

# Very little influenza in the WHO European Region during the 2020/21 season, weeks 40 2020 to 8 2021

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**Between weeks 40 2020 and 8 2021, the World Health Organization European Region experienced a 99.8% reduction in sentinel influenza virus positive detections (33/25,606 tested; 0.1%) relative to an average of 14,966/39,407 (38.0%;  $p < 0.001$ ) over the same time in the previous six seasons. COVID-19 pandemic public health and physical distancing measures may have extinguished the 2020/21 European seasonal influenza epidemic with just a few sporadic detections of all viral subtypes. This might possibly continue during the remainder of the influenza season.**

We study features of influenza epidemiology in the World Health Organization (WHO) European Region from week 40 2020 to week 8 2021, a period when in usual seasons the highest influenza activity (peak of seasonal epidemic) would be expected. Results are compared to those of the previous six seasons (2014/15–2019/20).

## Influenza surveillance in the WHO European Region

Influenza surveillance in the WHO European Region is jointly coordinated by the European Centre for Disease Prevention and Control (ECDC) and the WHO Regional Office for Europe [1,2]. Countries and territories report weekly to The European Surveillance System (TESSy) syndromic and/or virological data. The data originate from sentinel primary care sites (using case definitions either for influenza-like illness (ILI) or acute respiratory infection (ARI) [1]), designated hospital sites (for laboratory-confirmed influenza hospitalisation or cases of severe ARI (SARI)), as well as non-sentinel settings, such as those in the context of outbreaks, primary care diagnostic laboratories, hospitals and other healthcare facilities. Reported virological data include information on circulating virus types, subtypes and lineages. In sentinel surveillance, the number of tested specimens is used as denominator to calculate influenza virus

positivity, which is one indicator for influenza activity and intensity. Data are published weekly on the FluNewsEurope webpage [1].

## The COVID-19 pandemic and influenza in 2020

In late 2019, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which is responsible for coronavirus disease (COVID-19), emerged in China [3], from where it further spread. This subsequently led to a pandemic declared on 11 March 2020 [4], which is still ongoing. The implementation during the pandemic of strict public health measures (e.g. working from home, school closures, limiting social gatherings, increased hygiene measures, wearing masks etc.) to decrease SARS-CoV-2 transmission also reduced the circulation of other respiratory viruses [5,6]. This was reflected by an all-time low level of influenza activity in the southern hemisphere in 2020 and elsewhere [7–10].

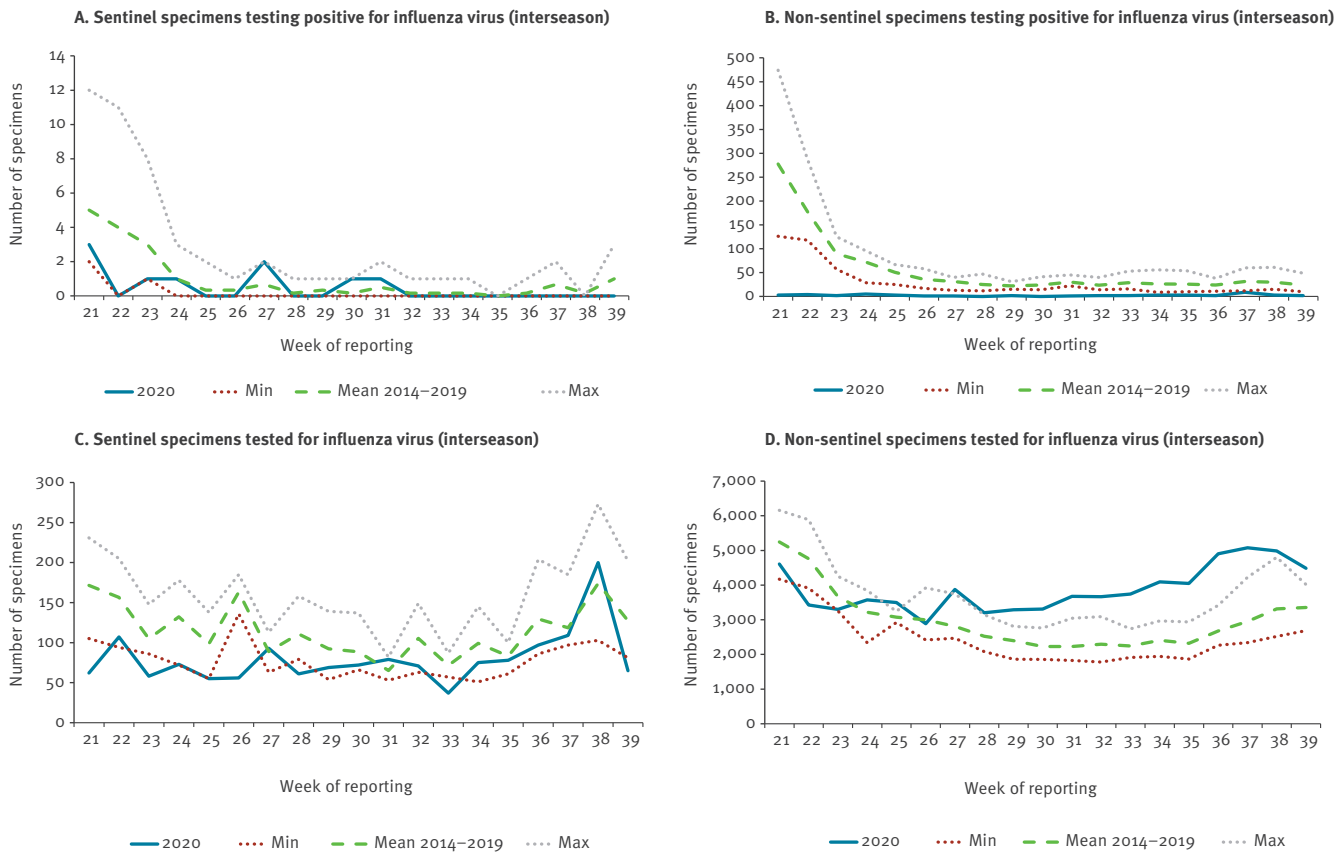
For the WHO European Region, in autumn 2020, we predicted unusually late and low level influenza activity for the 2020/21 winter, based on the low numbers of specimens testing positive for influenza virus, detected in the summer months by sentinel and non-sentinel surveillance (Figure 1A,B), despite substantial testing for influenza virus during the COVID-19 pandemic (Figure 1C,D) [1,11].

## The 2020/21 season in the WHO European Region

We further describe the total numbers of influenza detections and numbers of specimens tested for influenza virus from sentinel, non-sentinel and hospital surveillance systems in the Region from week 40 2020 to week 8 2021. Results are compared to the averages, minimums and maximums of the previous six seasons (2014/15–2019/20). We used a paired t-test with a significance level  $p = 0.05$ .

**FIGURE 1**

Numbers of specimens in the 2020 interseason (weeks 21–39) (A) testing positive for influenza virus in sentinel surveillance and (B) in non-sentinel surveillance, as well as (C–D) numbers of specimens tested for influenza virus by these respective surveillance systems, compared with minimum, mean and maximum of 2014–2019 interseasons, WHO European Region



Max: maximum; min: minimum; WHO: World Health Organization.

Please note the different y-axis scales.

### Sentinel surveillance results

Between weeks 40 2020 and 8 2021, 37 countries and territories in the WHO European Region tested 25,606 sentinel specimens, of which 33 tested positive for influenza virus, with both virus types A and B detected in 11 countries (Figure 2A). Among type A viruses, 13 influenza A(H1)pdm09 viruses were detected compared with six A(H3) and one type A untyped; two of 13 type B viruses detected were ascribed to a lineage, B/Victoria. This number of specimens testing positive is 99.8% lower than in any previous comparable period (first 22 weeks of the 2014/15–2019/20 season) when an average of 14,966 specimens tested positive (range: 12,176–18,748).

The level of tested sentinel specimens in 2020/21 was similar to prior seasons between weeks 40 2020 and 2 2021, but lower from week 3 2021 (Figure 2B). Compared with previous seasons and respective time periods, the overall number of tested sentinel specimens were lower than the average of 39,407 specimens from 2014/15 to 2019/20 (range: 32,746–45,124;  $p < 0.01$ ).

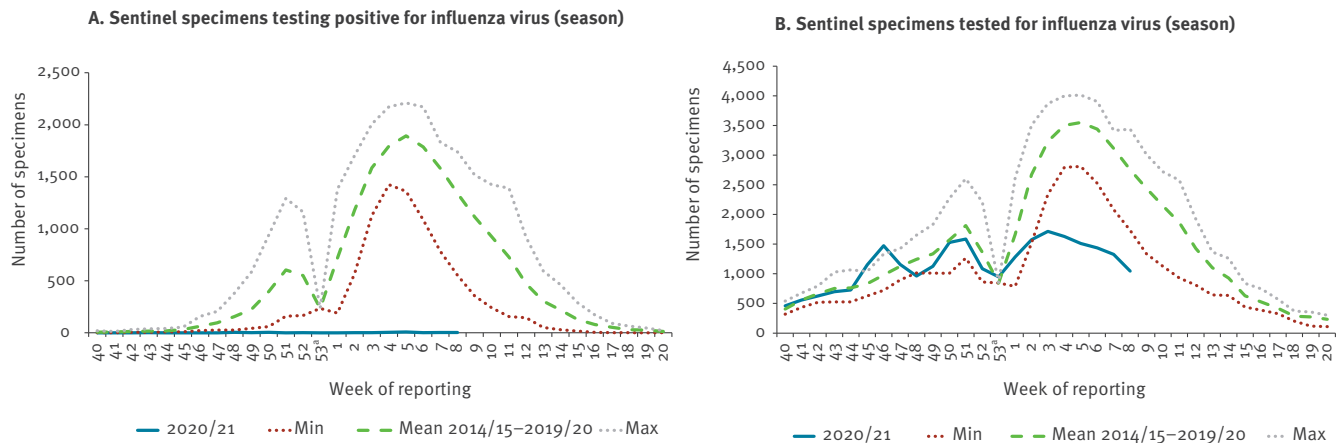
A significantly lower positivity of 0.1% (33/25,606) compared with an average positivity of 38% (14,966/39,407) between week 40 and week 8 ( $p < 0.001$ ) was estimated. The observed 0.3% (3/1,045) positivity in week 8 2021 indicated an exceptional reduction in activity compared with an expected positivity of 48.6% (1,340/2,755) for week 8, based on the average in previous seasons (Figure 3).

### Non-sentinel surveillance results

By week 8 2021, 35 countries and territories tested 424,541 specimens from non-sentinel sources of which 679 specimens tested positive for influenza virus (Figure 4A). The positive specimens were reported from 19 countries and territories across the WHO European Region; the United Kingdom (UK) reported the majority of cases (488; 72%). Similar numbers of type A and B viruses were reported (343 vs 336). Among influenza A viruses, 278 were untyped, 28 were A(H1)pdm09 and 37 A(H3). Among B viruses, 328 had no lineage determined, six were B/Victoria, and two B/Yamagata. Thus, the majority (89%; 606/679) of viruses was reported without subtype or lineage. The number of

**FIGURE 2**

Sentinel-surveillance-obtained numbers of (A) specimens testing positive for influenza virus and (B) specimens tested in the 2020/21 season up to week 8, compared with minimum, mean and maximum of previous seasons (weeks 40–20) in 2014/15–2019/20, WHO European Region



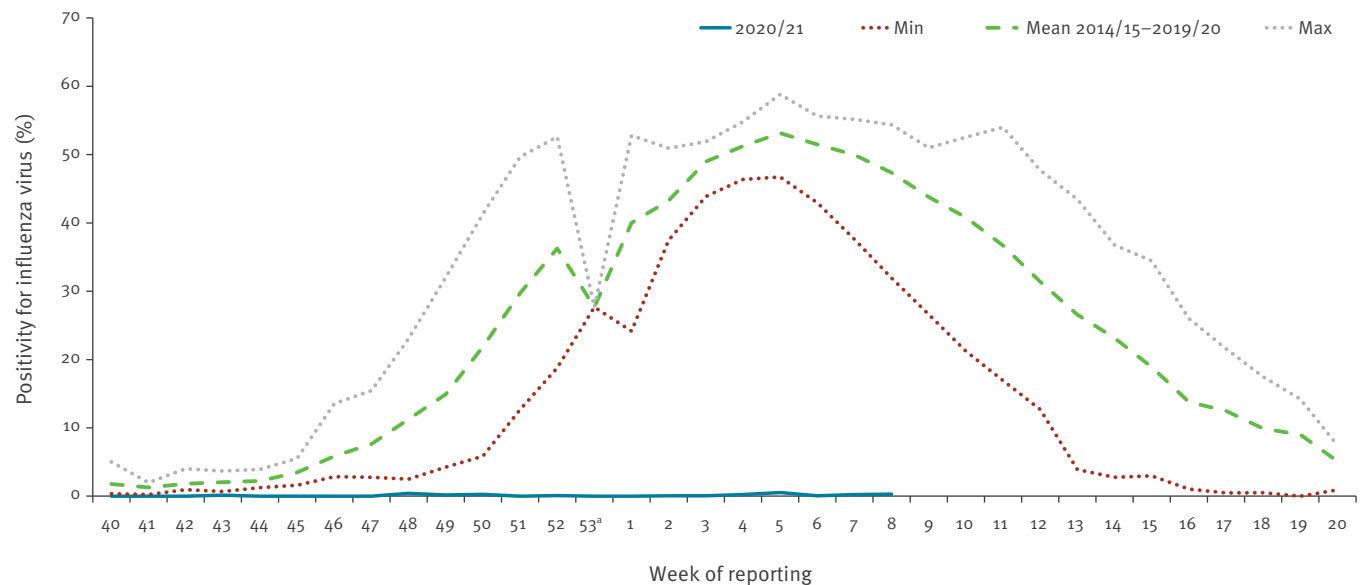
Max: maximum; min: minimum; WHO: World Health Organization.

<sup>a</sup> Only seasons 2015/16 and 2020/21 had week 53.

Please note the different y-axis scales.

**FIGURE 3**

Proportion of specimens testing positive (positivity) for influenza virus in sentinel surveillance in weeks 40 2020–8 2021 compared with minimum, mean and maximum of previous seasons in 2014/15–2019/20, WHO European Region

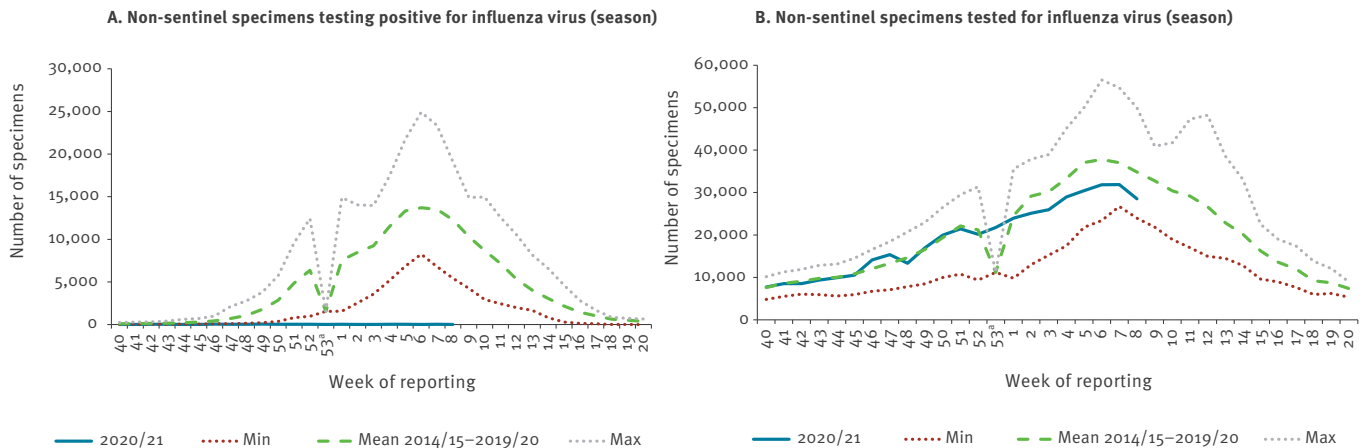


Max: maximum; min: minimum; WHO: World Health Organization.

<sup>a</sup> Only seasons 2015/16 and 2020/21 had week 53.

**FIGURE 4**

Non-sentinel-surveillance-obtained numbers of (A) specimens testing positive for influenza virus and (B) specimens tested in the 2020/21 season up to week 8, compared with minimum, mean and maximum of previous seasons (weeks 40–20) in 2014/15–2019/20, WHO European Region



Max: maximum; min: minimum; WHO: World Health Organization.

<sup>a</sup> Only seasons 2015/16 and 2020/21 had week 53.

Please note the different y-axis scales.

non-sentinel influenza virus detections, similar to sentinel detections, is 99.4% lower than the average of 117,777 specimens testing positive observed during comparable time periods in previous seasons (range: 63,409–165,375;  $p < 0.001$ ; Figure 4A). The number of tested specimens from non-sentinel sources falls in the expected range when compared with similar time periods over the last six seasons (average: 469,126; range: 275,295–604,420;  $p = 0.15$ ) (Figure 4B).

### Severity/hospitalisation

The substantially lower than expected circulation of influenza viruses this season resulted in a small number of reported laboratory-confirmed influenza hospitalisations. Until week 8 2021, only Ukraine reported nine hospitalised influenza cases in non-intensive care units (non-ICU) and two countries (Ukraine and England) reported two and nine hospitalised influenza cases in ICU, respectively.

In contrast to these nine non-ICU and 11 ICU cases, in previous seasons until the same time point, between 1,991 and 13,849 non-ICU and between 2,844 and 7,497 ICU cases with laboratory-confirmed influenza were reported by five to 11 countries and nine to 16 countries, respectively. The numbers obtained so far in the 2020/21 season represent 99.9% (non-ICU) and 99.8% (ICU) reductions in case numbers compared to the respective averages of 6,904 (non-ICU) and 4,602 (ICU) cases for the same period in prior seasons ( $p < 0.001$ ; Figure 5A and B).

From SARI-based surveillance, 13 non-EU/EEA countries and territories tested 8,446 SARI cases for influenza and only 15 cases (0.2%) were reported positive, 11 from Ukraine (eight A(H1)pdm09 and three type A

unsubtyped), three from Armenia (all A(H3N2)) and one from Azerbaijan (type B virus). Significantly more SARI cases were tested for influenza this season compared with the average of 7,213 (range: 4,358–8,733;  $p = 0.02$ ) during the same time period over the last six seasons, when 2,175 (30.2%; range: 1,098–3,212) tested positive. Despite increased testing, a 99.3% reduction in influenza cases was observed during the current season.

Whereas in primary care sentinel, non-sentinel and SARI-derived specimens, a mixture of all subtypes and lineages (albeit with limited B/lineage testing) was detected, in laboratory-based hospital surveillance, more influenza A, particularly A(H1)pdm09, was observed: in non-ICU, seven of the nine type A viruses were subtyped as A(H1)pdm09, while in ICU all 11 specimens were type A viruses, one subtyped as A(H1)pdm09 [1]. The low number of detections overall limits the interpretation of these findings.

### Discussion

During the annual seasonal epidemics in non-pandemic years, influenza causes high burden on the population and healthcare systems of the WHO European Region [12]. The COVID-19 pandemic through 2020 and 2021 had a large impact on influenza circulation in the WHO European Region as well as globally [7–10]. This 2020/21 influenza season is exceptional since the creation of the Global Influenza Surveillance and Response System (GISRS) network in 1952 [13,14]. Despite countries testing a high number of specimens for influenza, most likely in parallel to SARS-CoV-2, e.g. using multiplex assays, only sporadic influenza virus detections of all types, subtypes, and lineages have been reported in the WHO European Region. The epidemic threshold

## FIGURE 5

Number of hospitalised influenza cases in (A) non-ICU units, (B) ICU wards and (C) number of influenza positive cases from SARI surveillance, weeks 40 2020–8 2021 compared with minimum, mean and maximum of seasons 2014/15–2019/20, WHO European Region



ICU: intensive care unit; max: maximum; min: minimum; SARI: severe acute respiratory infection; WHO: World Health Organization.

<sup>a</sup> Only seasons 2015/16 and 2020/21 had week 53.

Please note the different y-axis scales.

of 10% positivity has not been reached in the Region, and seasonal influenza as well as ILI and ARI (data not shown) detections were lower than those observed even during regular summer months. Countries have made large efforts to minimise the impact of the ongoing COVID-19 pandemic on influenza surveillance. In the past, vaccination efforts and communication campaigns on individual behaviour to minimise influenza have been conducted with limited success in reducing virus circulation, however, no strict measures like school closures, stay home orders, using masks, and general reduction of population movement globally, regionally and locally have been in place during any influenza season since 1918 [15]. Because of the lower reproduction number ( $R_0$ ) of influenza virus compared with SARS-CoV-2, such measures are likely to explain the much stronger impact on influenza circulation [16].

Sentinel surveillance is considered the gold standard to monitor influenza activity and to provide the highest data quality from a defined outpatient population (ILI or ARI) tested in National Influenza Centres (NICs) that also perform detailed virus characterisation analyses.

In the current 2020/21 season, most of the samples testing positive for influenza are derived from non-sentinel specimens (collected from different sources without being based on a specific clinical case definition) likely being sampled for parallel SARS-CoV-2 testing. While data from non-sentinel surveillance is usually of a lower quality, e.g. most viruses are not subtyped/lineage determined, the broader specimen sample from non-sentinel surveillance has provided useful data in the situation of a pandemic that is not caused by influenza, where sentinel surveillance alone is not able to identify as many influenza cases because of the likely changes in healthcare seeking and referral behaviour as well as the overall lower numbers of tests performed.

Only four influenza viruses have been genetically characterised this season, and no viruses have been antigenically characterised, providing limited information for vaccine composition decisions [1]. Because of the limited circulation of influenza viruses, NICs have been challenged to collect representative specimens for influenza virus detection and subsequent virus



characterisations [17]. Countries have been encouraged to better utilise non-sentinel specimens for subtype/lineage determination and virus characterisation.

## Conclusion

The coincidental reduction of influenza transmission due to COVID-19 measures within the WHO European Region will possibly continue, with very low-level circulation of influenza viruses for the rest of the 2020/21 season, as long as non-pharmaceutical public health and physical distancing measures remain in place.

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Data are publicly available through [www.FluNewsEurope.org](http://www.FluNewsEurope.org) and ECDC.

## Conflict of interest

None declared.

## Authors' contributions

CA Conceptualization (lead); writing – original draft (lead); formal analysis (lead); writing – review and editing (equal); PM, FL, LF, AM data analysis (equal) – review and editing (equal); AA and RP writing – review and editing (equal). Members of the network coordinated collection of specimens and epidemiological data, analysed the specimens and provided data to TESSy, reviewed the analysis and approved the final manuscript. All authors contributed to the work, reviewed and approved the manuscript before submission.

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