on the cobas SARS-CoV-2 assay (Roche) and the Aptima SARS-CoV-2 assay (Hologic).

Findings: We demonstrated comparable sensitivity, specificity, and agreement between self-collected nasal and Rhinoswab samples, compared to HCW- collected samples tested using the cobas SARS-CoV-2 and Aptima SARS-CoV-2 assays. In our study the clinical performance of self-collected specimens was comparable to HCW-collected samples, with both self-collect nasal and Rhinoswab samples resulting in 90-95% sensitivity, and in most cases >95% specificity.

Discussion: Without the availability of samples for NAAT the ability to perform genomic testing is limited, reducing surveillance and public health investigations. We showed that genomic sequencing from self-collected samples can correctly identify the virus lineage and that the main determination of successful genomic testing is a high viral load rather than collection method.

Conclusion: These data support self-collection as an accessible method for community testing for COVID-19 and introduces a novel collection device, the Rhinoswab as an alternative to the standard nasal swab. The testing method of self-collection can be expanded from the widely used RATs to NAAT and genomic testing which may inform the management and public health response to the COVID-19 pandemic.

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HOW WILL DEMOGRAPHIC CHANGE AFFECT THE DISEASE BURDEN OF FUTURE EPIDEMICS?

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Intro: The burden of infectious diseases is influenced by the structure of the population at risk. Population ageing may have implications for the disease burden of future epidemics. Moreover, changing household structures induced by population ageing may influence the dynamics of disease transmission and burden of infections transmitted via close contact interactions. We aim to investigate the impact of demographic change on the disease transmission dynamics and future disease burden and illustrate this for COVID-19 and influenza-like illness (ILI).

Methods: We simulate the Belgian population between 2020 and 2050 using an individual-based model with census data. The simulated population structures were used as input for an infectious disease model that distinguishes between exposure to infection in the household versus exposure in the community at large. We mimicked outbreaks of COVID-19 and ILI of varying total final size.

Findings: The simulated population ages between 2020 and 2050, which also affects household size and composition. As the proportion of elderly people in the population increases, the overall attack rate slightly decreases because older age groups have fewer contacts and are therefore less likely to incur and transmit infections. Despite the lower per-person attack rate, the estimated disease burden increases as morbidity and mortality increases with the age at infection.

Conclusion: The demographic changes induced by population ageing have an impact on the burden of future outbreaks of COVID-19 and ILI in Belgium. The shifting age distribution implies that the elderly, a population group with increased morbidity and mortality in case of infection, make up an increasing proportion of the total population. Population ageing also leads to an increasing proportion of single-person households and collective households (e.g. nursing homes) in the population. Since the household attack rate varies by household size and composition, the living arrangements of the elderly population influences the disease burden of future epidemics to some extent.

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DETECTION OF PUBLIC HEALTH THREATS GLOBALLY: A 20-YEAR ANALYSIS

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Intro: Detecting and responding to acute public health threats is one of the World Health Organization's (WHO) most important activities. Therefore, WHO established a unique approach for the global detection and verification of events of potential international public health concern and adopted an all-hazards approach as part of the International Health Regulations (2005), moving beyond a focus on infectious diseases only. Here, we analysed 20-year trends of acute public health events globally.

Methods: We extracted data on acute public health events reported between 2002 and 2021 from the Event Management System (EMS). EMS is an internal WHO web-based platform used for tracking health threats globally. We examined the designation, source and hazard of events by WHO Region and over time by calculating descriptive statistics and trends using R.

Findings: Between 2002 and 2021, 7572 events were recorded globally in EMS, ranging from 231 to 576 per year. Of these, 5466 (76%) were designated as substantiated, deemed true acute public health events, and only a small proportion (379, 5%) were unverifiable or had no designation. During the 20-year period, sub-