Aetiology of respiratory viruses amongst older adults in Europe

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BACKGROUND & OBJECTIVES

POS-ARI-PC-001 is a prospective multi-centre observational study enrolling patients who are either ≥60 years or 50-59 years with a long-term health condition qualifying for influenza vaccination, across 5 European countries. (financially supported by SANOFI).

The objective of this study is to determine the etiology of respiratory tract infections in elderly patients presenting with acute symptoms to their general practitioner.

METHODS

Patients were consecutively enrolled over at least 12 consecutive months. To account for the seasonality of the pathogens, a monthly sampling framework was pre-defined.

One combined oropharyngeal/nasal swab was taken at baseline, placed in universal transport medium and stored frozen until monthly analysis (at the central laboratory in Antwerp, Belgium). Nucleic acids were extracted by using the MagMAX Viral/Pathogen II Nucleic Acid Kit on the KingFisher Flex and analysed by the TrueMark Respiratory Panel 2.0, TaqMan Array Card (ThermoFisher Scientific) by using a Quantstudio 7Flex. The following organisms were targeted: influenza (INF) A and B; INF A H1 and H3; SARS-CoV-2; human coronavirus (hCoV) 229E, OC43, NL63 and HKU1; human rhinovirus (HRV); human metapneumovirus (hMPV); respiratory syncytial virus (RSV) A and B; adenovirus (AdV); human bocavirus (hBoV); parainfluenza virus (PIV1-4); human parechovirus (hPeV), enterovirus (EV) and Enterovirus D68 (EV-D68) infections. The latter were confirmed by the Belgian Reference Centre.

RESULTS

Samples from 490 patients, enrolled from 02/2024, 08/2024, 02/2025, 03/2025 till 01/04/2025, in the United Kingdom, France, Spain and Italy (Fig. 1), respectively, were analysed (males n= 197, females n=293, 50 - 93 years old). In 312/490 (63.7%) ≥1 respiratory virus was detected (Fig. 2): 107/490 (21.8%) HRV, 61/490 (12.4%) INF, 32/490 (6.5%) hCoVs, 30/490 (6.1%) EV-D68, 26/490 (5.3%) hMPV, 24/490 (4.9%) RSV, 23/490 (4.8%) SARS-CoV-2, 20/490 (4.1%) PIV 1-4, others in ≤1% (Fig. 4). An overview of monthly infections is presented in Fig. 3. In addition, *M. pneumoniae* (n=2, 03/2024-04/2024, United Kingdom) and *Bordetella* (n=4, 03/2024-05/2024, United Kingdom) infections were also detected. During the winter months, dual viral infections were detected in samples collected from 21 patients. INF was involved in 13/21, HRV in 12/21 and both were detected in 7/21. In 2 specimens both INF A H1 and H3 were detected.

RSV and INF were detected during winter, hMPV during winter and spring, whereas PIV 3 and hCoVs were mostly detected in spring, EV-D68 and PIV 1,2 and 4 were mainly detected in autumn and HRV and SARS-CoV-2 were detected all year round (Fig. 5).

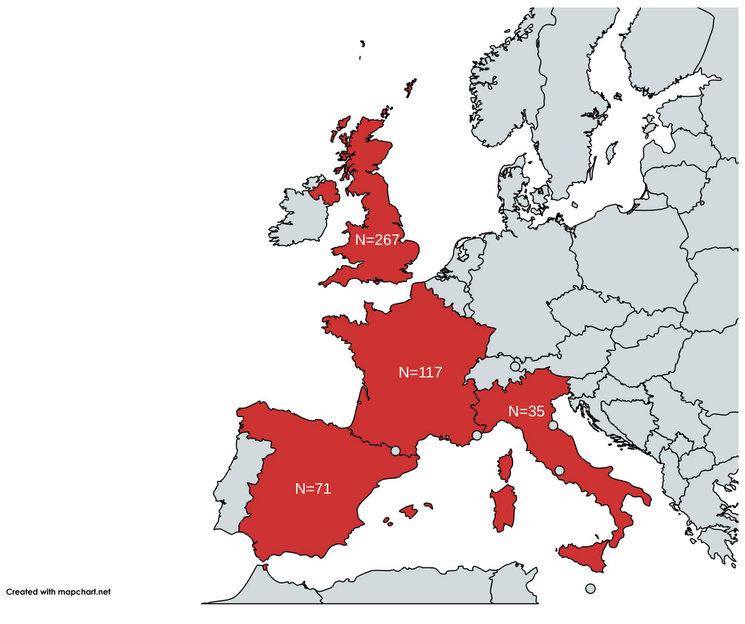

Figure 1: Nr of participants per country

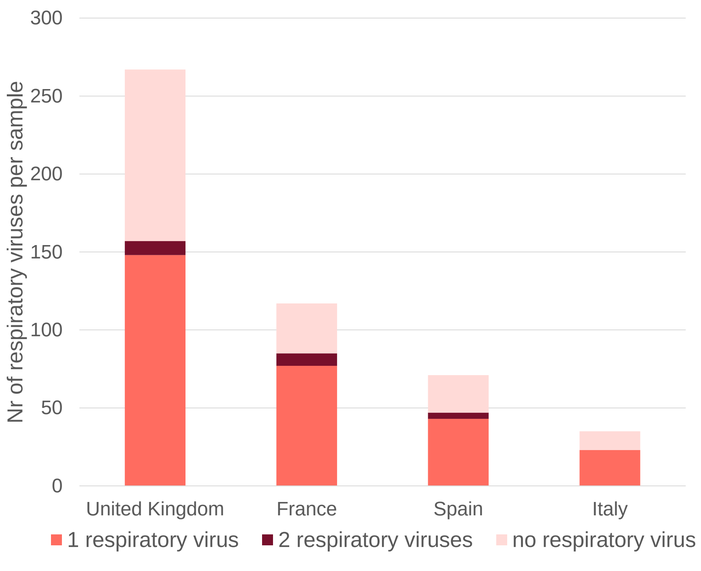

Figure 2: Nr of respiratory viruses detected per sample per country

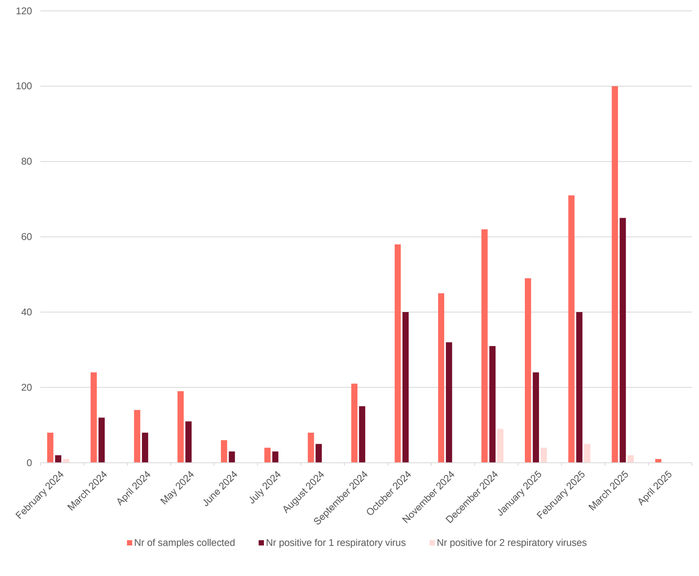

Figure 3: Nr of respiratory viruses detected per sample per month

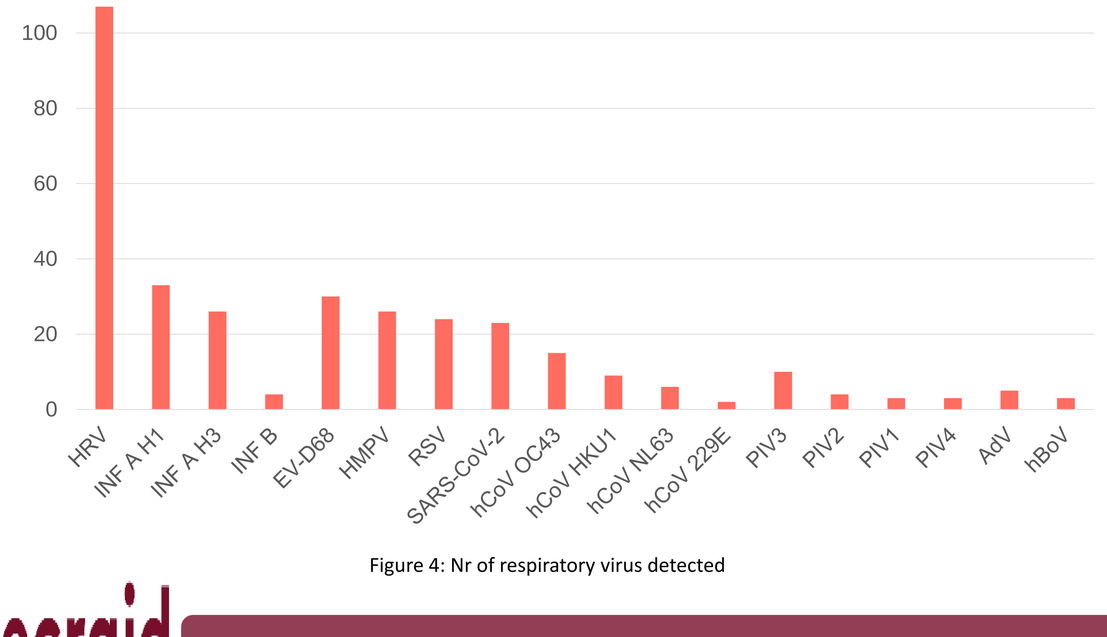

Figure 4: Nr of respiratory virus detected

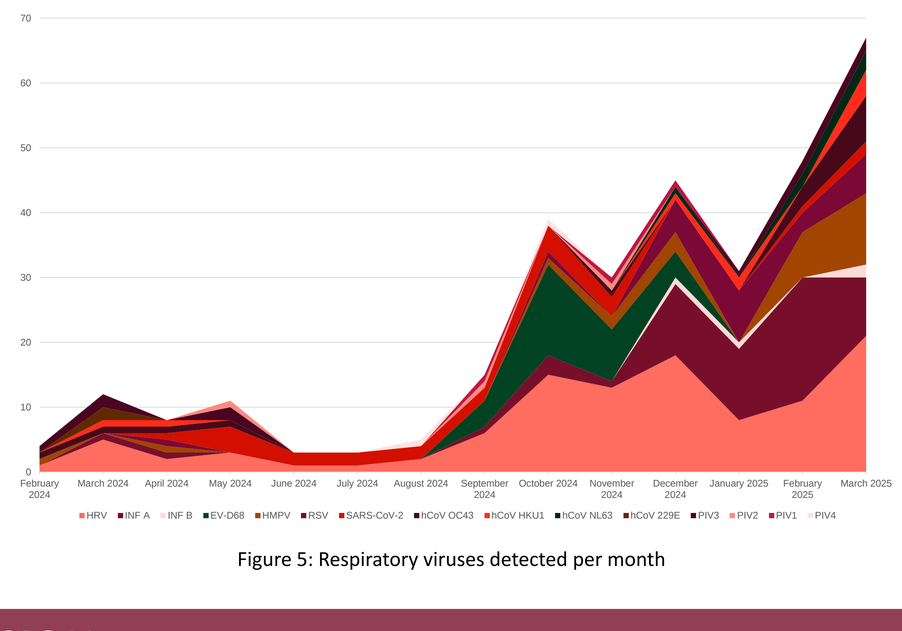

Figure 5: Respiratory viruses detected per month

CONCLUSION

Rhinoviruses, influenza viruses and hCoVs were most often detected. RSV and hMPV were detected at similar rates. Surprisingly, EV-D68 was also detected in 6.1% of patients.

Disclosures: This study is funded by Sanofi and executed by Ecraid with partner institutes from the Primary Care Research Network. OM is an employee of Sanofi and may hold shares/stock options in Sanofi. CB has undertaken part-time remunerated consultancy for GSK, Moderna, Shionogi, Sanofi, and Lindus Health. KL, NT, GG, HG, CB, AV, GL received Sanofi funding via Ecraid. This study builds on the Perpetual Observational Study on acute RTI in primary care (POS-ARI-PC) in the ECRAID-Base research infrastructure which has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 965313.