



National Institute for Public Health  
and the Environment  
*Ministry of Health, Welfare and Sport*

## Three sequencing confirmed cases of SARS-CoV-2 reinfection in The Netherlands

5.1.2e

10-09-2020



## 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 diarrhea 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.

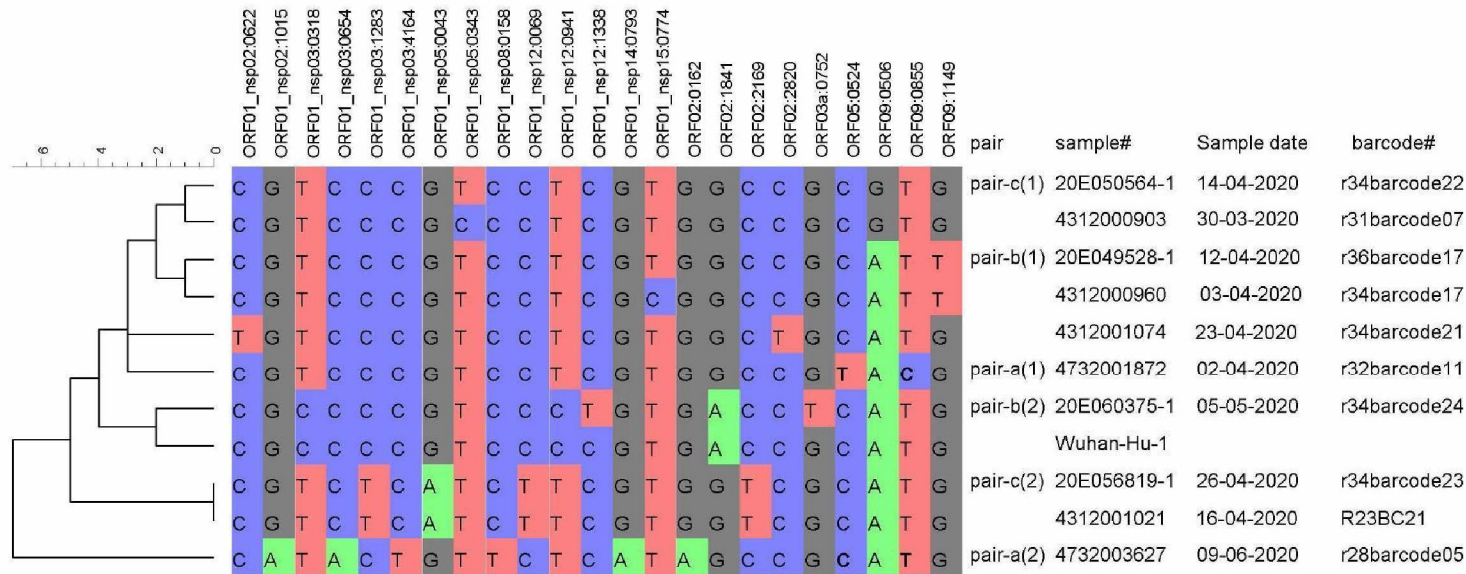
**12-06** resolution of complaints

**18-06** ceased all isolation measures





## SNP analysis selected strains vs ref strain Wuhan-Hu-1



Sequencing regarded as final proof? How much difference?  
 What about reinfection with exactly the same virus?



## Labinf@ct sent on 15-07-2020

Nationwide notification 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 contact with a previous PCR-positive case

AND

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

Limitation: often low viral load during 2<sup>nd</sup> episode; no testing for other causes eg rhinovirus



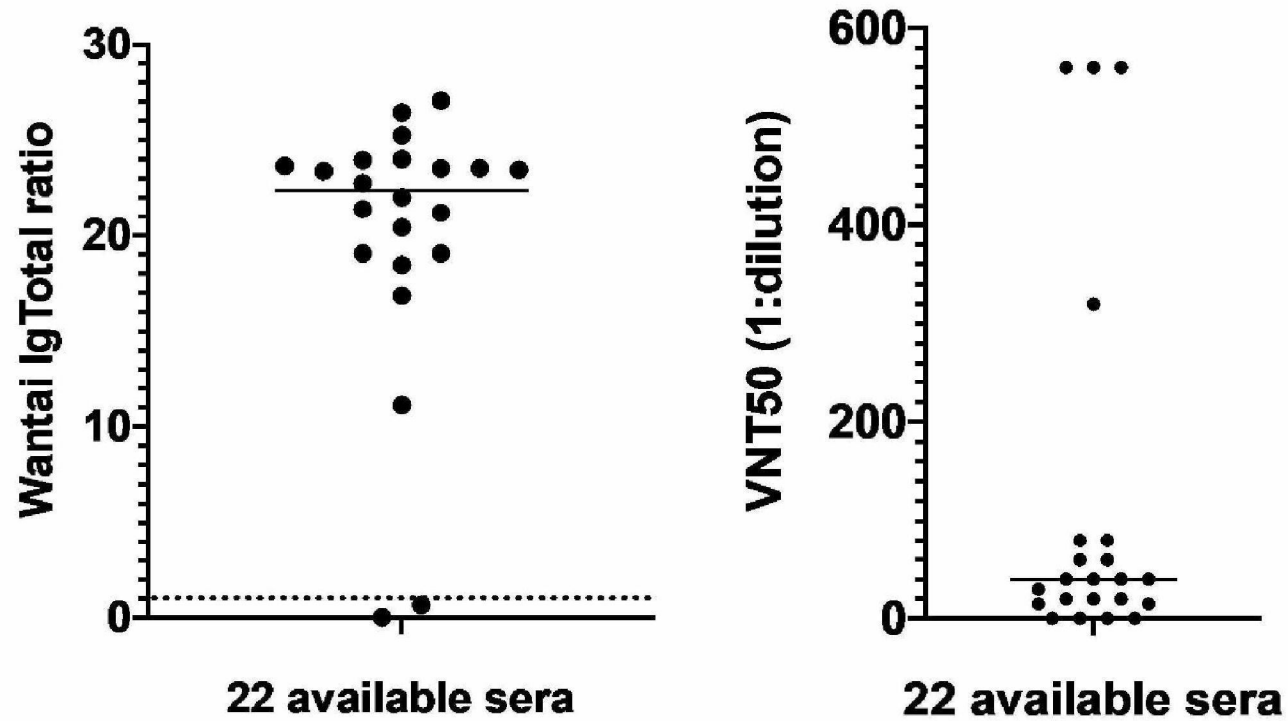
## Reported reinfection

As of 31<sup>st</sup> 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 or <8 weeks symptom-free period
- 2 of 22 cases dates of symptom onset unknown



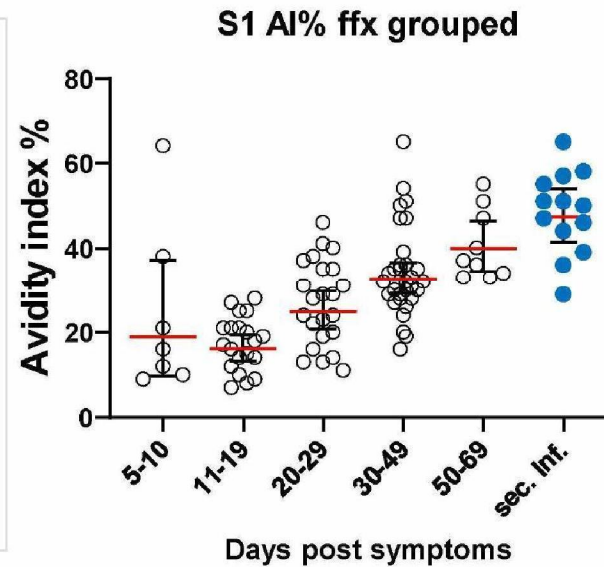
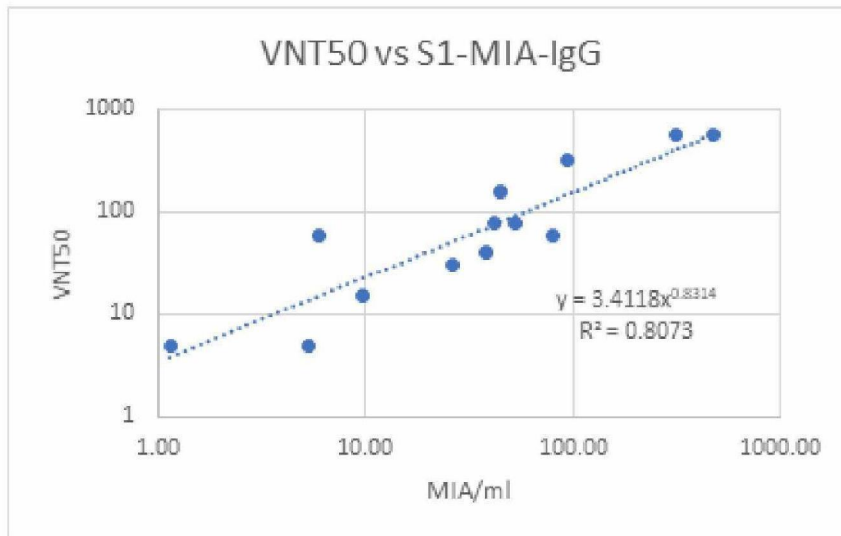
## Serology and virus neutralization







## Serological response after reinfection Multiplex Immunoassay (MIA, Luminex)



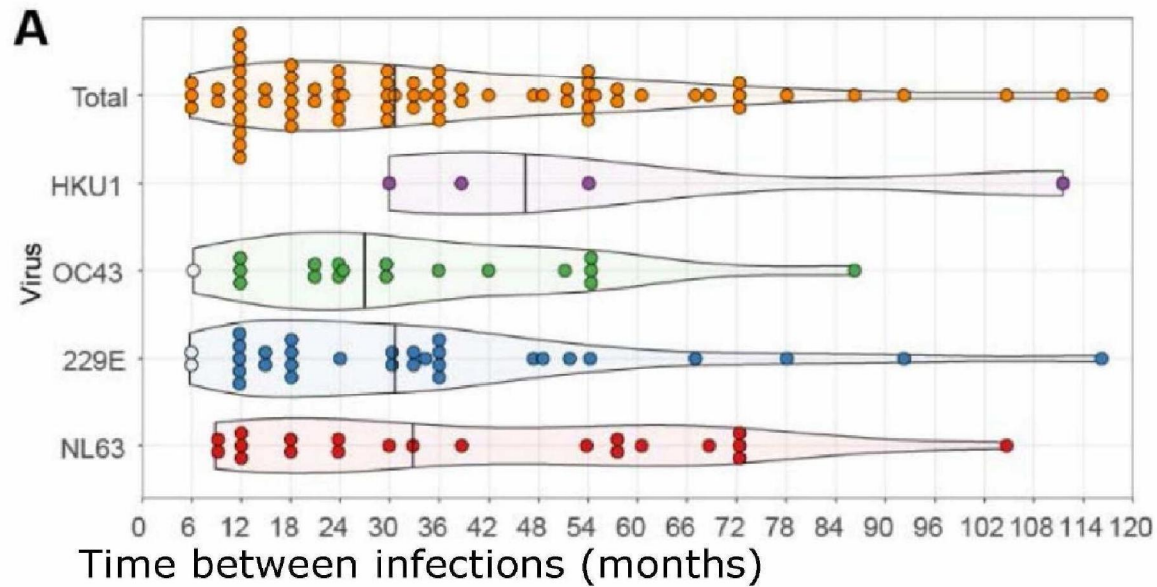


## Conclusions

- 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.



## Endemic coronaviruses



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



# Acknowledgements



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