Three sequencing confirm

5.1.2e

04-09-2020

Timeline case 1

80 year old man with history of COPD, obesity, CHD, prostate carcinoma

16-03 erysipelas lower right leg
20-03 to 03-04 admitted to hospital for erysipelas treatment
12-04 readmitted due worsening of leg wound and low oxygen saturation. CRP 104. X-thorax: no infiltrates. PCR nose/throat swab: positive (Ct 15). O2 treatment and supportive care. Not intubated.
20-04 discharged from hospital
02-05 complaints of increased drowsiness
04-05 readmitted to hospital due to renal dysfunction, pneumonia and *C.difficile* infection. PCR nose/throat swab: negative.
05-05 admitted to ICU. PCR on lower airways material: positive (Ct 27)
07-05 discharged from ICU
09-05 PCR sputum: negative
15-05 discharged to recovery care centre

Timeline case 2

60 year old man with no relevant medical history

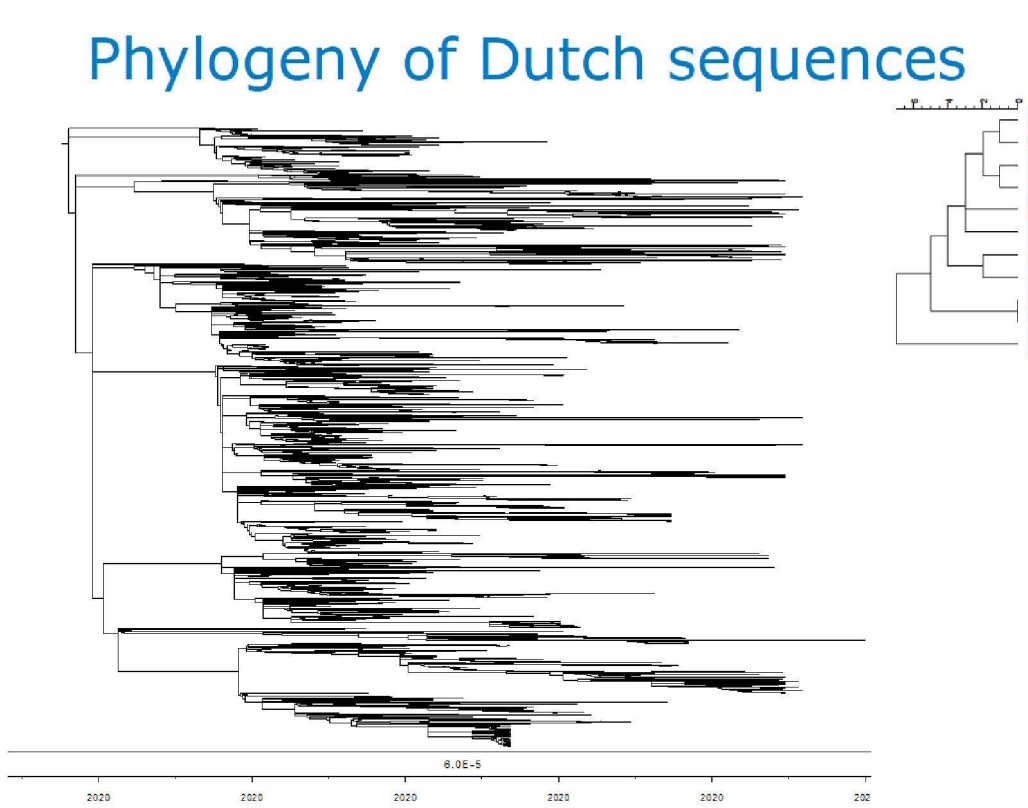
07-04 presented with abdominal pain and progressive dyspnea
14-04 admitted to hospital. X-thorax: bilateral infiltrates.
PCR nose/throat swab: positive (Ct 26). O2 treatment and supportive care. No intubation
17-04 discharge from hospital
19-04 readmitted with progressive dyspnea. PCR nose/throat: negative.
20-04 admitted in ICU, required ventilation
24-04 multiple lung embolisms
26-04 broncho-alveolar lavage PCR positive (CT 26)
12-05 galactomannan positive and treated for pulmonary aspergillosis
09-06 discharge from ICU

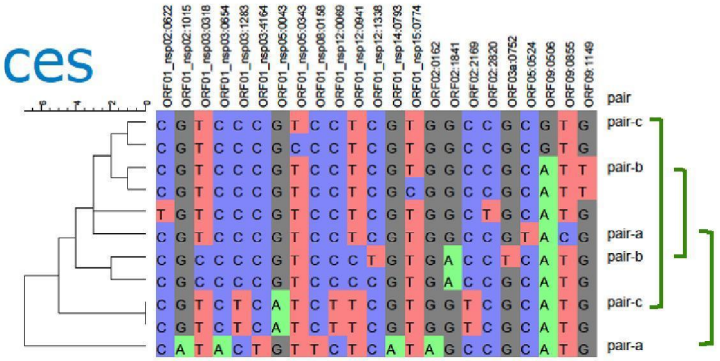
Timeline case 3

82 year old male with history of diabetes, hypertension, CHD, obesity, gout, gonartrosis. Living in long term care facility with a private room.

01-04 presented with fever, less approachable/communicative, general malaise, mild coughing, no respiratory distress. Patient room placed in isolation
02-04 PCR nose/throat swab: positive.
09-04 moved to in-house COVID19 isolation unit
12-04 fever and decubitus treated with amoxicillin/clavulanic acid (augmentin)
14-04 resolution of pulmonary symptoms
16-04 non-productive cough
20-04 discharged from COVID19 unit to personal room
09-06 complaints of increased diarrea and changed defecation. PCR throat/nose swab: positive. No fever, oxygen saturation 92%. Initially interpreted by local municipal health service as remnant RNA. No contact tracing was performed. Did advise 2 week quarantine and care in protective equipment.
12-06 resolution of complaints
18-06 ceased all isolation measures

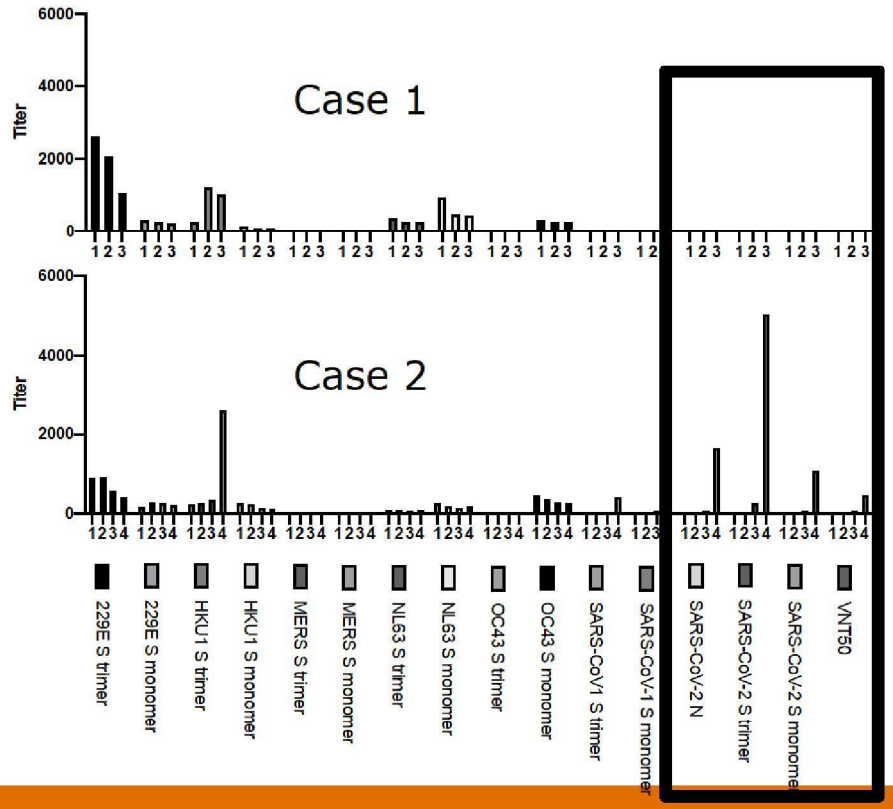
Phylogeny of Dutch sequences





GISAID (31-08-2020): 2280 Dutch sequences

Coronavirus serology via micro array



For case 1 and 2 sequential sera were available. At the earliest available time point both had no response to SARS-CoV-2 antigens.

Case 2 seroconverted over time with a broad response to multiple SARS-CoV-2 antigens.

For the 3rd patient no sera were available for testing.

Labinf@ct sent on 15-07-2020

Nationwide signaling system by e-mail to all laboratories, municipal health services and relevant clinicians, requesting notification of suspected cases of COVID19 re-infection.

Reporting criteria:

- Patients with a first COVID19 episode with a positive PCR or first clinical episode from a household with a previous PCR-positive case

OR

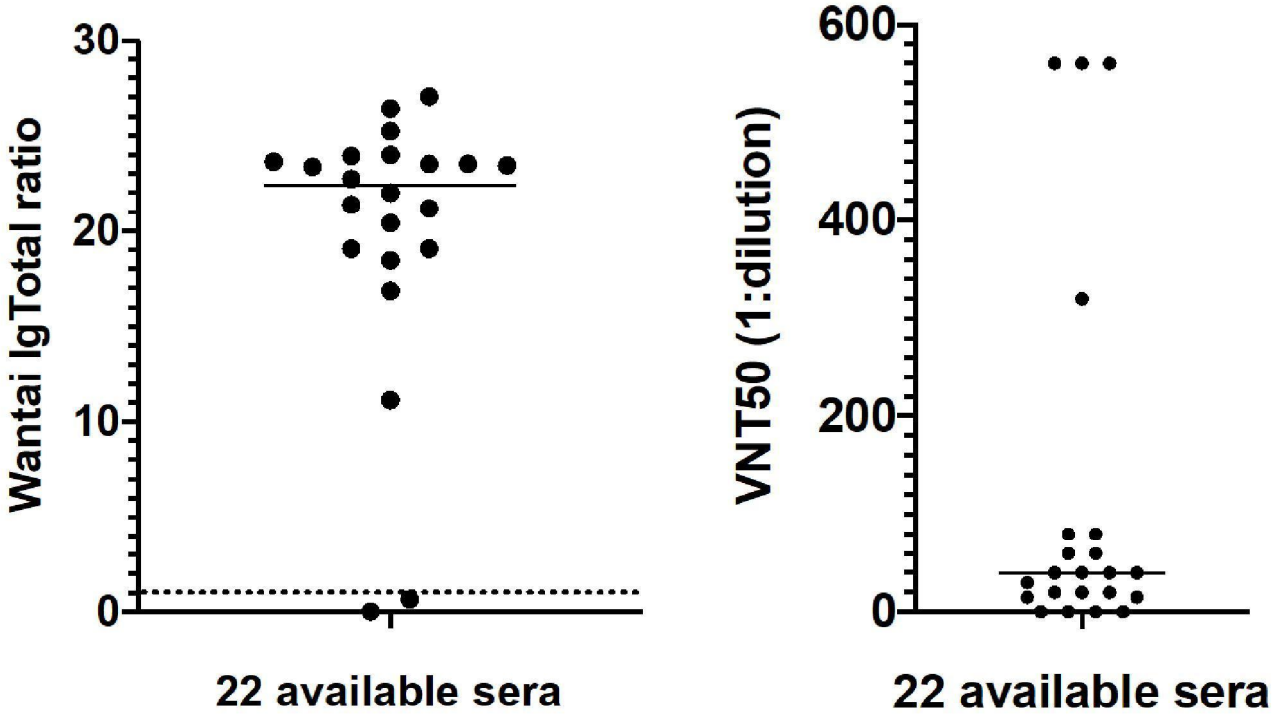
- A second clinical episode with symptoms matching COVID19 and a positive PCR and symptom-free interval of at least 8 weeks

Reported reinfection

As of 31st of August 2020

- 38 reported cases of possible reinfection
- 22 possible cases had available materials
- 15 of 22 cases had >8 weeks of symptom-free period
- 5 of 22 cases did not report symptoms of <8 weeks symptom-free period
- 2 of 22 cases dates of symptom onset unknown

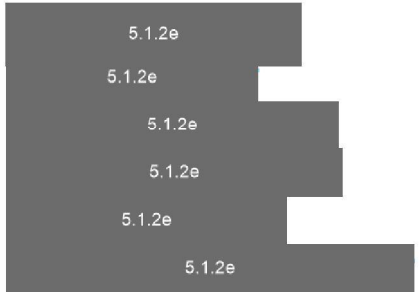
Serology and virus neutralization



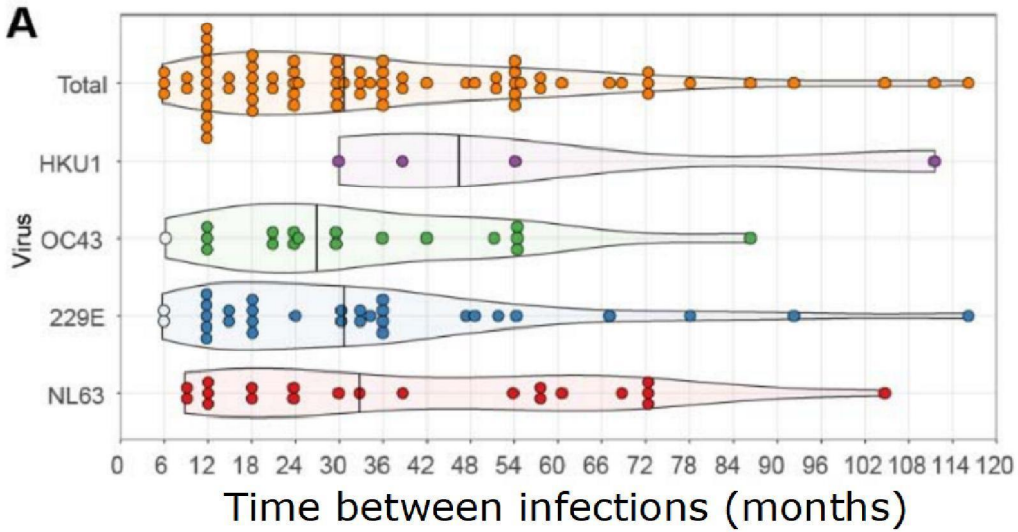
Conclusions

- In total three sequencing confirmed reinfection cases in The Netherlands
- 2 of the 3 described cases had short intervals between reinfections, but no adequate virus neutralization capabilities were observed suggesting lack of protective antibodies after the initial infection
- For the third case no serology could be performed as no samples were available
- In 22 clinically reported suspected reinfection cases lack or very low level neutralizing antibodies were observed in 82% (18/22) of cases.

Acknowledgements



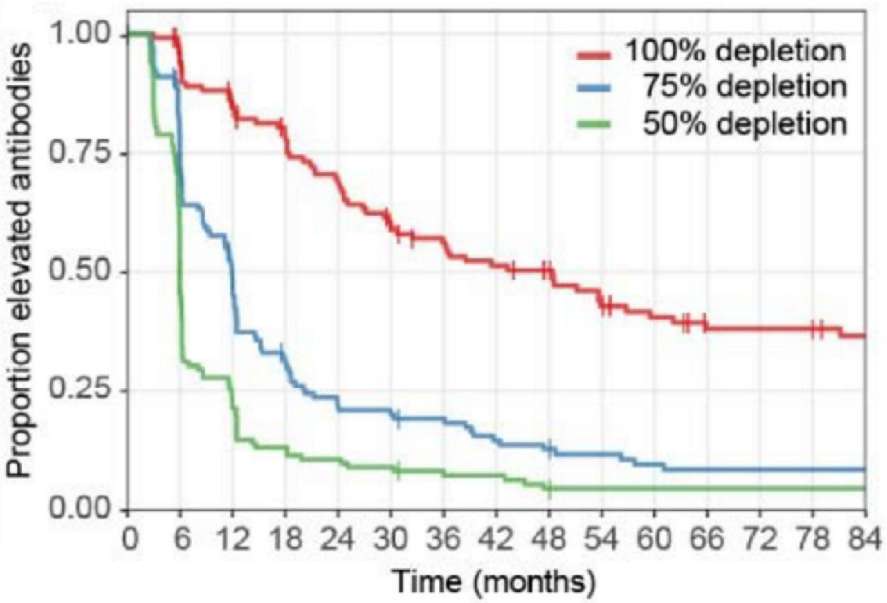
Endemic coronaviruses



Reinfections can occur as early as 6 months after initial infection in endemic coronaviruses.

Edridge et al. MedRxiv May 2020

Waning immunity



Immunity raised to the initial infection is depleted quite rapidly over time with evidence of >50% depletion after 6 months in the majority of tested individuals.

Edridge et al. MedRxiv May 2020