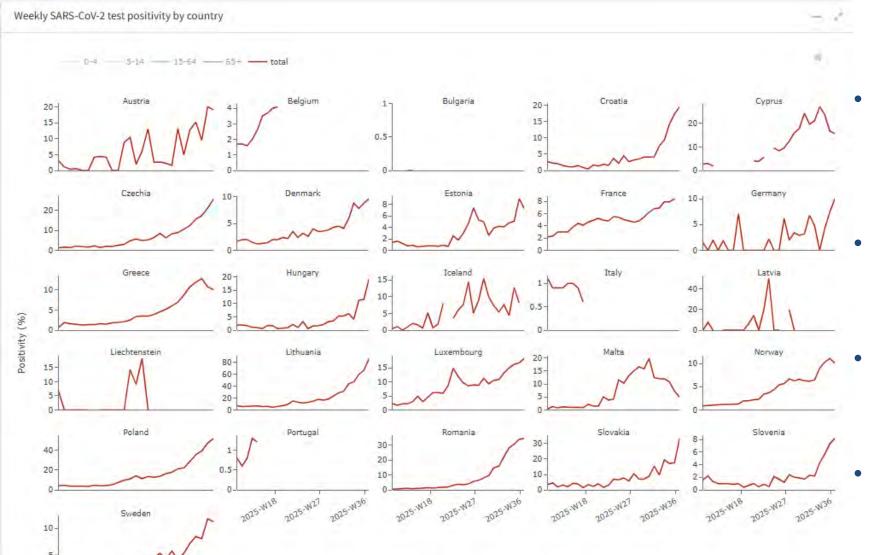


- Rising primary care test positivity was hard to interpret while ARI/ILI was baseline in all countries
- Most country level data initially very noisy and based on v low counts of detections
- Single large country driving up the pooled line above the 75<sup>th</sup> centile of country values

## 1. How best to assess the situation during periods of low respiratory activity?







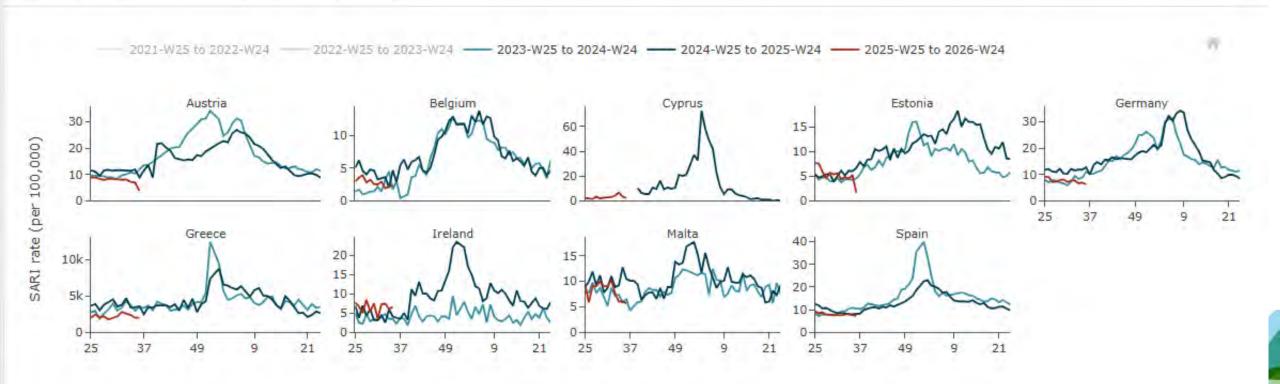
- Non-sentinel lab-based surveillance data was extremely useful in early summer period
- Smoother trends that were detected much earlier than ILI/ARI virological data
- Still unclear why the syndromic systems hadn't detected anything
- What would be the impact on severe disease?

## 2. What has been the impact of COVID-19 in secondary care over the summer?





### Historical comparison of weekly SARI rates by country



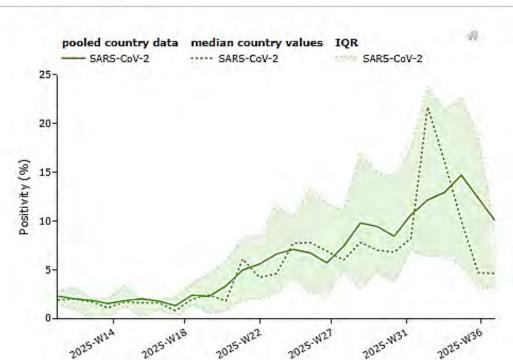
## 2. What has been the impact of COVID-19 in secondary care over the summer?



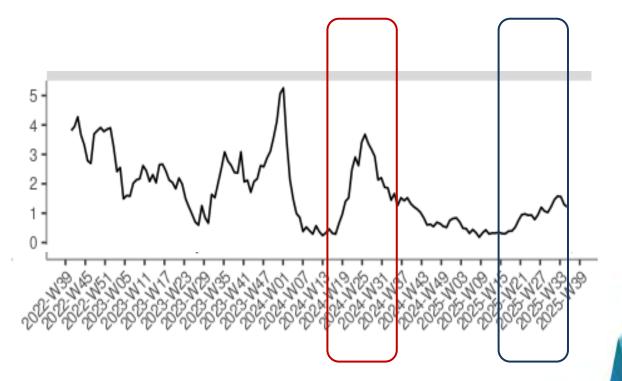


### SARI virological surveillance

Aggregate weekly test positivity



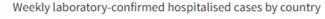
Used proxy SARI rates internally as part of our weekly assessment

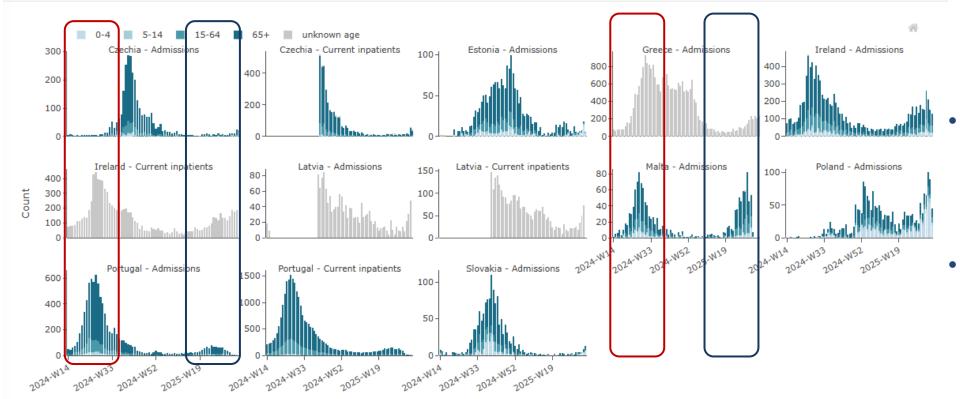


## 2. What has been the impact of COVID-19 in secondary care over the summer?







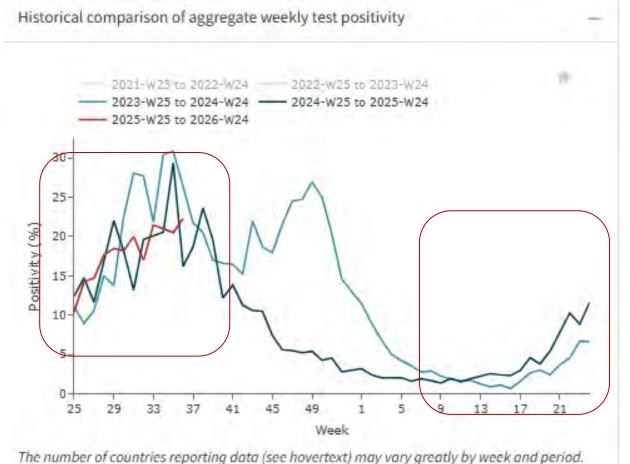


Proxy rates were lower than last summer

- Hospital lab-based data also suggested lower in many countries
- But....what will come next?

### 3. Seasonality and thinking ahead

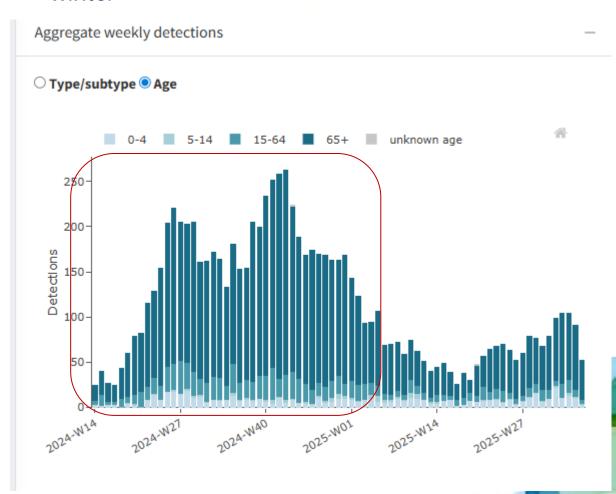
Timing of 2025 summer COVID-19 has closely matched that of summer 2024







In 2024 the impact in SARI continued long into the winter

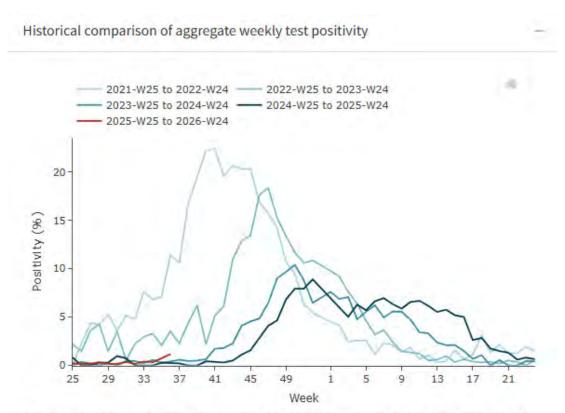


### 3. Seasonality and thinking ahead



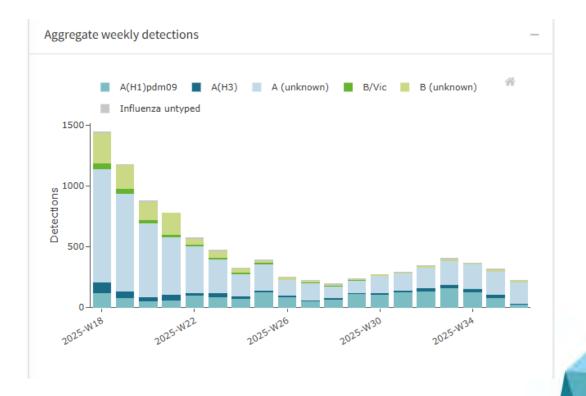


RSV - another summer without early activity.
 More evidence of return to normal seasonality?



The number of countries reporting data (see hovertext) may vary greatly by week and period.

Influenza - limited summer detections overall with some exceptions



<u>Eurosurveillance | An interseasonal outbreak of influenza</u> <u>A(H1N1)pdm09 related to a music festival, Denmark, August</u> 2025

### COVID-19 in Scotland 2024-25

Ross McQueenie – Acting lead healthcare scientist in vaccine effectiveness and respiratory inequalities

18 September 2025



### Wastewater Surveillance



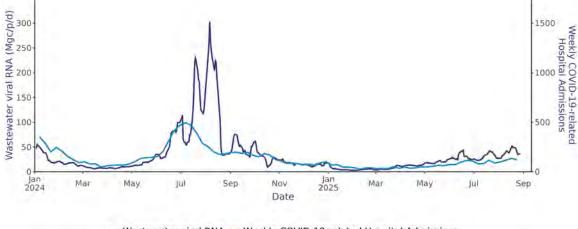


## Wastewater-based surveillance

### Situation up to 28<sup>th</sup> August 2025:

- During the one-week period of 22 August 2025 to 28 August 2025 levels ranged between 34 and 49 Mgc/p/d, while in the previous week (15 August 2025 to 21 August 2025) levels were 49 to 52 Mgc/p/d.
- COVID-19 RNA wastewater levels increased gradually over summer 2025, though remained at lower levels than in the previous summer.
- RNA levels in wastewater continue to circulate at reduced levels. This remains consistent with other PHS indicators, including hospital admissions.

National running average trends in wastewater RNA up to 28<sup>th</sup> August 2025. For this graph, a wastewater RNA average using the last 7 days of data is computed at every sampling date. Prevalence estimates and 95% confidence intervals from the ONS Coronavirus Infection Survey is overlaid, with a scale chosen to approximately match post-July 2022 trends in WW viral RNA level.



Wastewater viral RNA — Weekly COVID-19-related Hospital Admissions

Source: These analyses of the levels of SARS-CoV-2 detected in wastewater in Scotland are produced by PHS Wastewater Analysis Group for the Wastewater Monitoring Programme in Scotland which is operated by Scotlish Government in partnership with Scotlish Water and NHS Lothian.

Since 01 August 2024, COVID-19 testing of water samples has transferred from Scottish Environment Protection Agency (SEPA) to NHS Lothian

Please refer to https://gublichealthscotland.scot/media/27952/metadata-and-methodology-datafile.xisx.document for more information on methodologies and definition

Quality control (QC) samples (with a known quantity of virus) are PCR-tested alongside surveillance samples to assess changes in RNA recovery efficiency. When comparing estimates of RNA levels across surrounding sampling dates, this can indicate "batch" effects, whereby unusually high RNA recovery rates most likely explain the observed rise.

See Public Health Scotland COVID-19 Statistical Report for further details: https://publichealthscotland.scot/our-areas-of-work/covid-19/covid-19-data-and-intelligence/covid-19-weekly-report-for-scotland/.

## Laboratory Surveillance

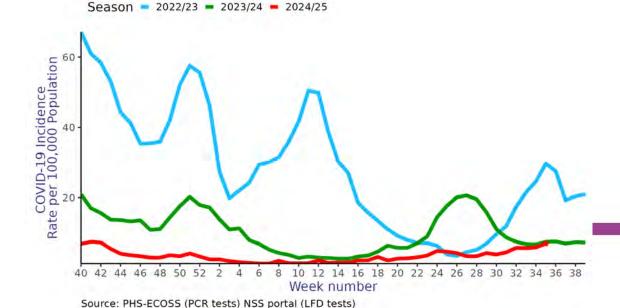


### **COVID-19 PCR/LFD cases**

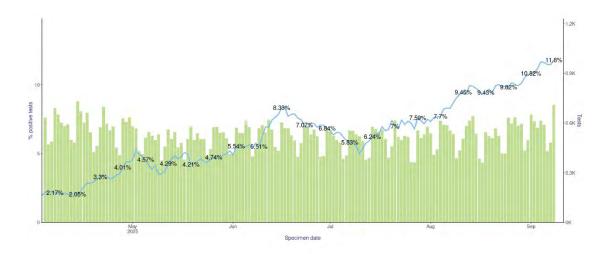


- Among PCR tests, PCR positivity (7-day average) increased in the most recent week (from 9.89% to 10.69%, 414/3873).
- Summer 2025 COVID-19 incidence showed a small peak around week 25 – consistent with PCR test positivity around the same time. Incidence was lower than in previous seasons.

COVID-19 incidence rate (per 100,000 population), seasons 2022/2023 to 2024/2025



Daily number of PCR testing and proportion PCR positive



Note: As of 4<sup>th</sup> June 2024, asymptomatic testing of those being discharged from hospital into the residential care setting has ceased.



## Secondary Care Surveillance



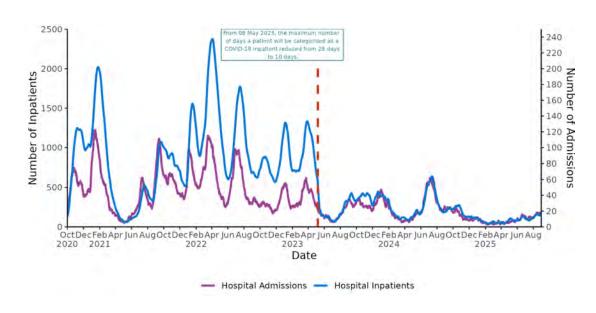
## **COVID-19 Hospital Admissions and Inpatients**

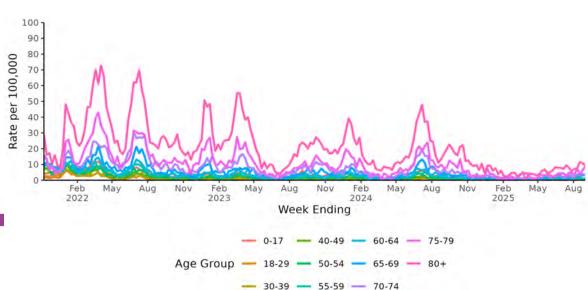


- The number of hospital admissions (RAPID)
  have decreased, and inpatient numbers have
  increased (7-day average of 144 inpatients on
  the 24<sup>th</sup> August compared with 177 inpatients on
  the 31<sup>st</sup> August).
- Admission rates have increased in the under 18, 40-49, 50-54, 55-59, 60-64 and 75-79 age groups and decreased or remained consistent in all other age groups.
- COVID-19 hospital admissions for all age ranges remained low over summer 2025 but, as in other indicators, appear to be increasing in recent weeks.

Data Sources: Hospital Admissions – RAPID, Hospital Inpatients – PHS COVID-19 admission definition: PCR confirmed episode of COVID-19 infection that is community acquired (up to 14 days before or within 2 days of admission). This includes emergency admissions (except for patient injury codes) and medical

This includes emergency admissions (except for patient injury codes) and medical and paediatric specialities only. Inpatients were counted for 28 days after testing positive prior to 08 May 2023 and then up to 10 days after testing positive following 08 May 2023 (shown as red line in the admissions and inpatients chart)

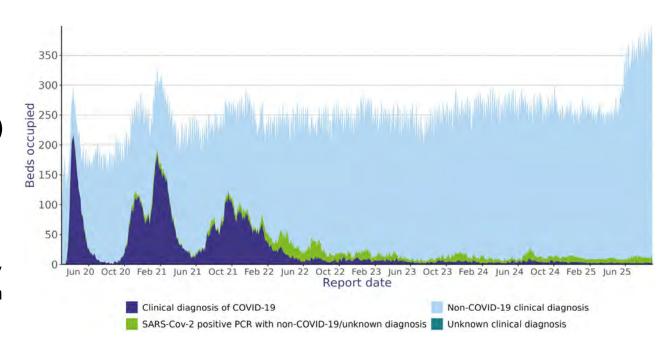


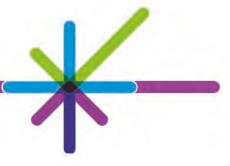


### **COVID-19 ICU inpatients**



- Numbers of ICU inpatients with a PCRconfirmed SARS-CoV-2 infection have decreased overall since autumn 2021.
- There has been an increase (from 59 to 64) in the total number of ICU inpatients with a PCR-confirmed SARS-CoV-2 infection in the most recent week (w/c 18<sup>th</sup> August and w/c 25<sup>th</sup> August).
- The total number of ICU inpatients clinically diagnosed with COVID-19 between w/c 11<sup>th</sup> August and w/c 18<sup>th</sup> August remained consistent (19 to 19) and increased (19 to 20) between w/c 18<sup>th</sup> August and w/c 25<sup>th</sup> August.
- No noticeable increase in ICU inpatients over summer 2025.



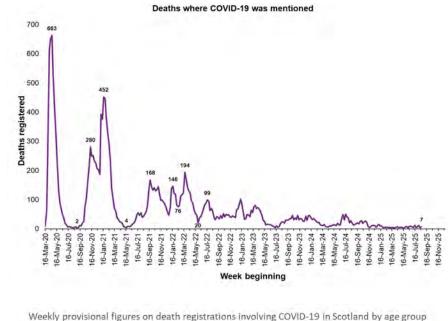


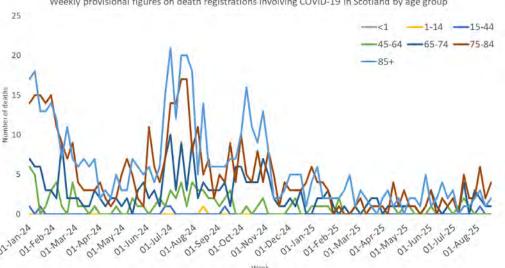
## Mortality



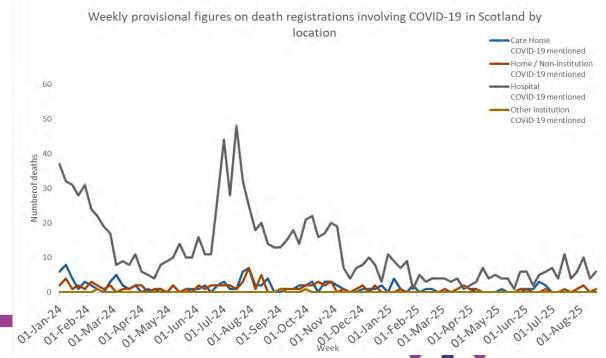
#### NRS COVID-19 deaths







- There were 7 deaths where COVID-19 was listed on the death certificate in the last week (deaths registered between the 18<sup>th</sup> August and 24<sup>th</sup> August), this is 3 more than the previous week.
- Deaths have increased in the 75-84 and 85+ age groups and remained consistent in all other age groups in the most recent week.
- Most COVID-19 related deaths continue to occur in hospital. There were no care home deaths in the most recent week.
- COVID-19 mortality remained at low levels for all age groups over summer 2025.



Source: https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/vital-events/general-publications/weekly-and-monthly-data-on-births-and-deaths/deaths-involving-coronavirus-covid-19-in-scotland Note: Updated NRS death data are published on Thursday morning.

## Vaccine Effectiveness

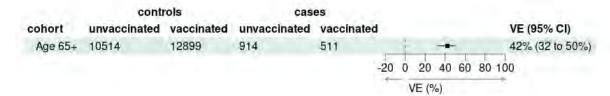


# COVID-19 Vaccine Effectiveness against Covid 19 hospitalisation among adults aged 65 years and above in Scotland, 2024-2025 Winter Season

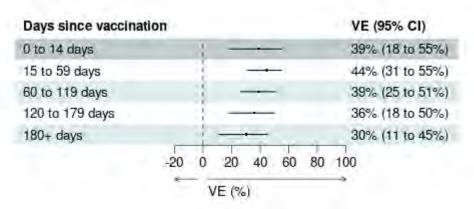


- The 2024–2025 autumn/winter COVID-19 vaccine offered moderate protection against hospitalisation in adults aged 65 and over, with some evidence of waning of protection since time of vaccination after 180 days.
- Over the winter period adjusted VE against COVID-19 hospitalisation was 42% (95%: 32-50%) for those aged 65 and above.
- Vaccine effectiveness peaked at 15 to 59 days after vaccination at 44% (95%: 31-55%), before decreasing to 30% (95%: 11-45%), after more than 180 days.

Vaccine effectiveness (VE) against COVID-19 hospitalisation among those aged 65 years and above, with 95% Confidence Intervals



Waning of vaccine effectiveness against COVID-19 hospitalisation in those aged 65 and above with 95% confidence intervals





## Vaccine effectiveness of the maternal RSV vaccine against severe disease in infants in Scotland



- Maternal RSV vaccine effectiveness was 82.9% (95% CI: 75.9-87.8%) against RSV-associated lower respiratory tract infection (LRTI) hospitalisation for infants ≤90 when mothers were vaccinated at least 14 days before their birth.
- 228 (95%CI: 197-252) fewer RSV-related LRTI hospitalisations in infants aged ≤90 days between August 2024 and March 2025.
- Vaccine effectiveness high among preterm infants (<37 weeks: 89.2%, 95%CI: 52.2-97.6) who are most vulnerable to severe disease.
- Women who were vaccinated and gave birth within 14 days were not able to offer protection to their infants against hospitalisation (29.6%, 95%CI: -19.6–58.6).

## Maternal RSV Vaccine Effectiveness (%) against RSV-related LRTI hospitalisation in infants aged ≤90 days

Variable	Cases	Controls		Vaccine Effectiveness % (95% CI)	p-value
Unvaccinated	290	1767			
Vaccinated	42	1503	-	82.9 (75.9, 87.8)	< 0.001
<37 weeks gestation	3	128		89.2 (52.2, 97.6)	0.0034
>=37 weeks gestation	39	1375	-	82.3 (74.8, 87.6)	< 0.001
Sub-optimal immunisation	18	201		29.6 (-19.6, 58.6)	0.19
			0 25 50 75 100 Vaccine Effectiveness (%)		



#### **Conclusions**

- ECOSS surveillance of COVID-19 shows low incidence in the year to date, with no large peaks observed unlike previous seasons. However, infections are likely to increase towards the end of the year, and case positivity is rising.
- Hospital, inpatient and ICU admissions remain at low levels for all age groups. For ICU, levels remained low both when analysing positivity or reason for admission
- COVID-19 related mortality remains low. Most deaths are ed in hospitals, and no deaths were ed in care homes
- •The COVID-19 vaccine offers effective protection against COVID-19 related hospitalisation in those aged over 65 years old. Protection peaked between 15 and 59 days, and remained up to 180 days.
- We have also been able to show, for the first time, that the RSV maternal vaccine is highly effective in preventing RSV related hospitalisation in those aged up to 3 months, and in premature babies. There was no protection against hospitalisation observed in those who gave birth within 14 days of receiving the RSV vaccine.













# Use of pathogen-specific *proxy* indicators in SiVIRA surveillance (Spain)

Susana Monge

National Centre of Epidemiology

Institute of Health Carlos III (ISCIII)

smonge@isciii.es

## SiVIRA design in a nutshell



#### **Syndromic surveillance**

- All ARI/SARI cases
- Based on extraction of diagnotic codes (ICPC, ICD)

Weeky ARI/SARI incidence rate



#### Systematic surveillance

- Oportunistic but representative sampling of all syndromic cases:
  - ✓ First 2-5 attending PC each week
  - ✓ Admitted to hospital on pre-defined weekdays
- Triple PCR
- Virological characterisation if positive
- Additional information (clinical, vaccination)

#### Proportion positivity of ARI/SARI cases to:

- ✓ influenza
- ✓ SARS-CoV-2
- ✓ RSV

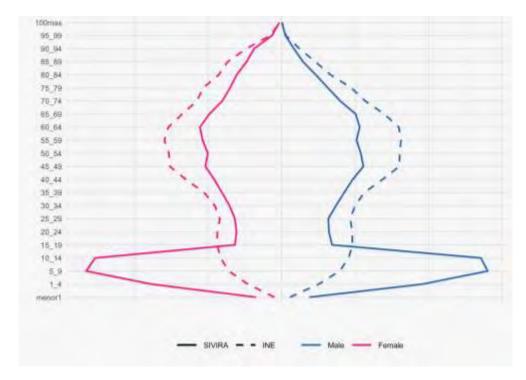
## Estimating *proxy* indicators



### proxy pathogen, week = ARI/SARI rate week x positivity pathogen, week

- Need to account for region, age and sex:
  - ✓ The size of the sentinel network varies by region
  - ✓ Neither the syndromic nor the systematic samples necessarily have the same age distribution as the population
  - ✓ Incidence rates are generally higher for females in PC and for SARS-CoV-2 at hospitals for males

#### **Example of the PC network in one region**



## Estimating proxy indicators weekly



Strata (i)	region	age- group	sex	ARI/ SARI cases	Catchment population	Total population	Weighting factor	Weighted ARI/SARI cases	Positivity (%) to pathogen	pathogen- specific ARI/SARI cases
1	1	<1	F	a <sub>1</sub>	$b_1$	B <sub>1</sub>	$w_1 = B_1/b_1$	$a_{w,1} = a_1^* w_1$	$p_1$	$a_{p,1} = a_{w,1} * p_1$
2	1	<1	M	a <sub>2</sub>	b <sub>2</sub>	B <sub>2</sub>	$w_2 = B_2/b_2$	$a_{w,2} = a_2^* w_2$	p <sub>2</sub>	$a_{p,2} = a_{w,2} * p_2$
3	1	1-4	F	a <sub>3</sub>	b <sub>3</sub>	B <sub>3</sub>	$w_3 = B_3/b_3$	$a_{w,3} = a_3 * w_3$	p <sub>3</sub>	$a_{p,3} = a_{w,3} * p_3$
4	1	1-4	M	$a_4$	$b_4$	$B_4$	$w_4 = B_4/b_4$	$a_{w,4} = a_4 * w_4$	$p_4$	$a_{p,4} = a_{w,4} * p_4$
5	1	5-9	F	a <sub>5</sub>	<b>b</b> <sub>5</sub>	B <sub>5</sub>	$w_5 = B_5/b_5$	$a_{w,5} = a_5 * w_5$	<b>p</b> <sub>5</sub>	$a_{p,5} = a_{w,5} * p_5$
•••					•••	•••	•••			

Weekly pathogen-specific-proxy = 
$$\frac{\sum_{i=1}^{i=I} a_{p,i}}{\sum_{i=1}^{i=I} B_i}$$

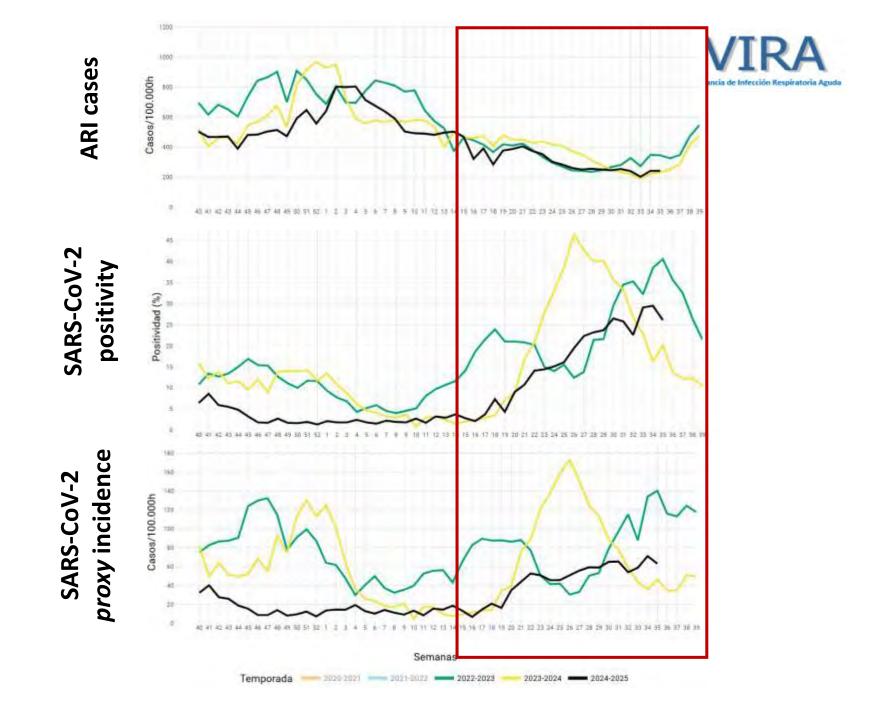


## Advantages of pathogen-specific proxy indicators

- Syndromic surveillance is unspecific
- Positivity depends on what else is circulating (very low incidence of a single pathogen may result in 100% positivity)
- High comparability across the three pathogens, flexibility to include others
- Only way for pathogens with unspecific clinical presentation (i.e. RSV in the elderly)

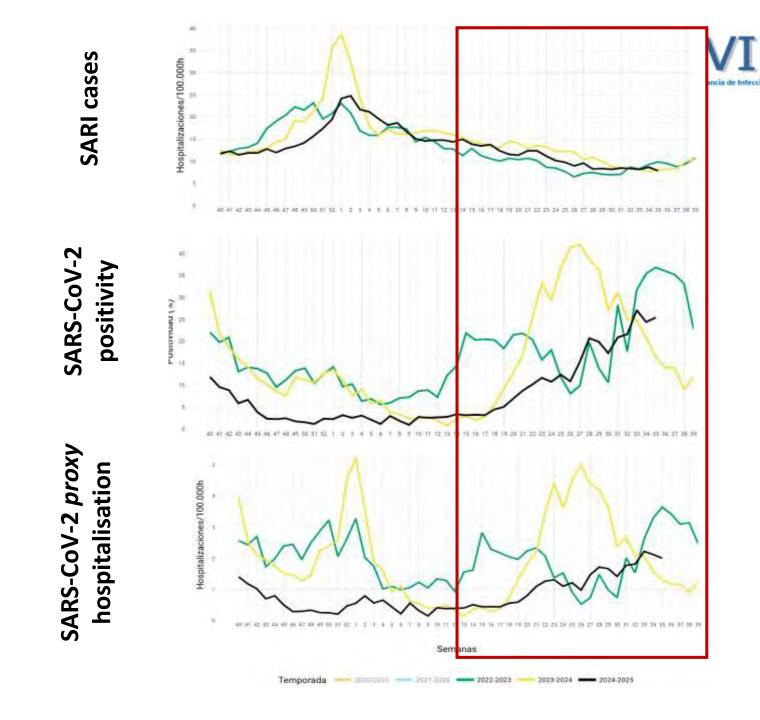
## Use of *proxys* for routine surveillance

 COVID-19 summer wave in Primary Care



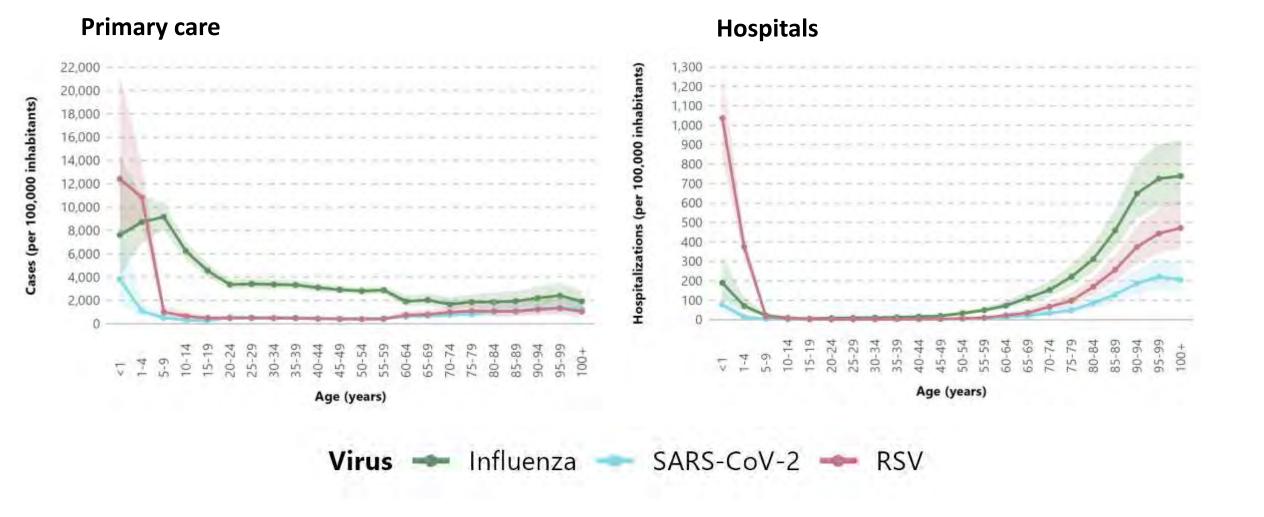
## Use of *proxys* for routine surveillance

 COVID-19 summer wave at hospitals





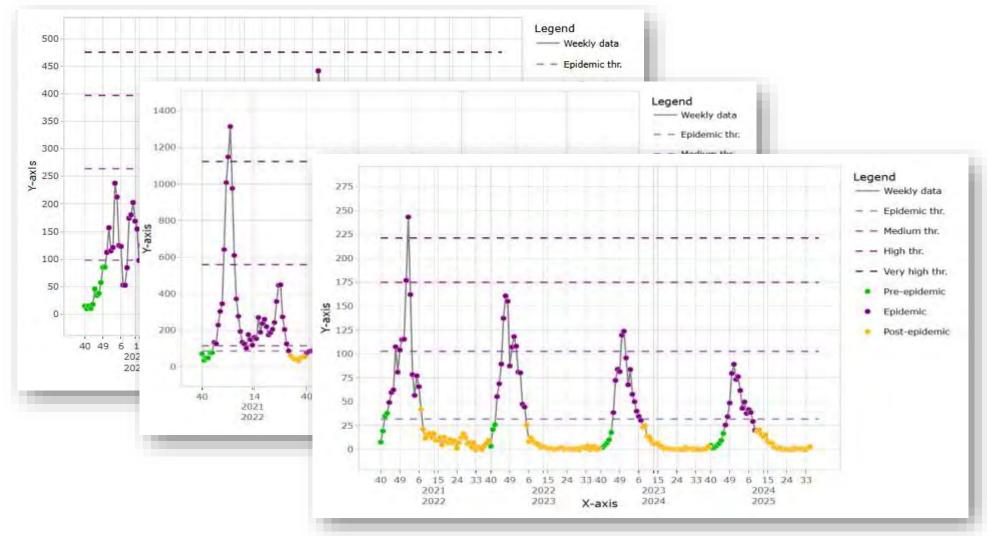
## Use of proxys to estimate burden of disease



## Use of proxys to estimate intensity and severity\*



#### **Primary care**



<sup>\*</sup> Not used for this objective in Spain, explotatory results prepared for this presentation



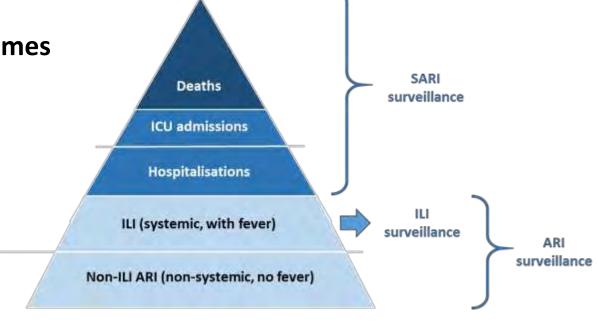
## Challenges of pathogen-specific proxy indicators

- Unstability of positivity when using multiple strata  $\rightarrow$  wider age-groups, statistical models
- The systematic sample is not truly representative of all syndromic cases
  - ✓ Quality of coding in non-trained physicians
  - ✓ Physicians preferably select for systematic testing ILI cases among all ARIs.

✓ At hospitals, acute onset in the last 10 days is checked for systematically selected cases but

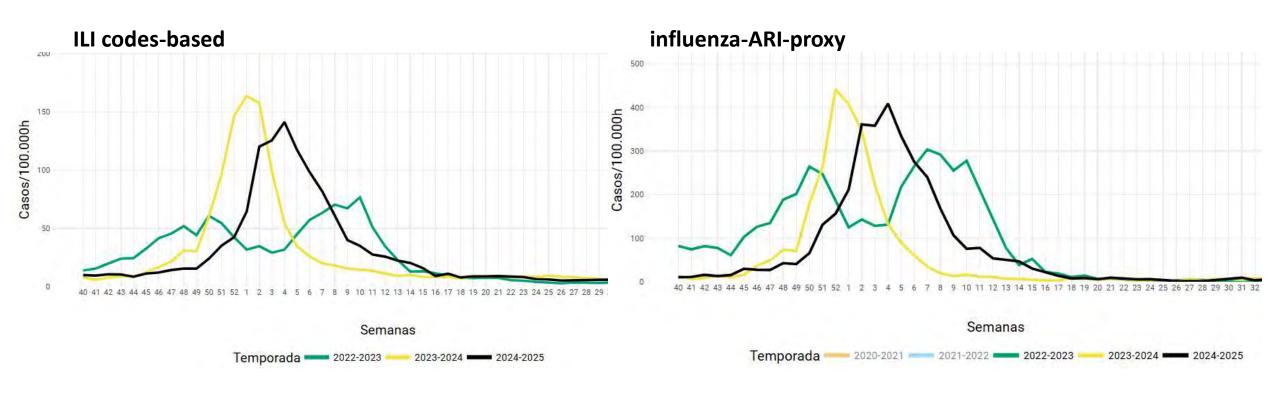
not for syndromic cases

Influenza-ARI estimated with proxys is 2-3 times
 higher that incidence of ILI



## ILI vs. influenza-ARI-proxy





## Conclusions on pathogen-specific proxys



- Combined assessment of syndromic rates and positivity
- Relies on the asumption that testing is systematic
- Unstability in the positivity can result in unstable proxys
- Coherent assessment of the three viruses in PC and hospitals
- They may overestimate incidence compared to other indicators (ILI incidence) different things are being measured
- Complicates communication: different indicators











## Acknowledgements

SiVIRA and RELECOV collaborators in the National Centre of Microbiology, National Centre of Epidemiology and Spanish Autonomous Communities



## Thank you for your attention!

Susana Monge

National Centre of Epidemiology

Institute of Health Carlos III (ISCIII)

smonge@isciii.es, GRIPE-OVR@isciii.es

# Influenza trends in Malta 2022-W40 to 2025-W37

#### **Presented by:**

Dr. Maria-Louise Borg

Infectious Disease Control and Prevention Unit

Health Promotion and Disease Prevention Directorate

Ministry for Health and Active Ageing

Malta

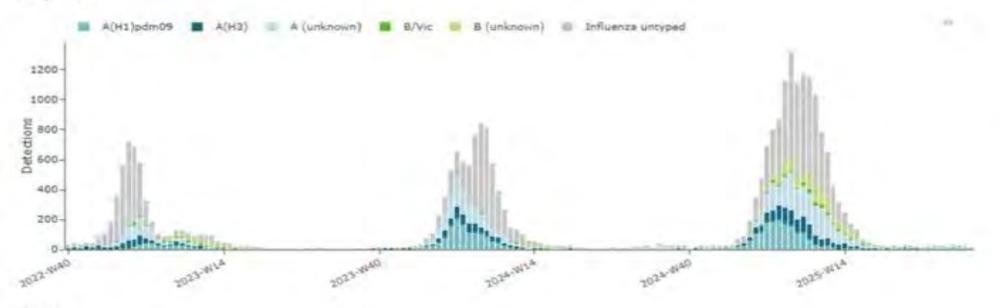
18 September 2025



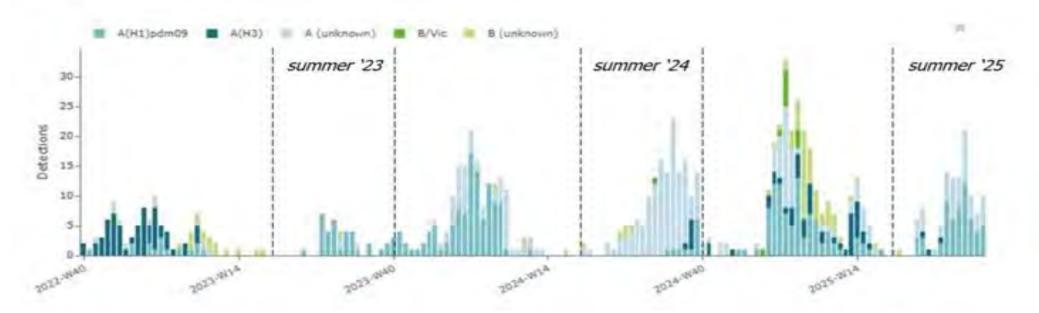


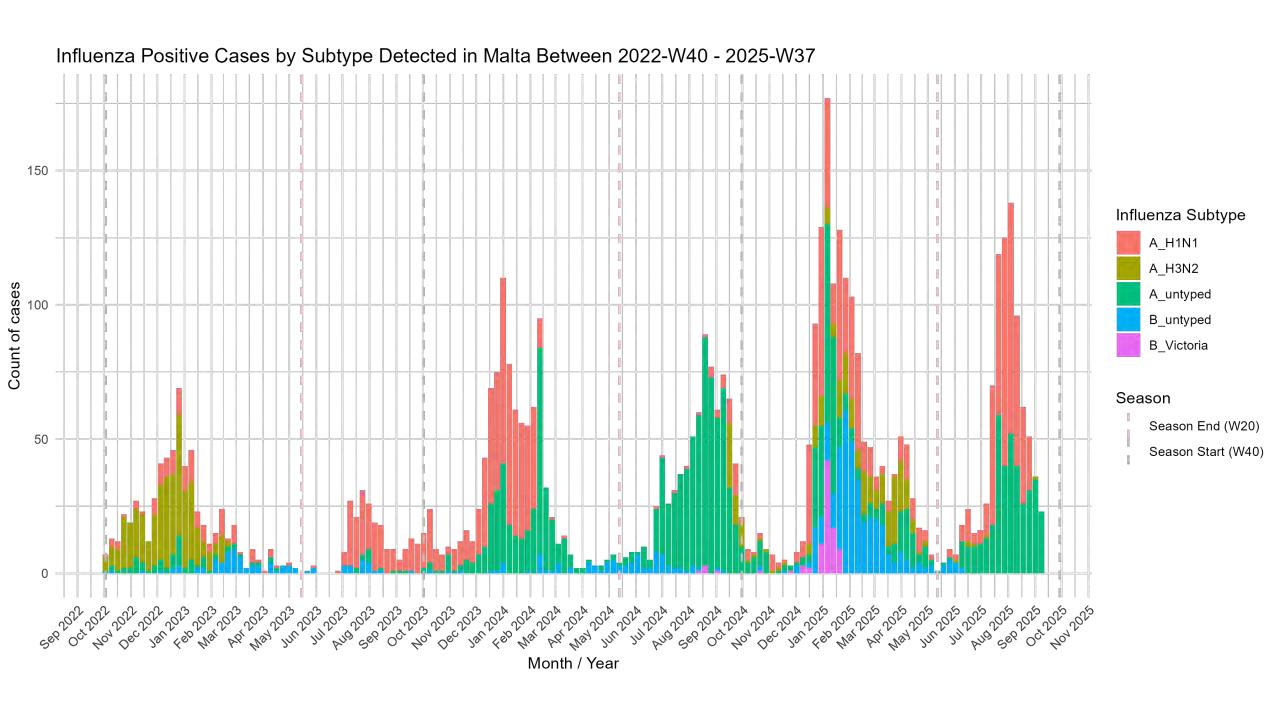
#### EU/EEA

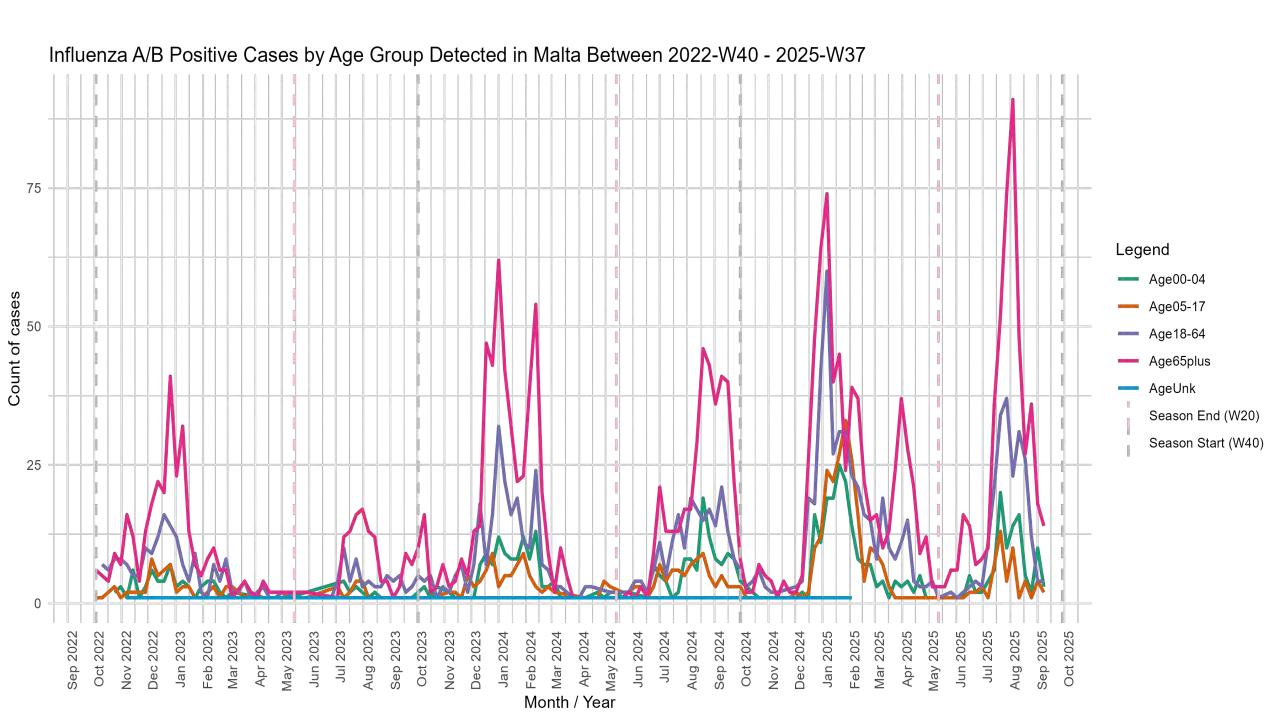


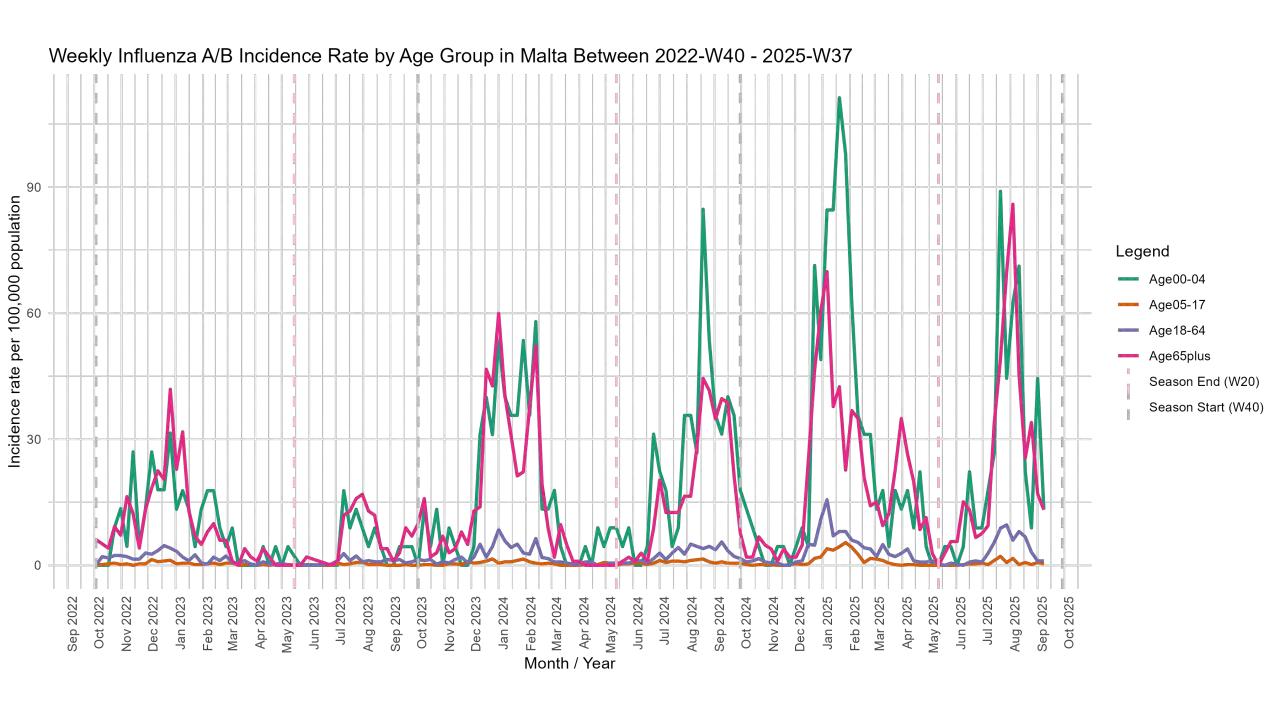


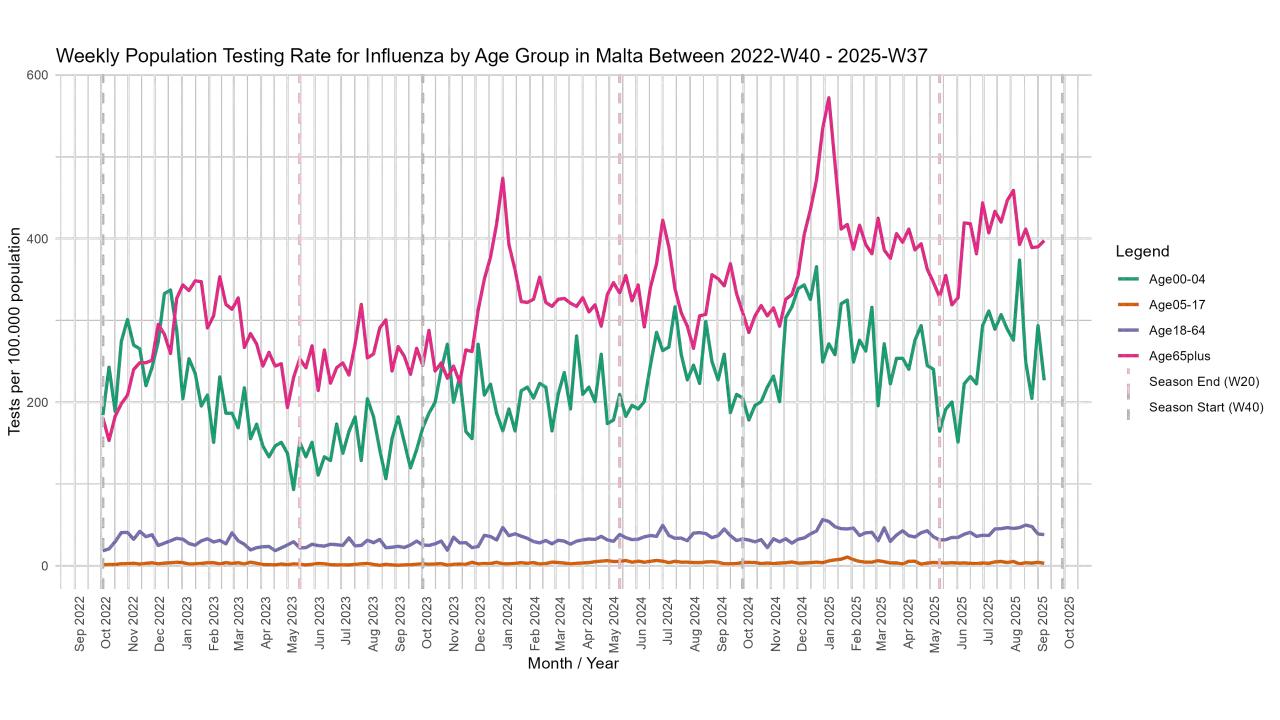
#### Malta

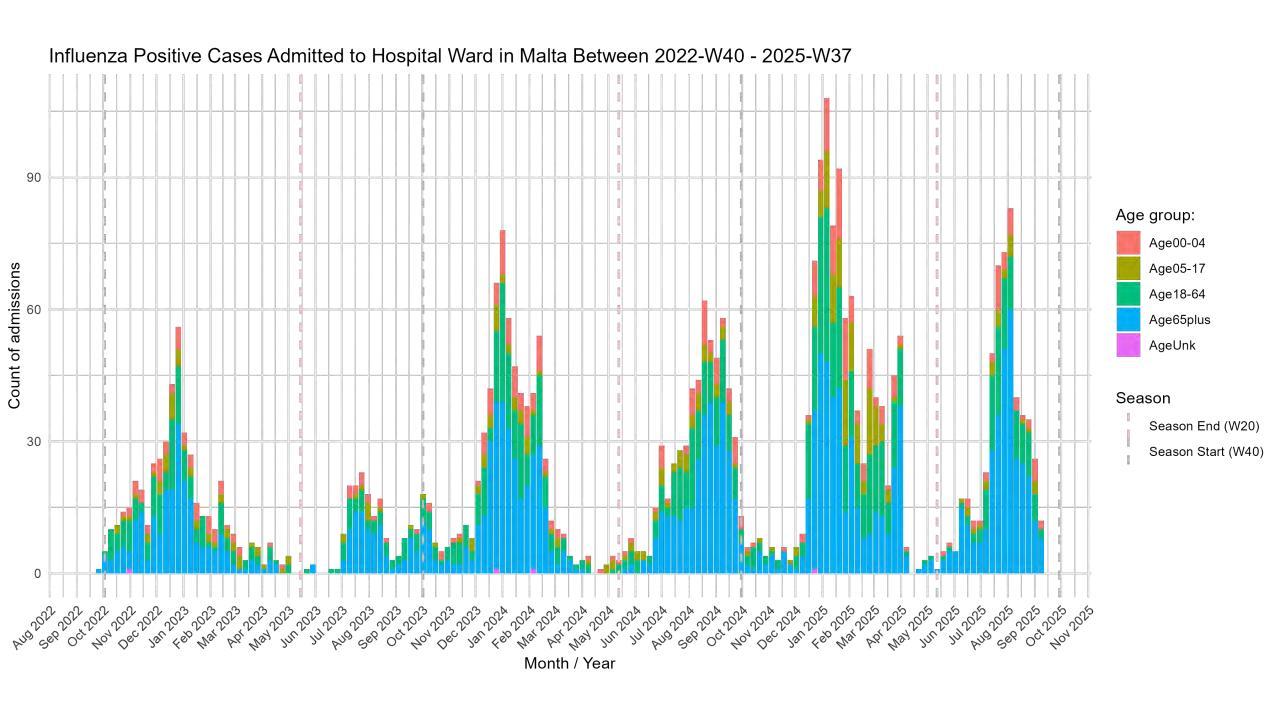


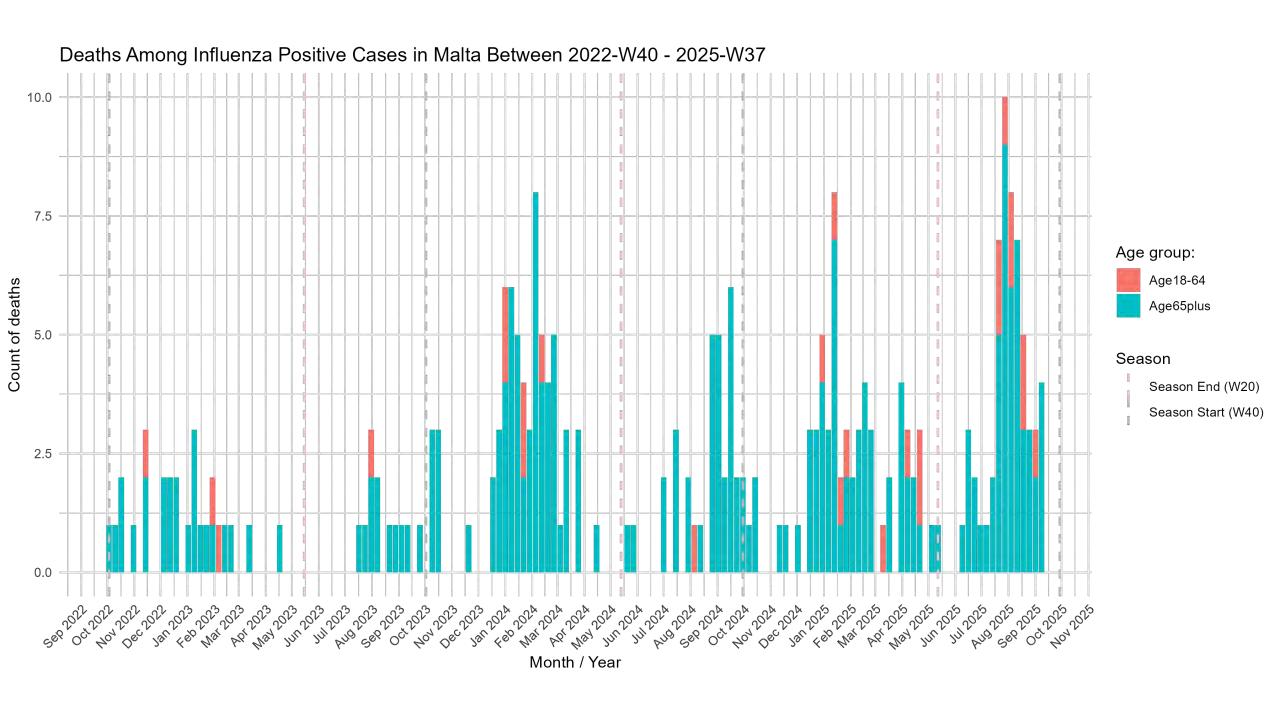




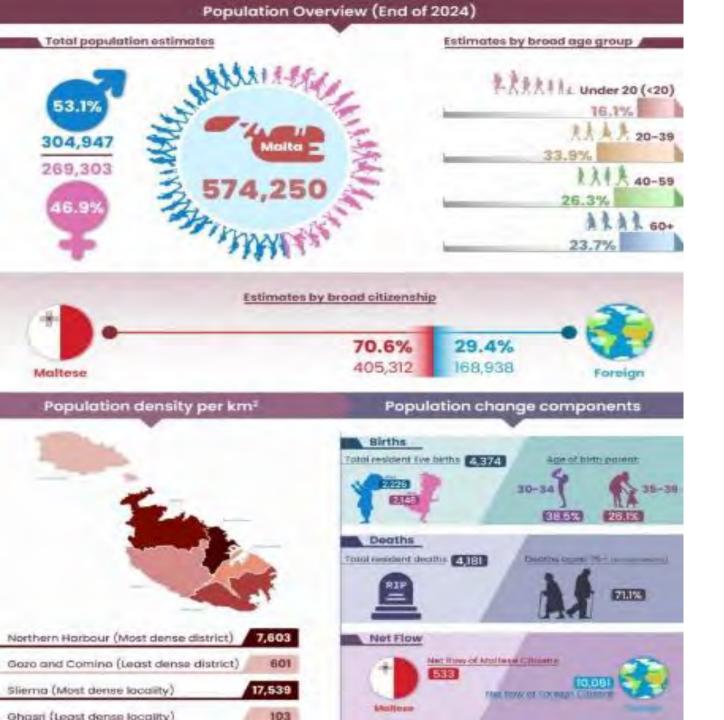








# What are the possible driving factors?



- Most densely populated country in the EU
- Population of 574,250 (30% are foreign)
- Over 10,600 new residents in 2024. 76% of them coming from outside EU
- Increase of 38% in population since 2011 and of 14% in the last 5 years
- Largest age group in 20-39 years and males

## Mass gatherings

International festivals, concerts and religious festas starting from June till September





## Travel (inbound and outbound)

- MT received 3,563,618 tourists in 2024, almost half a million more than the year before.
- Very dynamic population with increased travel by residents outside of Europe coupled with high influx of TCNs

## Outbreaks in Institutions

- Outbreaks especially in healthcare facilities and in Homes of the Elderly
- Lack of staff / HCWs
- High staff turn over compromising infection control training
- Challenges in isolation and containment due to lack of space
- LTCFs at full capacity

## Other challenges

- Small MS limited expertise and resources
- Tests carried out by centralised Molecular diagnostics lab at the Pathology Dept of the main general hospital - primarily a clinical lab and not PH
- Lack of capacity (HR and space) to be able to store samples and perform WGS
- Strained healthcare system due to population increase

## PH measures

- Vaccination campaigns held annually to encourage population, especially vulnerable to take up Flu/COVID vaccination. Kick off campaigns from October.
- Campaigns focused on respiratory illness prevention. These campaigns emphasize the importance of staying home when unwell, sneezing into a tissue, and frequent hand washing.
- Circular to doctors to alert and keep informed.

### Coss Definitions

Case Delinitions.	
Influenza Case	Hospitalisation
Patient who tested positive for influenza by RT-PCR. Result is valid for 30 days unless different influenza type/subtype is detected.	Hospital ward admission of patients who tested positive for influenza within 14 days prior to admission or during hospitalisation period.
	Readmissions are reported and included.
ICU admission	Death
If patient was admitted to ICU ward during hospital	Patient who died within 14 days after testing positive

admission in where patient tested positive for influenza 14 days prior to admission or during hospitalisation period prior or while being admitted to ICU.

for influenza

#### OR

died as an outcome of hospital admission (where patient tested positive for influenza 14 days prior to admission or during hospitalisation period).

Cause of death is not reported quickly enough for timely use.

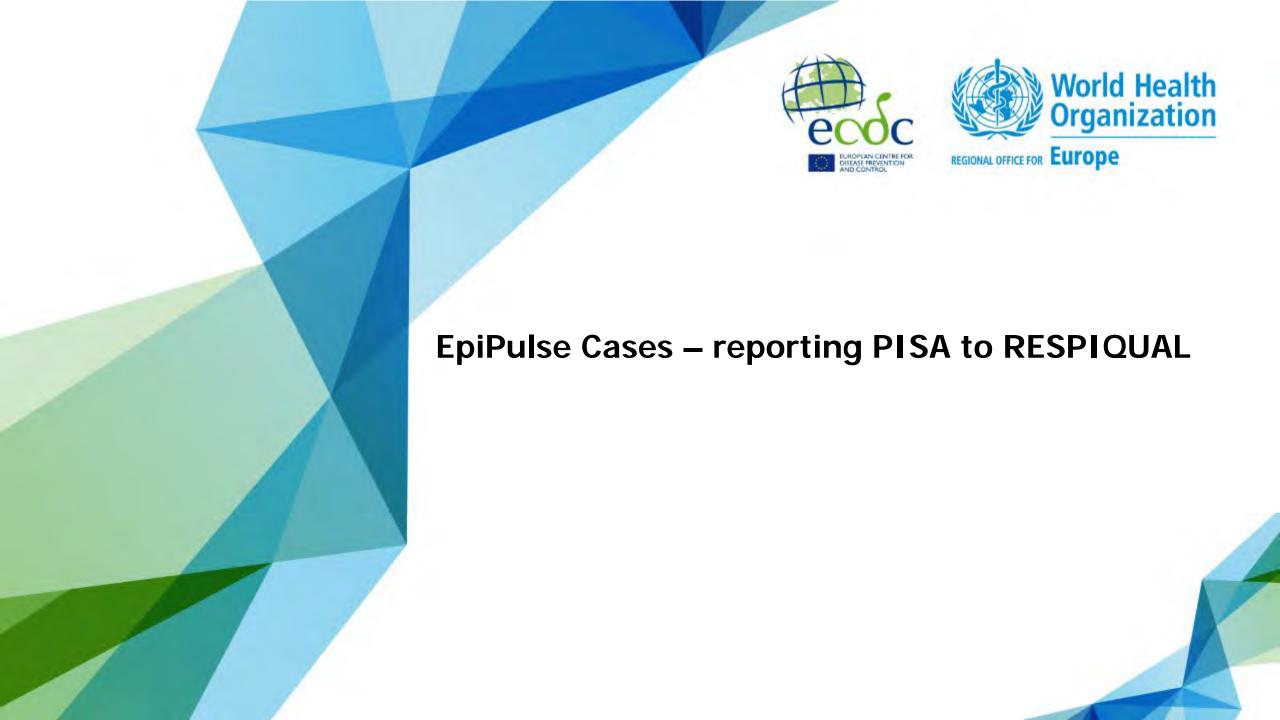
Data include both SARI and non-SARI cases in Malta.

## Thank you

Acknowledgements

IDCU Team: Tanya Melillo; Ausra Dziugyte

Pathology Department: Chris Barbara; Graziella Zahra

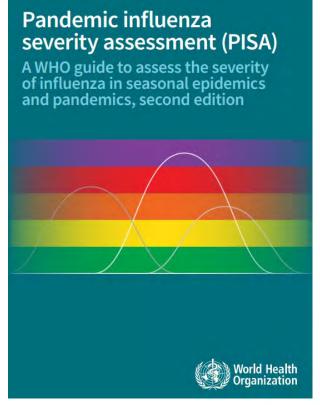


#### WHO Pandemic Influenza Severity Assessment (PISA)

ecoc En a portan con trong panalel provincio



- Assess severity of current influenza relative to previous years by using historical data to set thresholds that then allow for the qualitative categorization of such activity.
- Updated WHO PISA guidance published in May 2024
  - Option to report syndromic and/or influenza-specific assessments (except seriousness of disease)
  - > 7 PISA indicators (4 influenza specific, 3 syndromic)
  - Expanded parameter lists for PISA indicators
  - French and Spanish versions published. Russian to follow shortly.
- PISA data collected in EpiPulse Cases from the 2025/26 season via RESPIQUAL subject
- Replacing collection of first version PISA indicators in TESSy
- Uploaded weekly to WHO/HQ by WHO/EURO and used in real time by both teams
- Global WHO dashboard for visualizing data (available via the PISA landing page once launched)



https://www.who.int/teams/globalinfluenza-programme/surveillanceand-monitoring/pandemic-influenzaseverity-assessment

#### WHO Pandemic Influenza Severity Assessment (PISA)





PISA update indicators	Description (full description of parameters and methods in the guidance)	Frequency of submission	
Transmissibility - influenza	Measure of how many people get sick with influenza or	Weekly	
Transmissibility - syndromic	respiratory viruses and reflects the ease of movement of respiratory viruses between individuals and communities		
Morbidity & mortality - influenza	Measure of the level of serious disease and death in the		
Morbidity & mortality - syndromic	population due to influenza or acute respiratory disease		
Impact on healthcare capacity - influenza	Describes of how the epidemic or pandemic is affecting		
Impact on healthcare capacity - syndromic	health care system capacity		
Seriousness of disease of influenza	Describes the extent to which individuals become ill when infected with an influenza virus	Twice per season only (peak & end weeks)	

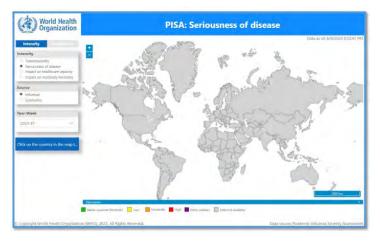
- All PISA indicators have supporting confidence and comment fields available for providing certainty and context to submissions (also displayed on public facing global dashboard)
- Threshold approaches used to define 5 categories for 6 of 7 indicators (seriousness of disease has no baseline category):
  - ➤ No activity or below epidemic threshold<<u>Low</u><<u>Moderate</u><<u>High</u><<u>Extraordinary</u>

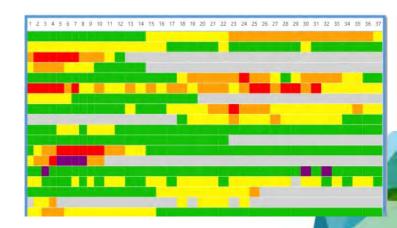
#### WHO Pandemic Influenza Severity Assessment (PISA)

- Mapping of additional TESSy data planned to populate gaps in PISA reporting for transmissibility indicators
  - Opt-out on request (<u>euinfluenza@who.int</u>)
- Transmissibility influenza
  - ➤ Influenza intensity qualitative indicator to populate indicator where no data submitted for a season by a country
  - ➤ definition of intensity aligns with parameters for transmissibility influenza
- Transmissibility syndromic
  - Intensity levels of ILI or ARI data (preferential order) used to populate indicator where no data submitted for a season by a country
- WHO/EURO can provide support in implementing PISA guidance and threshold setting (MEM, WHO method or other preferred approach)









## **EpiPulse Cases Timeline**





Year	recordtypes/subject codes	Approximate date
2025	RESPIQUAL data INFLZOO (zoonotic influenza subject codes)*	Late September (launch) Training September and October
2026	RESPI (RESPIAGGR, RESPISURV, RESPISEVERE) SARI (SARISURV, SARISURVDENOM, INFLSARIAGGR) INFLCLIN, INFLANTIVIR	Approx. June (launch) Training May and June

## **EpiPulse Cases Timeline - RESPIQUAL**





Date	Activity
18 September	Start-of-season webinar which includes a demo of EpiPulse Cases
19 September	TESSy reporting of PISA variables is deactivated in INFLCLIN
23 September	New subject code are launched in EpiPulse Cases. Data can now be reported.
30 September	Network workshop EpiPulse Cases reporting for PISA data – live demo and Q&A

#### Access and permissions





The nominated users that currently have access to reporting routine respiratory virus data to TESSy will have access for EpiPulse Cases reporting

#### Changing user access:

User	Access
EU/EEA countries	National Coordinator should nominate the user in ECDC Stakeholder Relationship Management system (SRM)
Non-EU enlargement countries with a cooperation frameworks in place	Check ECDC cooperation framework with your country for information on how to initiate nomination process
Other non-EU/EEA countries	Please contact WHO Regional Office which then sends a request by email to ECDC Country Cooperation

#### Reporting protocol





The latest reporting protocol can be downloaded from EpiPulse Cases platform. On the support page, there will be a section for 'Respiratory viruses' with the reporting protocol and other tools (e.g. webinar ings).

	ecoc EpiPulse	Cases v	Events 🗸	Molecular Typing	≡ ∨	稿~	<b>©</b> ~	ۥ ~	0	 1
	Cases									
	Metadata set	4	EpiPulse Cases	XSD schema 😃	Data colle	ctions sche	dule w	•		
	Video Tutorials							Ť		
	Guides							Ţ		
	ARHAI (Antimicro	bial resistar	nce and healtho	are-associated	l infections)			•		
EVD ovample	EVD (Emerging a	nd Vector-Bo	rne Diseases)							
EVD example	EpiPulse Cases EVD	Reporti	EVD_Templates	<u>.</u>	Recording	- EpiPulse (	Cases	•		

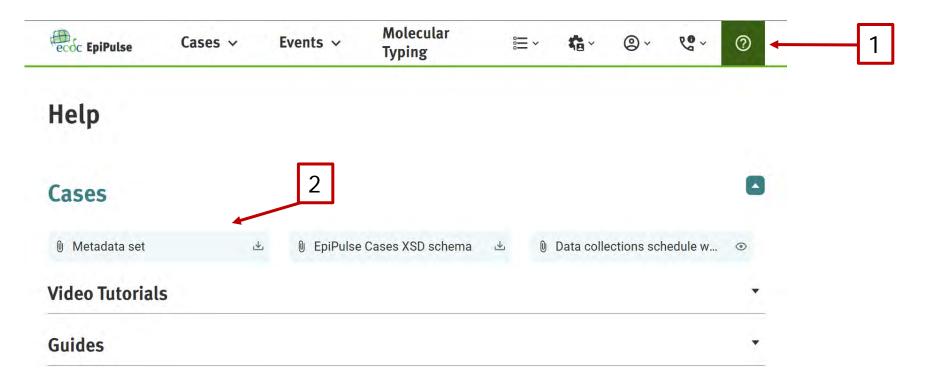
The reporting protocol will also be available on the ECDC website (LINK).

#### Metadata - access the latest version





The latest metadata can be downloaded from EpiPulse Cases platform.



We encourage all users to always download the most up-to-date metadata and reporting protocol to ensure you are looking at the most recent version.

#### Metadata - RESPIQUAL





#### **Standard EPC variables**

Variable name	Description	Coded Values
Health Topic	The code of the health topic that is being reported	<b>RESPI</b> = Respiratory viruses
Reporting Country	The country reporting the	
Status	Will be selected based on your entry when uploading data	<b>DELETE</b> = Delete a previously reported . <b>NEW/UPDATE</b> = Update a previously reported (default)
Subject Code	SubjectCode is a reporting model for a disease/health topic	<b>RESPIQUAL</b> = Respiratory virus - qualitative indicators
National Id	Unique identifier for each — selected and generated by the country reporting the> Further detail in subsequent slides	
Data Source	The data source (surveillance system) that the originates from. The DataSource value must be a special reference value from EpiPulse Cases metadata.	

#### Metadata - RESPIQUAL





#### Epidemiological variables

Variable name	Description	Coded Values
Date used for statistics	The reference week (yyyy-Www) for the reported qualitative indicator.	
Pathogen or syndrome	Pathogen or syndrome that applies.	<pre>INFL = Influenza SYND = Syndromic</pre>
Surveillance type	Type of surveillance system.	<b>PISA</b> = PISA
Qualitative indicator	Please select the qualitative indicator that you would like to report. The reporting protocol includes considerations for each qualitative indicator.	<pre>IMPACT = Impact on healthcare capacity MORB = Morbidity and mortality SERIOUS = Seriousness of disease TRANS = Transmissibility</pre>
Qualitative value	Please select the value corresponding to the selected combination of pathogen/sydrome, surveillance type and qualititive indicator.	<ul> <li>1 = No activity or below epidemic threshold</li> <li>2 = Low</li> <li>3 = Moderate</li> <li>4 = High</li> <li>5 = Extraordinary</li> </ul>
Confidence	Level of confidence for the qualitative value reported for the selected combination of pathogen/sydrome, surveillance type and qualititive indicator.	<ul><li>H = High</li><li>L = Low</li><li>M = Medium</li></ul>
Comment	Information should be included on any factors which may have influenced the assessment.	

## Metadata - Example





Health Topic	Reporting Country	Status	SubjectCode	Nationalld	DataSource	DateUsed ForStatistics	Pathogen Syndrome	Surveillance Type	Qualitative Indicator	Qualitative Value	Confid ence
RESPI	CY	NEW/UPDATE	RESPIQUAL	INFL2025- W07PISATRANS	CY-RESPIQUAL	2025-W37	INFL	PISA	TRANS	2	М
RESPI	CY	NEW/UPDATE	RESPIQUAL	SYND2025- W07PISATRANS	CY-RESPIQUAL	2025-W37	SYND	PISA	TRANS	3	М
RESPI	CY	NEW/UPDATE	RESPIQUAL	INFL2025- W07PISAMORB	CY-RESPIQUAL	2025-W37	INFL	PISA	MORB	1	L
RESPI	CY	NEW/UPDATE	RESPIQUAL	SYND2025- W07PISAMORB	CY-RESPIQUAL	2025-W37	SYND	PISA	MORB	1	L
RESPI	CY	NEW/UPDATE	RESPIQUAL	INFL2025- W07PISAIMPACT	CY-RESPIQUAL	2025-W37	INFL	PISA	IMPACT	1	Н
RESPI	CY	NEW/UPDATE	RESPIQUAL	SYND2025- W07PISAIMPACT	CY-RESPIQUAL	2025-W37	SYND	PISA	IMPACT	1	L

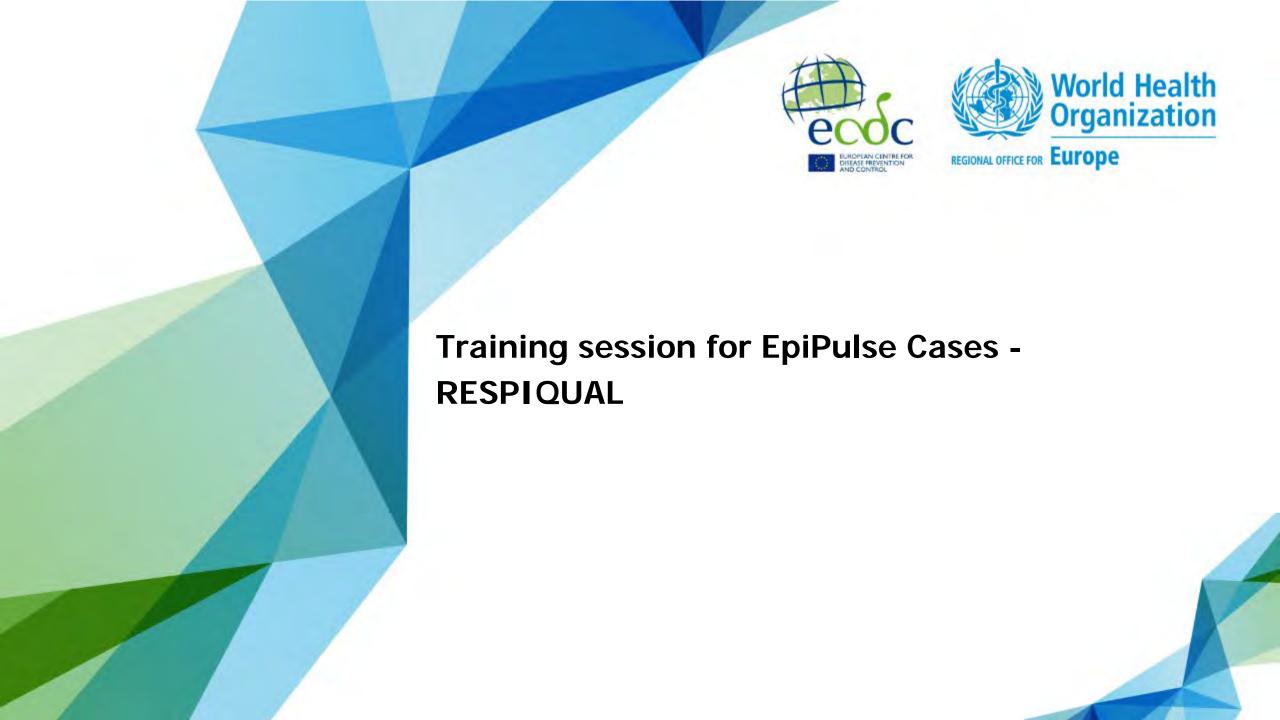
#### Metadata - Example





Health Topic	Reporting Country	Status	SubjectCode	NationalId	DataSource	DateUsed ForStatistics	Pathogen Syndrome	Surveillance Type	Qualitative Indicator	Qualitative Value	Confid ence
RESPI	CY	NEW/UPDATE	RESPIQUAL	INFL2025- W07PISATRANS	CY-RESPIQUAL	2025-W37	INFL	PISA	TRANS	2	М
RESPI	CY	NEW/UPDATE	RESPIQUAL	SYND2025- W07PISATRANS	CY-RESPIQUAL	2025-W37	SYND	PISA	TRANS	3	М
RESPI	CY	NEW/UPDATE	RESPIQUAL	INFL2025- W07PISAMORB	CY-RESPIQUAL	2025-W37	INFL	PISA	MORB	1	L
RESPI	CY	NEW/UPDATE	RESPIQUAL	SYND2025- W07PISAMORB	CY-RESPIQUAL	2025-W37	SYND	PISA	MORB	1	L
RESPI	CY	NEW/UPDATE	RESPIQUAL	INFL2025- W07PISAIMPACT	CY-RESPIQUAL	2025-W37	INFL	PISA	IMPACT	1	Н
RESPI	CY	NEW/UPDATE	RESPIQUAL	SYND2025- W07PISAIMPACT	CY-RESPIQUAL	2025-W37	SYND	PISA	IMPACT	1	L

Make sure the **NationalID** is **unique to each row reporting**. In this example, PathogenSyndrome, DateUsedForStatistics, SurveillanceType and QualitativeIndicator are combined to make create the NationalId.





European Centre for Disease Prevention and Control

# Training session for EpiPulse Cases - RESPIQUAL

### Agenda



#### EpiPulse Cases DEMO

- Access and general navigation
- Reporting options
- Data preparation
- Upload and technical validation
- ➤ EpiPulse Cases Data validation report
- Approval or Rejection of submitted data
- Post go-live support description and where to contact us
- ➤ Q&A

## **EpiPulse Cases live demo**



Where to find EpiPulse Cases

General Navigation

Reporting Options

Prepare data

Upload and tech validation

EPC Data validation report

Approval or Rejection

# Where to find **EpiPulse Cases**

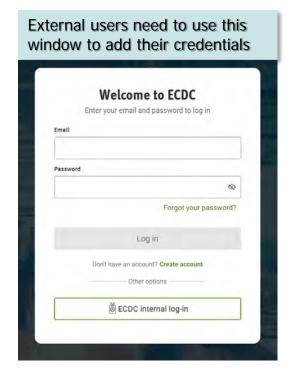


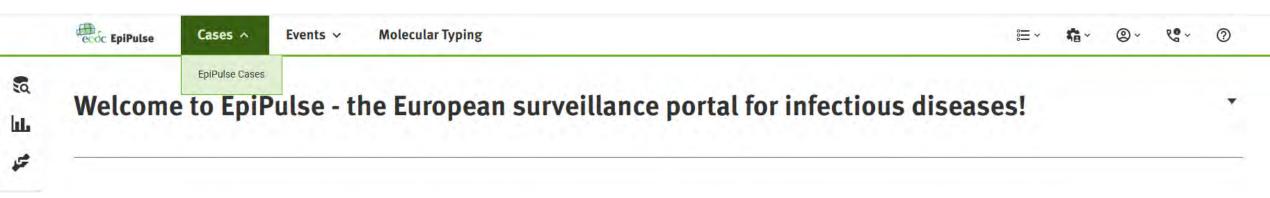
#### **EpiPulse Cases login and access**



#### Login

Users can use the following url <a href="https://epipulse.ecdc.europa.eu/epipulsecases/app/">https://epipulse.ecdc.europa.eu/epipulsecases/app/</a> and get redirected to the login page

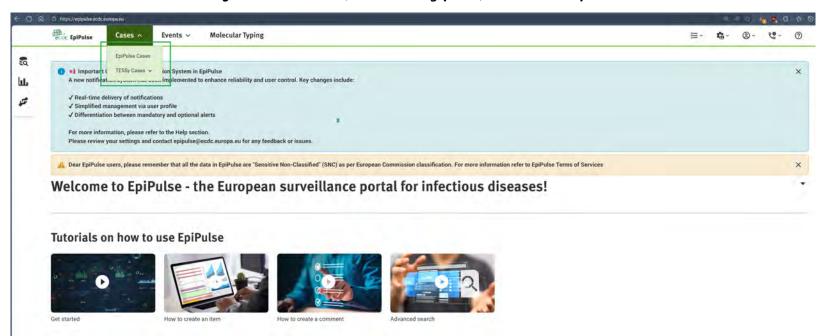




## **EpiPulse Cases and TESSy**



Access is still available in both **EpiPulse Cases** and **TESSy** applications and recordtypes NOT yet migrated in EpiPulse Cases will still be reported in TESSy. The latest version of TESSy metadata contains the list with all diseases and subject codes (record types) to be reported there.

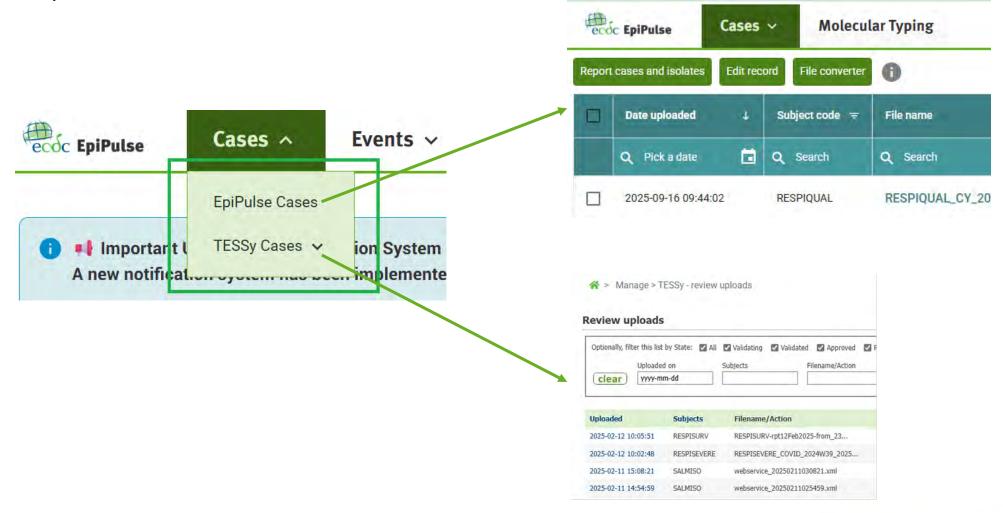


As metadata format is different between EpiPulse Cases and TESSy, if you report TESSy data to EpiPulse Cases (or the other way around), the validation will fail.

## **EpiPulse Cases and TESSy**



The platforms have a different look and feel!



#### **EpiPulse Cases live demo**



Where to find EpiPulse Cases

General Navigation Reporting Options

Prepare data

Upload and tech validation

EPC Data validation report

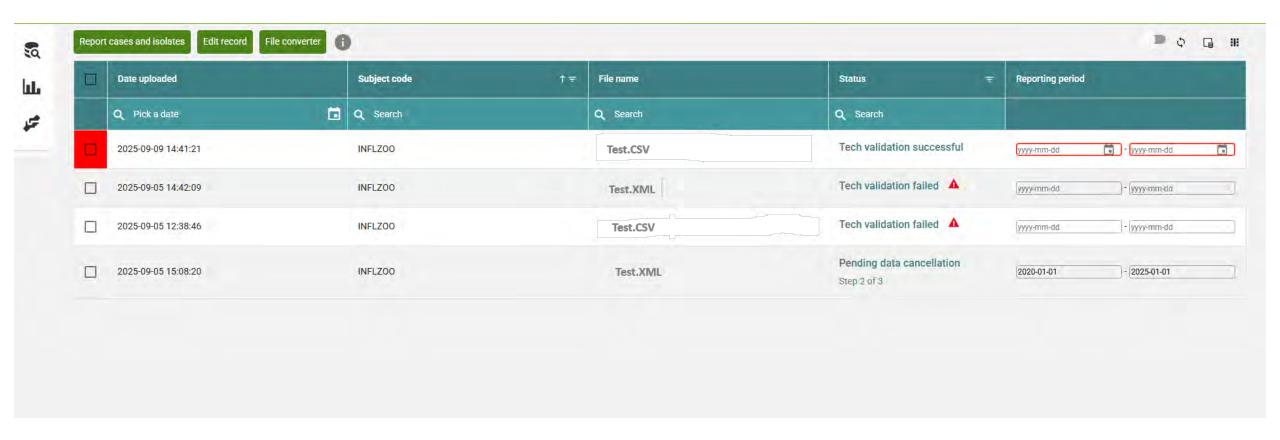
Approval or Rejection

## General navigation





## **EpiPulse Cases main page**



## **EpiPulse Cases live demo**



Where to find EpiPulse Cases

Help documentation

General Navigation

Reporting Options

Prepare data

Upload and tech validation

EPC Data validation report

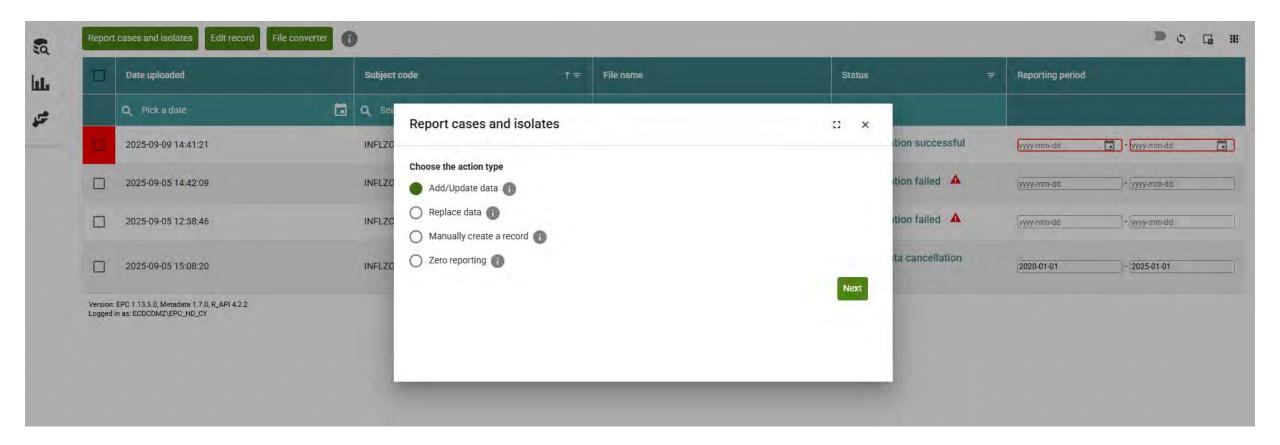
Approval or Rejection

## Reporting options



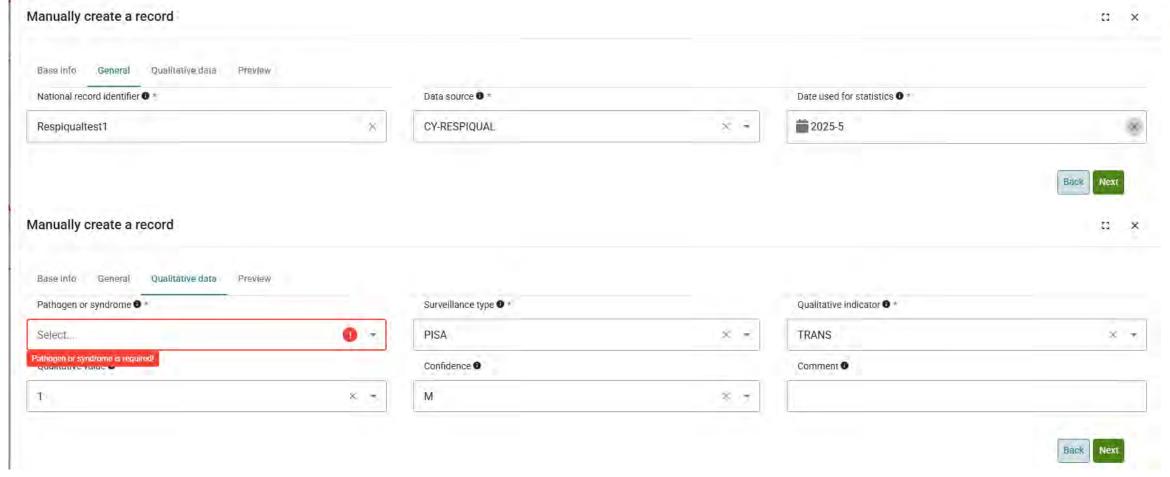


## **EpiPulse Cases reporting options**



## Manually create a record wizard





## Manually create a record wizard Preview and Submit



Manually create a record Qualitative data Preview Base info Subject code RESPIQUAL NEW/UPDATE Status RESPI Health topic Qualitative data Pathogen or syndrome INFL Surveillance type PISA Qualitative indicator TRANS Qualitative value 3 Confidence M Comment

#### **Steps for reporting to EpiPulse Cases**



Prepare

- prepare data according to metadataset
- · csv or other file, or manual entry

Upload and validate

- upload data in EpiPulse Cases
- · validate data against metadata rules
- review errors and warnings
- correct any errors/re-submit

Analyse and review

- start EpiPulse Cases data validation and generate the EpiPulse Cases data validation report
- review inconsistencies (metadata + cross-field)
- check the completeness section
- check the overview section

Finalise

- If validation OK, approve
- If validation not OK, reject, correct data, upload+check again

approved submission



Get the status **Tech** validation successful



Start Data validation process



Get the status **Data** validation report ready



Review the data validation report and Approve



Get the status **Data** change approved

## **EpiPulse Cases live demo**



Where to find EpiPulse Cases

General Navigation

Reporting Options

Prepare data

Upload and tech validation

EPC Data validation report

Approval or Rejection

Prepare data



#### **EpiPulse Cases**



Prepare Upload and Analyse and review Finalise

#### **Prepare** – Creating and editing a CSV

- Assure the content of the file (variables and reference data) is the same with the latest metadata version available in the Help menu
- Make sure your file is CSV, XML or ZIP of CSV and XML
- Check that your file size is up to 4GB
- If you manually edit the CSV file pay attention to date formatting when saving. Windows and Mac regional settings might affect date formatting when editing and saving CSVs with Excel (check the EpiPulse Cases guide to find the best alternatives on how to edit CSVs.)

## **EpiPulse Cases live demo**



Where to find EpiPulse Cases

Help documentation

General Navigation

Reporting Options

Prepare data

Upload and tech validation

EPC Data validation report

Approval or Rejection

## Upload and Tech validation

(error management)



## **EpiPulse Cases**



Prepare Upload and Validate Analyse and review Finalise

#### **Upload and validate**

- Make sure you add your start and end reporting dates
- If the status of your submission after upload is <u>Tech validation failed</u>, click on the status, open the timeline pop-up and check the errors and warnings identified. Make sure you correct all the errors and address all the warnings
- If the status of your submission after upload is **Tech validation successful** you can start the EpiPulse Cases data validation process and view the EpiPulse Cases data validation report

#### **EpiPulse cases – Tech validation traps**



**Tech validation failed status** suggests that errors were identified in the submitted CSV file. To solve the errors the tech validation messages must be verified to understand the type and the location of the errors inside the file

#### Most frequently error types:

#### Wrong date format or wrong date order:

National record identifier	Row number	Column index	Description
NationalRecordId15340856048561182051005961	2	8	The DateUsedForStatistics value (30-01-2024) is not in an allowed format

#### Missing permissions to submit data:

National record identifier	Row number	Column index	Description
			You are not authorized to upload data for this subject.

## EpiPulse Cases – steps to follow to solve Tech validation errors



- 1. Click on the status value (Tech validation failed) and the Details tab will open
- 2. In the Details tab you will see a status timeline, click on the 'View errors' button in the Tech validation failed box
- 3. Carefully read the error messages and solutions or download the Error csv file
- 4. Correct the errors in the original data
- 5. Upload the corrected CSV file with corrected data



## **EpiPulse Cases live demo**



Where to find EpiPulse Cases

Help documentation

General Navigation

Reporting Options

Prepare data

Upload and tech validation

EPC Data validation report

Approval or Rejection

# **EpiPulse Cases Data** validation report

(data quality management)



#### **EpiPulse Cases**



Prepare Upload and validate

and review

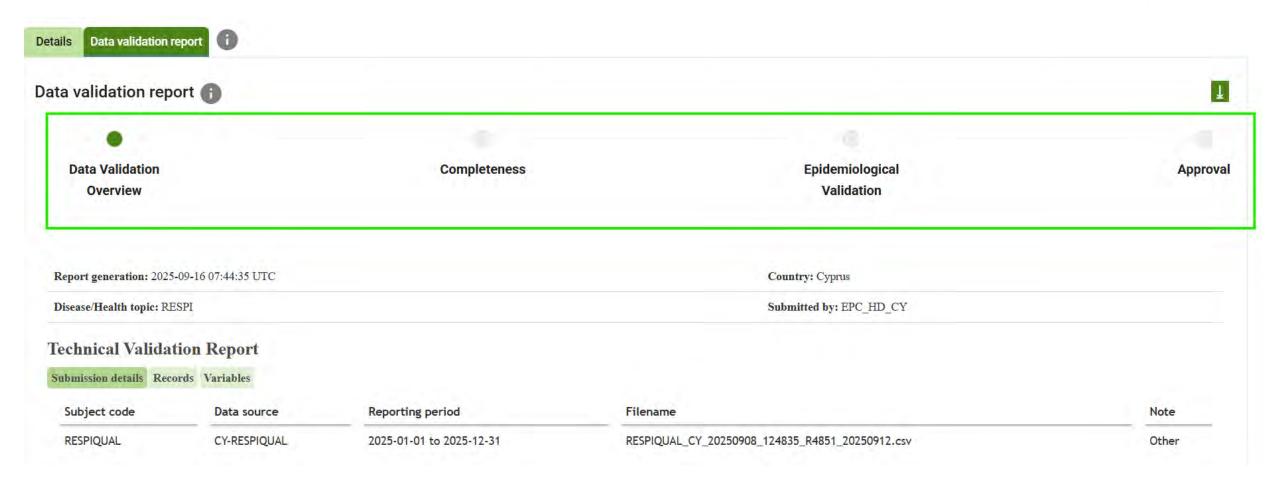
**Finalise** 

## Review the analysis results and finalise with the approval or rejection of your submission

- Before finalising the submission, make sure you review all sections of the EpiPulse Cases data validation report and identify any unwanted data quality issues
- The last step in the entire submission process is the Approval or Rejection of the submitted data. This can be done only by users with the Approve role active
- The confirmation of approval will save the submitted data and will make it available for future analysis
- The confirmation of rejection will remove the submitted data and will permit users to address potential issues identified during data validation and repeat the submission

### **EpiPulse Cases data validation report**





## **EpiPulse Cases live demo**



Where to find EpiPulse Cases

General Navigation Reporting Options

Prepare data

Upload and tech validation

EPC Data validation report

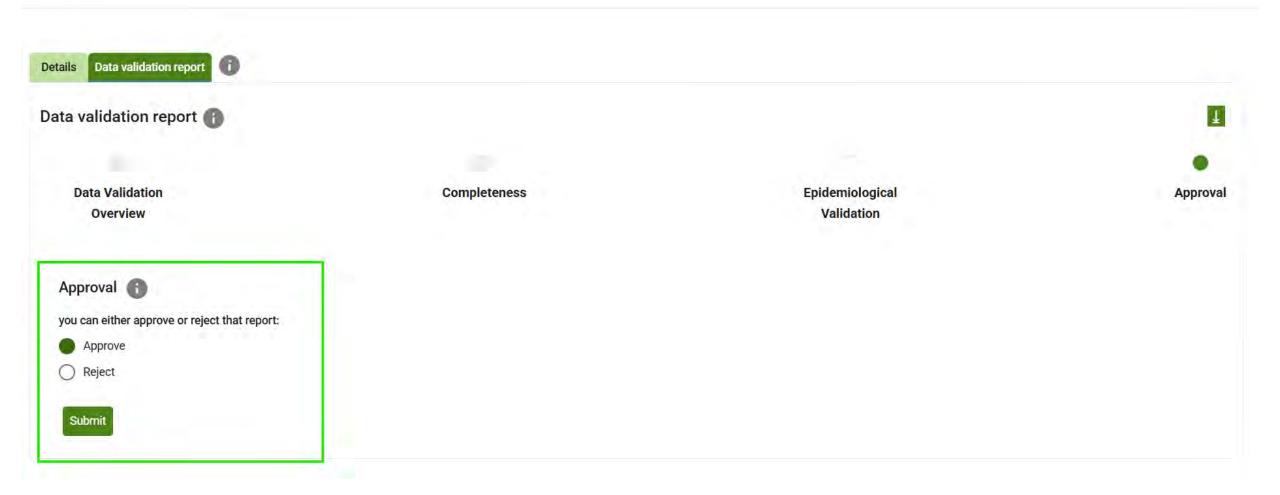
Approval or Rejection

Approval or Rejection



## **EpiPulse Cases data validation report approval**







# Live demo of EpiPulse Cases



## Support

## EpiPulse Cases - user guides and support



#### Materials available in the EpiPulse platform help menu, under EpiPulse Cases:

- Application guides
- Application video tutorials
- Relevant documentation for each disease group (metadata, submission templates, reporting protocols etc.)

#### Dedicated support offered via the EpiPulseCases@ecdc.europa.eu mailbox

· A dedicated team will monitor the EpiPulse Cases mailbox and will respond to all questions or concerns sent via e-mail

#### **Active monitoring of all submissions**

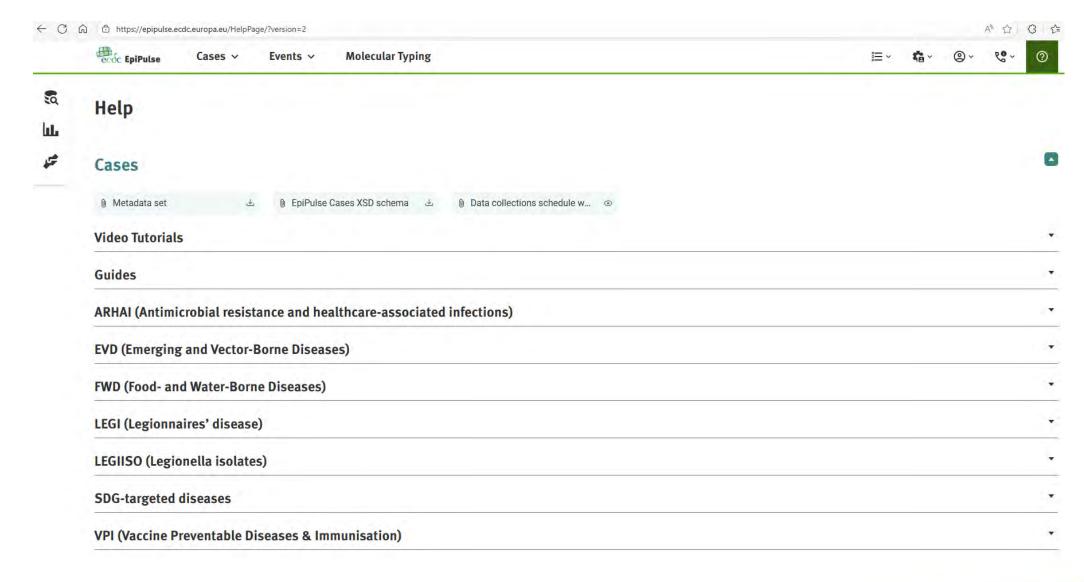
• A dedicated team will monitor the submissions made by each country and will flag and follow-up any unexpected behavior

#### **Continuous improvement**

• EpiPulse Cases application development will continue, and any unexpected behavior will be analysed and fixed in next versions or hotfixes

## **EpiPulse Cases Help section**







## **Questions and answers**





