

Early assessment of viral respiratory epidemics for the 2023/2024 season based on community laboratory surveillance network in France



RELAB laboratories

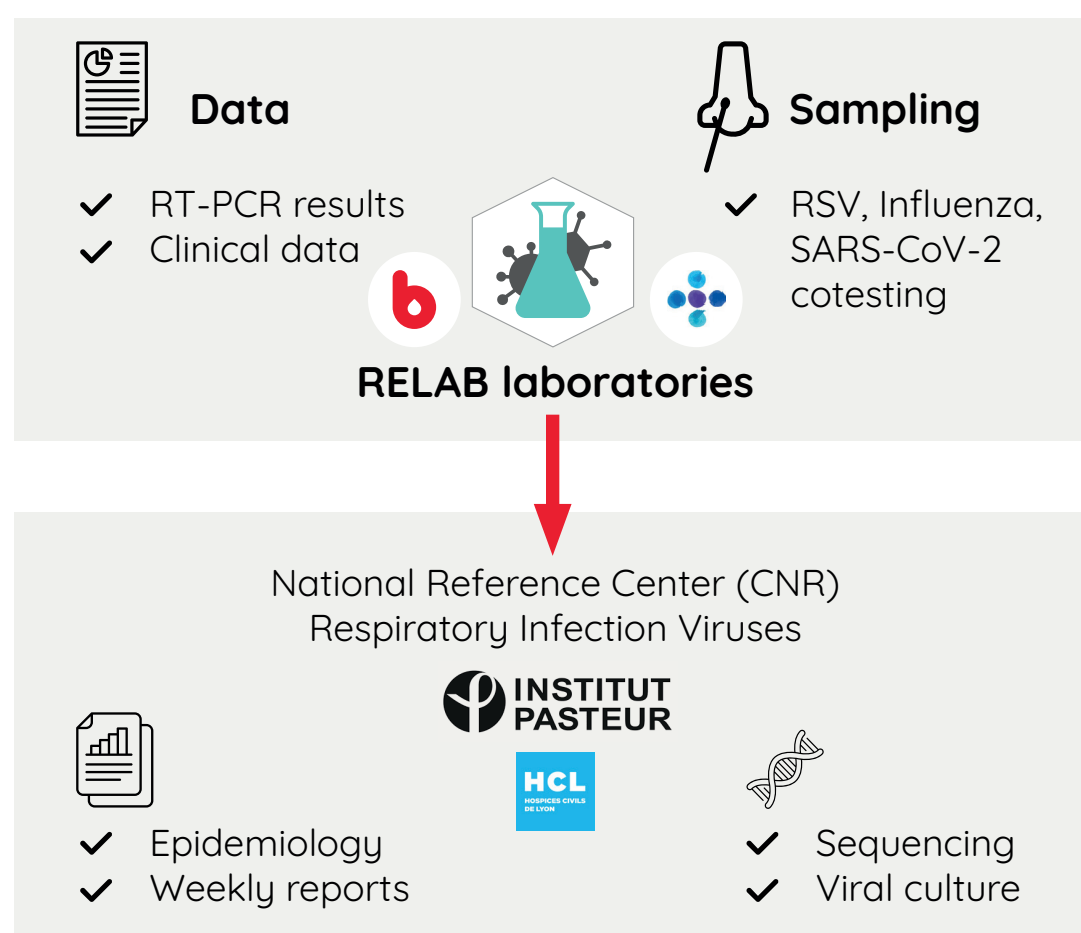
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1 BACKGROUND

The COVID-19 pandemic has underlined the necessity for a large-scale community-based viral surveillance system to efficiently monitor SARS-CoV-2 (SC2) epidemics, and variants. In contrast, it appeared that current surveillance of community-acquired influenza A/B, and RSV infections can be developed for hospitalised patients, nevertheless, ambulatory viral circulation needs to be scaled up. Here, we present results from the new French RELAB network for the 2023/2024 season, aiming to provide extensive community surveillance for viral respiratory infections.

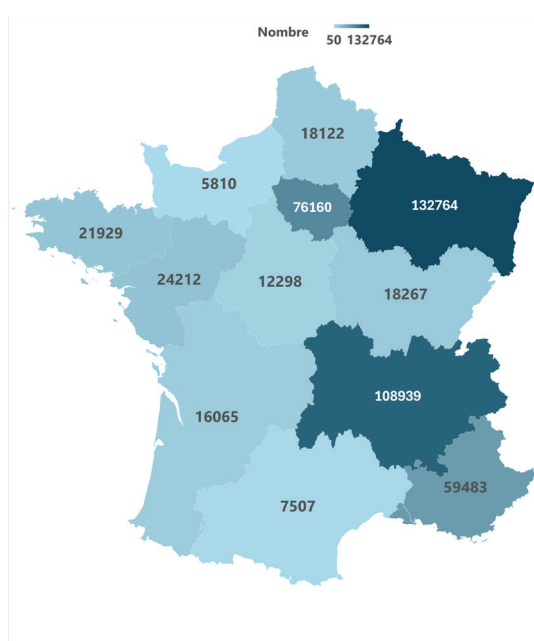
2 MATERIAL AND METHOD



- RELAB network consists in collecting respiratory viral circulation data obtained from 2 private laboratory networks : Biogroup and Cerbahealthcare (Cerballiance and Cerba laboratory). The RELAB network collected data from 1635 (community laboratories in metropolitan France and overseas regions (La Reunion, Martinique territories).
- Weekly reports of systematic PCR results were collected, along with clinical data including age, sex, French department, date of SC2 and Flu vaccination, clinical symptoms such as fever or cough, recent Beyfortus® injection for children less than 1-year old, were submitted to the French national reference centers, CNR (Hospices civils of Lyon, and Pasteur Institute, Paris)
- All patients signed an informed consent form, and a harmonized set of demographics and clinical information was collected, including presence of respiratory symptoms, fever, vaccination status, date of vaccination, age, sex and date of symptom onset.
- Pseudo anonymized data including RT-PCR test results, Ct values, demographic and clinical data are sent weekly to the CNR, allowing real-time surveillance.
- A subset of positive samples is also provided for phenotypic and genotypic characterization.

3 RESULTS

Figure 1 : Number of samples collected by region, October 2023- March 2024



- From weeks 40/2023 to 11/2024, a total of 399 039 patients were enrolled across all French regions, including 142,620 (35.7%) positive cases and 256,419 negative cases. (Figure 1).
- During this period, the proportion of asymptomatic infection was 853/10,773 (7.92%), 1,820/39,953 (4.55%) and 8,960/93,697 (9.56%) for RSV, influenza, and SARS-CoV-2, respectively.
- From week 43/2023, a gradual influenza surge was observed, first in patients below 5 years. In this age group a positivity rate of more than 50% was reached in week 6/2024 (Figure 2).
- Each week, a report was published by CNR and made available for physician, medical biologist and health agencies (Figure 3).
- The influenza positivity rate was around a two-fold higher among non-vaccinated than vaccinated people at the peak of the epidemic (Figure 4).
- The estimated vaccine effectiveness against PCR-detected influenza infection was 48.5% (CI 95 [45.1%; 51.6%]) when vaccinated between 15 days and 6 months before infection.
- RSV WGS performed on 202 samples mainly identified clades A.D.1, A.D.3 and A.D.5 for RSV A, while RSV B sequenced mainly belonged to B.D.5.2 clade.

Figure 2 : COVID-19, Influenza and RSV positivity rates by week according to age category

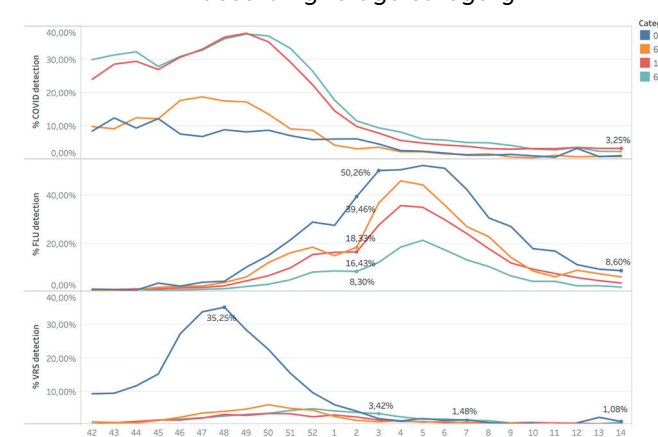


Figure 3 : Weekly report example (page for influenza detection)

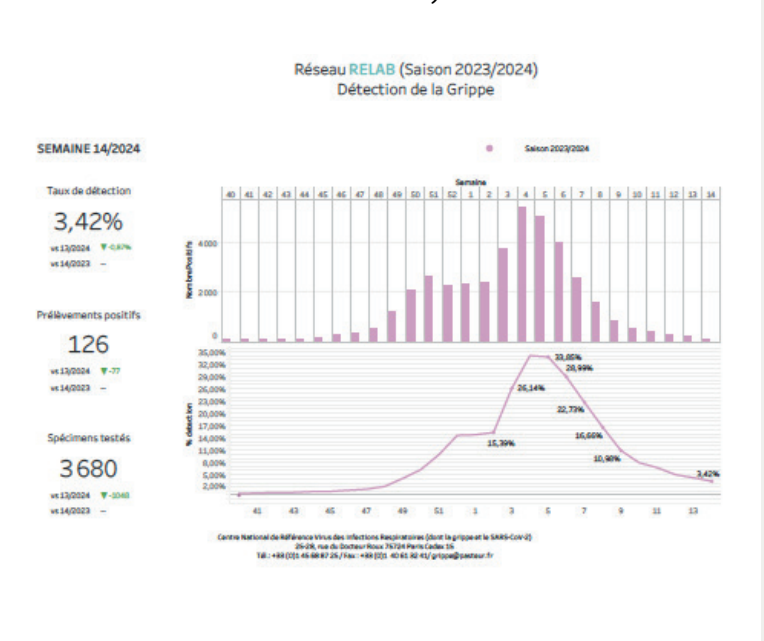
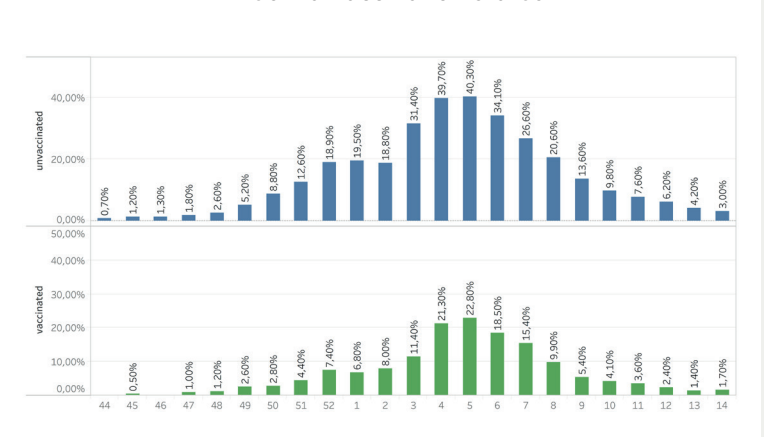


Figure 4 : Influenza positivity rate by week according to influenza vaccination status



4 CONCLUSION

Our preliminary results show that community laboratory-based data may play a pivotal role in the surveillance of RSV, influenza, and SARS-CoV-2 infections. They cover a broad demographic and clinical spectrum in a detailed geographical landscape and provide early genomic characterization of circulating viruses.