SARS-CoV-2 seroprevalence among vaccinated nursing home residents and staff in Belgium in August 2021

BRIEF COMMUNICATION ON PRELIMINARY RESULTS OF THE SCOPE STUDY

(Sars-COv-2 seroPrEvalence)

1 September 2021

Eline Meyers, Ellen Deschepper, Els Duysburgh, Liselore De Rop, Tine De Burghgraeve , Pauline Van Ngoc, Marina Di Gregorio, Simon Delogne, Anja Coen, Nele De Clercq, Laëtitia Buret, Samuel Coenen, An De Sutter, Béatrice Scholtes, Jan Verbakel, Piet Cools, Stefan Heytens

Contact person: Stefan Heytens stefan.heytens@ugent.be +32 475 39 58 43

1 BACKGROUND

The SCOPE study assesses the prevalence of anti-SARS-CoV-2 antibodies among a representative sample of residents and staff in Belgian NH (nursing homes). Starting from February 1st 2021, a cohort of 1,640 residents and 1.368 staff members in 69 Belgian NHs are being tested every two months on the presence of anti-SARS-CoV-2 antibodies.

This brief communication reports on the prevalence of anti-SARS-CoV-2 antibodies among vaccinated nursing home residents and staff. At the end of April 2021, the large scale vaccination campaign in Belgian nursing homes, which took place between January 5th and March 24th 2021, resulted in a vaccination coverage of 97% in NH residents and 84% in staff members. For these vaccinated groups, we describe the prevalence of anti-SARS-CoV-2 antibodies immediately following the vaccination campaign (April, 2021) and the seroprevalence evolution over the two following testing periods (in June and August 2021). Data collection of the August 2021 testing period was not finished at the time of compiling this brief communication. The August 2021 testing period comprises the data from 65 out of the 69 nursing homes. Additionally, some antibody test results are expected the coming weeks in case of self-sampling (for staff in particular). Results given here are preliminary. Small adaptations in some data might occur in future reports.

2 VACCINATION COVERAGE

At the testing period in August 2021, 97% of NH residents and 84% of staff were, based on the vaccination coverage among these participating in April 2021, fully vaccinated for more than four months (see Table 1).

The vaccination coverage among the cohort in June and August 2021 is not available yet.

Table 1: Vaccination coverage[1,2] among residents and staff during February and April 2021

	Not vaccinated		At least 1 dose[1]		Fully vaccinated[2]	
	Number[3]	%	Number[3]	%	Number[3]	%
Residents						
February 2021 (n=1,583)	62	4	1,521	96	1,077	68
April 2021 (n=1,552)	31	2	1,521	98	1,506	97
Staff						
February 2021 (n=1,257)	189	15	1,068	85	607	48
April 2021 (n=1,296)	160	12	1,136	88	1,087	84

[1] Participants that received at least one dose one day or longer before the antibody testing

[2] Participants that received all required doses (i.e. 1 dose for Johnson & Johnson vaccine, 2 doses for the others) one day or longer before the antibody testing.

[3] n, total number participants that completed vaccination data in the questionnaires.

3 SARS-COV-2 SEROPREVALENCE OVER TIME

At the testing periods in April, June and August 2021, we assessed the presence of anti-SARS-CoV-2 antibodies among the residents and staff that were fully vaccinated[1] (Table 2). Between April and August 2021, the **SARS-CoV-2 seroprevalence among fully vaccinated residents in Belgian NH decreased from 91% (95% CI: 89-93) to 69% (95% CI: 64-73) and among fully vaccinated staff from 99% (95% CI: 98-99) to 90% (95% CI: 87-92)**. (Table 2 and Figure 1). This means that in both groups, at about four months after being fully vaccinated, a decrease in persons with detectable SARS-CoV-2 antibodies has been observed. However, this decrease was larger among the residents (decrease of about 20%) than among the staff (decrease of about 10%). We also observed that among residents, about 10% did not develop antibodies after vaccination as among staff, almost everyone developed antibodies. The SARS-CoV-2 seroprevalence among fully vaccinated residents is quite similar across the different age groups.

Table 2: Number and adjusted prevalence of anti-SARS-CoV-2 antibodies among fully vaccinated residents and staff in Belgian nursing homes, total residents and per age group and total staff, in April, June and August 2021

	April 2021		June 2021		August 2021	
	Number positive/total	Prevalence % (95% CI[2])	Number positive/total	Prevalence % (95% CI[2])	Number positive/total	Prevalence % (95% C[2]I)
Residents						
< 60	22/24	92 (75-98)	25/25	100 (NA[3])	16/25	64 (41- 82)
60-69	75/78	96 (89-99)	69/72	96 (88-99)	45/64	70 (57- 81)
70-79	210/221	95 (91-97)	195/213	92 (87-95)	141/195	72 (65- 78)
80-89	616/680	91 (88-93)	564/651	87 (83-90)	395/574	69 (63- 74)
≥ 90	394/442	89 (85-92)	341/418	82 (76-86)	254/377	67 (62- 73)
TOTAL[1]	*1,345/1,475*	***91 (89- 93)***	*1,220/1,408*	***87 (83 - 89)***	*869/1,261*	***69 (64 - 73)***
Staff						
TOTAL	*1,029/1,040*	***99 (98 - 99)***	*950/959*	***99 (98-100)***	*591/657*	***90 (87 - 92)***

[1] Participants for whom date of birth is missing, are included in the total number of residents but not in the specific age categories.
[2]CI, confidence interval.
[3]NA, not available

[1] Only seroprevalence data from residents/staff that were fully vaccinated ≥14 days before the antibody testing date in April 2021 is presented.

Figure 1 : Adjusted prevalence of anti-SARS-CoV-2 antibodies among fully vaccinated residents and staff in Belgian nursing homes in April, June and August 2021.

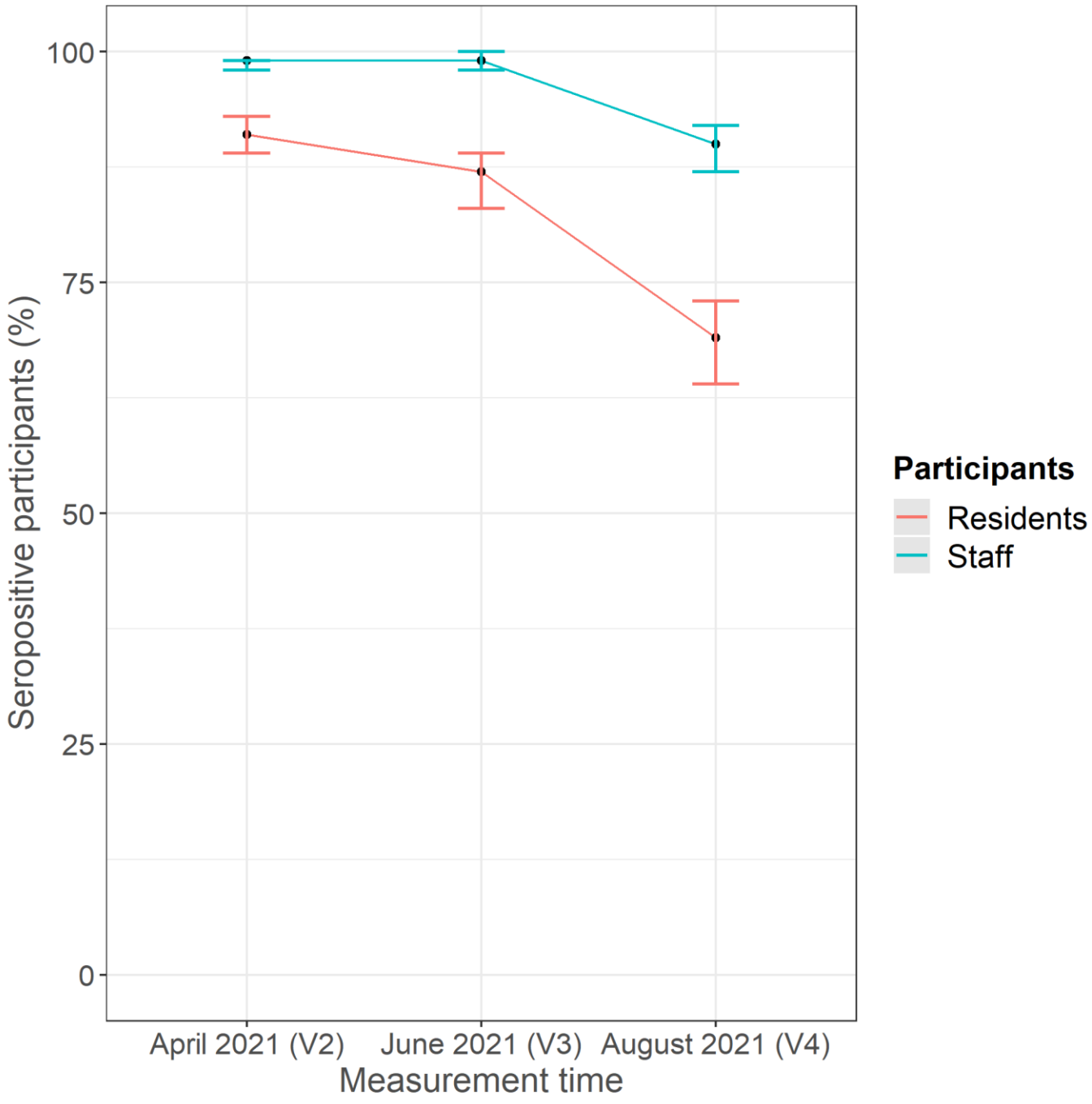
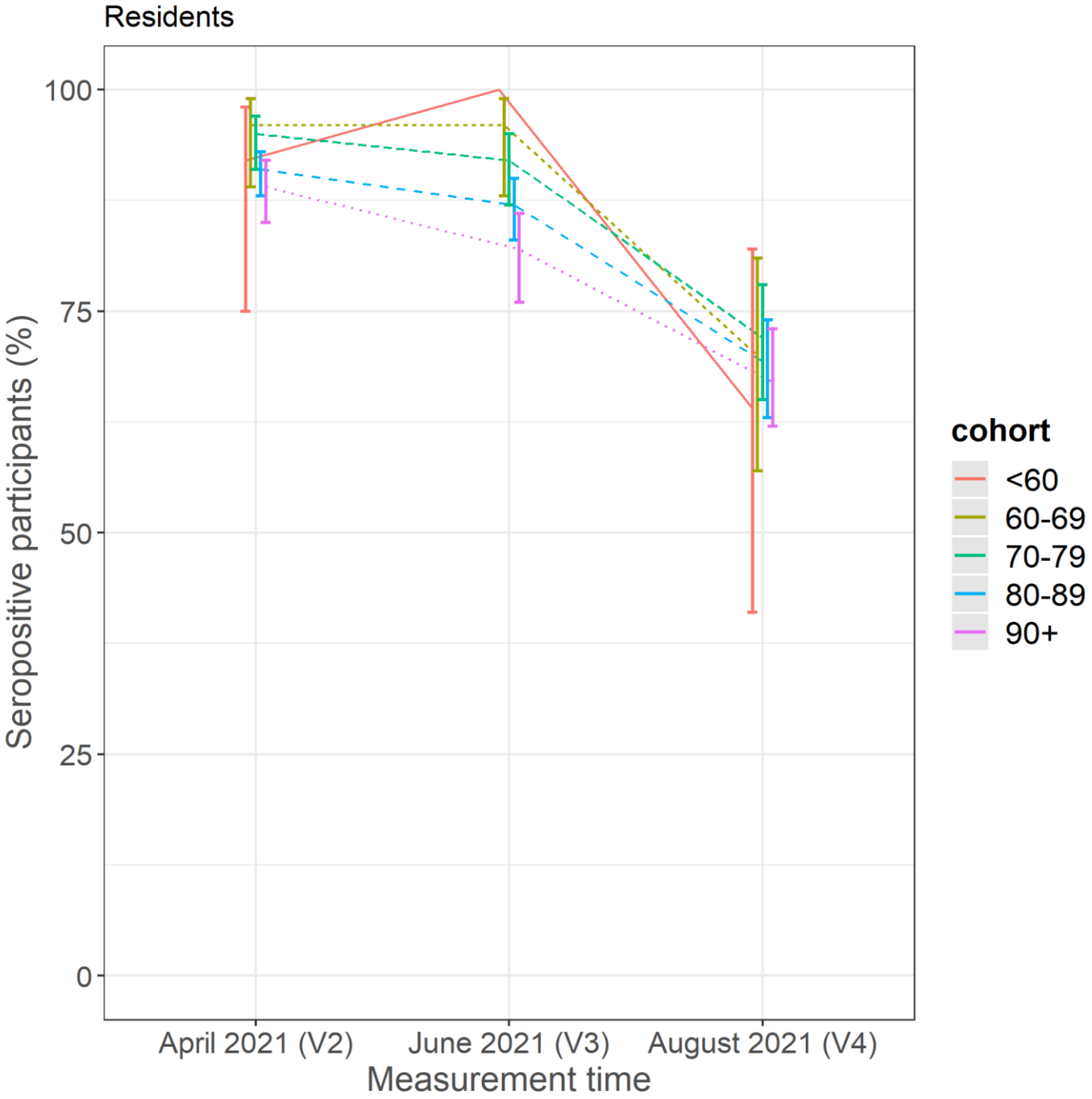


Figure 2: Adjusted prevalence of anti-SARS-CoV-2 antibodies among fully vaccinated residents in Belgian nursing homes per age group in April, June and August 2021.



4 FINDINGS AND RECOMMENDATIONS

Findings

- **In August 2021**, about four months after being fully vaccinated, we noticed **among fully vaccinated residents and staff in Belgian nursing homes** a decline in residents and staff having anti-SARS-CoV-2 antibodies. In August 2021, **69% of the residents and 90% of the staff had anti-SARS-CoV-2 antibodies**.

- Among fully vaccinated nursing home residents, it seems that the antibody response to vaccination was satisfactory. We noticed a lower antibody response with increased age, although these observed differences are small. **In April 2021**, immediately after the large scale nursing home vaccination campaign that ended 24 March 2021, **89% of the ≥ 90** (oldest age category) **and 96% of the 60-69** (youngest age category**) age group had SARS-CoV-2 antibodies**.

- The **decline of fully vaccinated residents with anti-SARS-CoV-2 antibodies** is observed in all age groups and the **trend in this decline** seems to be **the same in all age groups**.

Recommendations

Although in August 2021, about four months after being fully vaccinated, a decline in fully vaccinated residents and staff in Belgium NH having anti-SARS-CoV-2 antibodies is noticed, it is not yet clear if these residents lost their clinical immuno-protection against a new SARS-CoV-2 infection. At present, only a minority of the hospitalized patients and those who need intensive care are fully vaccinated nursing home residents and mortality and hospitalization among NH residents is a lot lower than what was seen before vaccination[2]. Therefore, it is **not clear if our study findings regarding a decline of residents with anti-SARS-CoV-2 antibodies should impact the present vaccination policy in this group**. However, close monitoring of these key indicators, being; SARS-CoV-2 seroprevalence, hospitalization and mortality, is needed to be able to adapt policies and measures if needed.

Study results from the following SCOPE study testing period (October and December 2021) will provide further insights on the duration of the antibody responses upon vaccination. We also prepare a survival analysis on these data.

[2] Belgium COVID-19 Epidemiological Situation: Nursing Home Surveillance. 2021. Sciensano. Belgium COVID-19 Studies - Sciensano › Nursing Homes (google.com). Accessed August 31st, 2021.

For general methods and study protocol we refer to:

Study Protocol: https://www.sciensano.be/nl/biblio/sars-cov-2-seroprevalence-among-nursing-home-staff-and-residents-belgium-protocol

Report visit 1 (February 2021): https://www.sciensano.be/sites/default/files/sars-cov-2_seroprevalence_in_nh_report_june_2021.pdf

Report visit 2 (April 2021): SARS-CoV-2 seroprevalence among nursing home residents and staff in Belgium - Results visit 2 – April 2021 | sciensano.be