

Sensitivity and correlation with RT-PCR values in cases of COVID-19, England, 2020

Shamez Ladhani^{1,2}, Andre Charlett³, Jamie Lopez Bernal⁴, Vanessa Saliba⁴, Joanna Ellis¹, Shamez Zambon¹

¹Public Health England, Colindale, United Kingdom
²Public Health England, Colindale, United Kingdom
³Public Health England, Colindale, United Kingdom
⁴Public Health England, Colindale, United Kingdom
j.lopez.bernal@phe.gov.uk

Shamez Ladhani, Vanessa Saliba, Jamie Lopez Bernal, Joanna Ellis, Shamez Zambon, Gopal Robin. Duration of upper respiratory tract (URT) viral RNA detection from persons with suspected COVID-19. *Euro Surveill.* 2020;25(32):pii=2001483. Article submitted on 03 Aug 2020 / accepted on 12 Aug 2020 / published on 13 Aug 2020

Upper respiratory tract (URT) viral RNA detection from persons with suspected COVID-19 were tested at the national respiratory virus reference laboratory at Public Health England to support routine clinical care and surveillance activities during the COVID-19 pandemic.

Kinetics of viral RNA detection from the respiratory tract

Upper respiratory tract (URT) viral RNA detection from persons with suspected COVID-19 were tested at the national respiratory virus reference laboratory at Public Health England to support routine clinical care and surveillance activities during the COVID-19 pandemic.



Wat doen anderen?

Buiten instellingen	Patiënt met COVID-19 in thuisituatie	Ten minste 24 uur symptomenvrij ² EN minimaal 7 dagen na de start symptomen ³
---------------------	--------------------------------------	---

2. Symptomenvrij van COVID-19: geen koorts, geen diarree, geen spierpijn, geen keelpijn, geen benauwdheid, geen neusverkoudheid. Symptomen zoals door patiënt en/of andere redenen vallen niet onder symptomen van COVID-19. Moehheid, anosmie, dysgeusie en postvirale hoest spelen geen rol in de definitie van symptomenvrij. Deze klachten kunnen een paar dagen tot weken langer aanhouden, zoals bekend is bij andere virale verwekkers, zonder dat nog sprake is van besmettelijkheid.

3. Start symptomen: ook wel de eerste ziektedag. Indien deze niet bekend is kan de datum van de monsterafname genomen worden.

Adviesorgaan	Dagen	Voorwaarden
WHO	10	3 dagen klachtenvrij
CDC	10	24 uur koortsvrij en verbetering klachten
ECDC (mild)	8	3 dagen koortsvrij en verbetering andere symptomen
ECDC (ernstig)	14	3 dagen koortsvrij en verbetering andere symptomen
Land	Dagen	Voorwaarden
Canada	10	Geen koorts en klinisch verbeterd, nog hoesten mag.
Zweden	7	48 uur klachtenvrij. Een droge hoest, anosmie en ageusie mag nog bestaan.
Noorwegen	8	Arts bepaald of je uit isolatie mag
Finland	14	48 uur klachtenvrij
Denemarken	0	48 uur klachtenvrij. Anosmie en ageusie mag nog bestaan.
Engeland	10	Hoesten, anosmie en ageusie mogen nog bestaan.
Duitsland	10	48 uur klachtenvrij

Literatuur

RAPID COMMUNICATION

Duration of infectiousness and correlation with RT-PCR cycle threshold values in cases of COVID-19, England, January to May 2020

Anika Singanayagam^{1,4}, Monika Patel^{1,4}, Andre Charlett¹, Jamie Lopez Bernal⁴, Vanessa Salliba⁴, Joanna Ellis¹, Shamez Ladhani⁴, María Zamboni¹, Robin Gopal¹

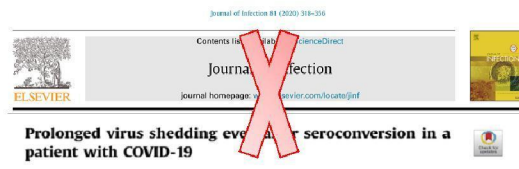
Clinical Infectious Diseases

MAJOR ARTICLE



Predicting Infectious Severe Acute Respiratory Syndrome Coronavirus 2 From Diagnostic Samples

Jared Bullard,^{1,2,3} Kerry Dust,¹ Duane Funk,^{4,5} James E. Strong,^{2,3,4} David Alexander,^{1,3} Lauren Garnett,^{3,4} Carl Boodman,³ Alexander Belle,^{3,4} Adam Hadley,¹ Zachary Schiffman,^{3,4} Kaylie Doan,^{3,4} Nathalie Bastien,^{3,4} Yan Li,^{3,4} Paul G. Van Caesele,^{1,3,4} and Guillaume Poliquin^{1,3,4}



European Journal of Clinical Microbiology & Infectious Diseases (2020) 39:1059–1061
<https://doi.org/10.1007/s10096-020-03913-9>

BRIEF REPORT



Viral RNA load as determined by cell culture as a management tool for discharge of SARS-CoV-2 patients from infectious disease wards

Bernard La Scola,^{1,2} Marion Le Bideau,^{1,2} Julien Andreani,^{1,2} Van Thuan Hoang,^{1,3,4} Clio Grimaldier,^{1,2} Philippe Colson,^{1,2} Philippe Gautret,^{1,3} Didier Raoult,^{1,2}

medRxiv preprint doi: <https://doi.org/10.1101/2020.06.08.20125310>; this version posted June 9, 2020. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted medRxiv a license to display the preprint in perpetuity. All rights reserved. No reuse allowed without permission.

Shedding of infectious virus in hospitalized patients with coronavirus disease-2019 (COVID-19): duration and key determinants

Jeroen J.A. van Kampen M.D., Ph.D.¹, David A.M.C. van de Vijver Ph.D.¹, Pieter L.A. Fraaij M.D., Ph.D.¹, ...

Zoekstrategie:

- Pubmed
- Referenties van gevonden artikelen

RAPID COMMUNICATION

Duration of infectiousness and correlation with RT-PCR cycle threshold values in cases of COVID-19, England, January to May 2020

Anika Singanayagam^{1,2}, Manika Patel^{1,2}, Andre Charlott¹, Jamie Lopez Bernal¹, Vanessa Saibba¹, Joanna Ellis¹, Shamez Ladhani¹, Maria Zamboni¹, Robin Gopal¹

- Brits Onderzoek
- Routinezorg en surveillance
- 253 ptn
 - 61 ptn asymptomatisch
 - 192 ptn symptomatisch (20 ernstig)
- 176 ptn met datum start van symptomen
 - 246 samples
 - 103 keer virus gekweekt

RAPID COMMUNICATION

Duration of infectiousness and correlation with RT-PCR cycle threshold values in cases of COVID-19, England, January to May 2020

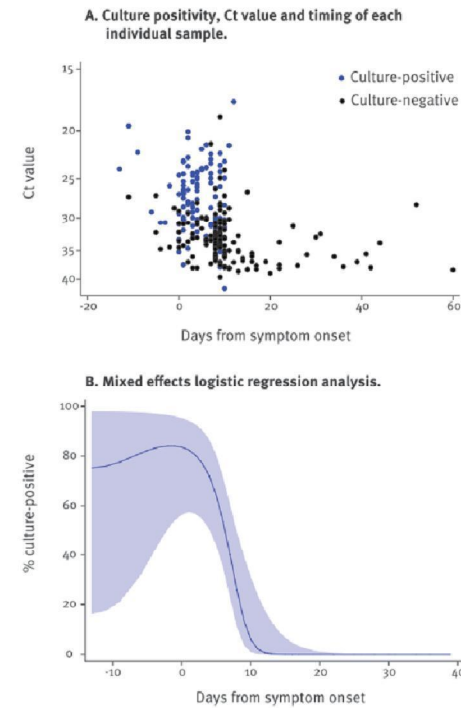
Anika Singanayagam^{1,2}, Manika Patel^{1,2}, Andre Charlott¹, Jamie Lopez Bernal³, Vanessa Saillab⁴, Joanna Ellis¹, Shamez Ladhani⁵, Maria Zamboni¹, Robin Gopal¹

- Tijd na start symptomen
 - 1e week: 74% kweek positief
 - >1e week: 21% kweek positief
 - Waarschijnlijkheid >10 dagen positief: 6%

- Ct waarde
 - Hogere Ct waarde, lagere kans op positieve kweek
 - Ct waarde >35: 8.3% kans

FIGURE 3

Relationship between culture positivity and time between symptom onset and sample collection, SARS-CoV-2, England, January–May 2020 (n = 246)



Predicting Infectious Severe Acute Respiratory Syndrome Coronavirus 2 From Diagnostic Samples

Jared Bullard,^{1,2,3} Kerry Dast,⁴ Duane Funk,^{4,5} James E. Strong,^{2,3,6} David Alexander,^{7,8} Lauron Gormet,^{9,10} Carl Boodman,⁷ Alexander Bello,¹¹ Adam Hedley,¹ Zachary Schiffman,¹² Kaylie Doan,⁸ Nathalie Bastien,¹³ Yan Li,¹⁴ Paul G. Van Caeseele,^{15,2} and Guillaume Pebody^{2,16}

- Canadees Onderzoek
- Routinezorg en surveillance
- 90 samples
- 26 keer virus gekweekt

Predicting Infectious Severe Acute Respiratory Syndrome Coronavirus 2 From Diagnostic Samples

Jared Bullard,^{1,2,3} Kerry Dust,⁴ Duane Fink,^{5,6} James E. Strong,^{2,5,6} David Alexander,^{7,8} Lauron Gormett,^{9,10} Carl Boodman,⁷ Alexander Bello,¹¹ Adam Hedley,¹ Zachary Schiffman,¹² Kaylie Doan,¹³ Nathalie Bastien,¹⁴ Yan Li,¹⁵ Paul G. Van Caeselo,^{12,3} and Guillaume Pebody^{2,3,4}

- Tijd na start symptomen
 - Geen positieve kweek >7 dagen

- Ct waarde
 - Lager bij positief gekweekte samples 17 vs. 27

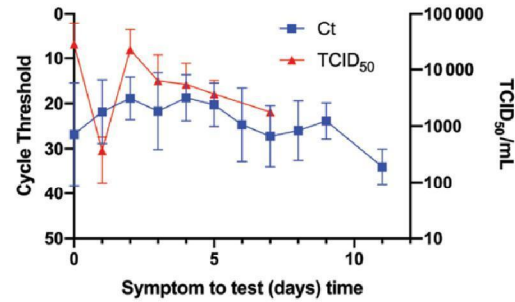


Figure 1. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) viral dynamics as expressed by E gene reverse-transcription polymerase chain reaction cycle threshold (Ct) value and cell culture median tissue culture infectious dose (TCID₅₀)/mL, over time (days).

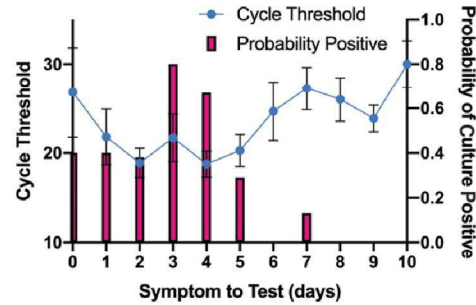



Figure 3. Comparison of symptom onset to test (days) to the probability of successful cultivation on Vero cells (Probability Positive) and severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) E gene reverse-transcription polymerase chain reaction cycle threshold (Ct) value.



Viral RNA load as determined by cell culture as a management tool for discharge of SARS-CoV-2 patients from infectious disease wards

Bernard La Scola^{1,2}  · Marion Le Bideau^{1,2} · Julien Andreani^{1,2} · Van Thuan Hoang^{1,3,4} · Clio Grimaldier^{1,2} · Philippe Colson^{1,2} · Philippe Gautret^{1,2} · Didier Raoult^{1,2}

- Frans Onderzoek
- Routinezorg en surveillance?
- 155 ptn
 - 183 samples
 - 129 keer virus gekweekt



Viral RNA load as determined by cell culture as a management tool for discharge of SARS-CoV-2 patients from infectious disease wards

Bernard La Scola^{1,2} · Marion Le Bideau^{1,2} · Julien Andreani^{1,2} · Van Thuan Hoang^{1,3,4} · Clio Grimaldier^{1,2} · Philippe Colson^{1,2} · Philippe Gautret^{1,5} · Didier Raoult^{1,2}

- Tijd na start symptomen
 - Geen positieve kweek >8 dagen

- Ct waarde
 - Hogere Ct waarde, lagere kans op positieve kweek
 - Ct waarde tussen 13-17 gaf 100% kweek positiviteit
 - Geen positieve kweek bij Ct waarde ≥ 34

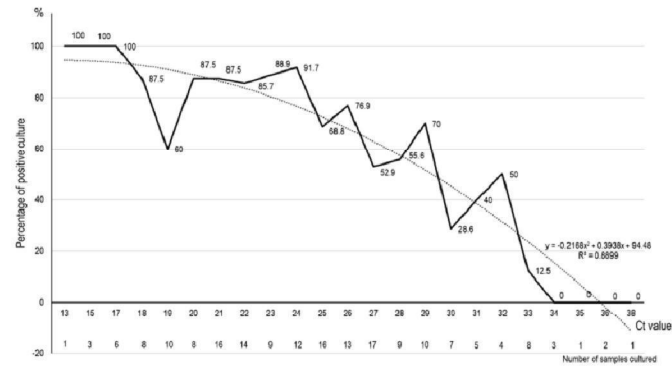


Fig. 1 Percentage of positive viral culture of SARS-CoV-2 PCR-positive nasopharyngeal samples from Covid-19 patients, according to Ct value (plain line). The dashed curve indicates the polynomial regression curve

Shedding of infectious virus in hospitalized patients with coronavirus disease-2019 (COVID-19): duration and key determinants

Jeroen J.A. van Kampen M.D., Ph.D.¹, David A.M.C. van de Vijver Ph.D.¹, Pieter L.A. Fraaij M.D.,
Ph.D.¹, ~~Christiaan M. de Boer M.D., Ph.D.¹, Vincent P. van Duyn M.D., Ph.D.¹~~

- Nederlands Onderzoek, ErasmusMC
- MC/IC
- 129 ptn
 - 690 samples
 - 62 keer virus gekweekt

Shedding of infectious virus in hospitalized patients with coronavirus disease-2019 (COVID-19): duration and key determinants

Jeroen J.A. van Kampen M.D., Ph.D.¹, David A.M.C. van de Vijver Ph.D.¹, Pieter L.A. Fraaij M.D., Ph.D.¹

- Tijd na start symptomen
 - Mediane duur 8 dagen, IQR(5 tot 11), range (0 tot 20)
 - Waarschijnlijkheid positieve kweek <5%: 15,2 dagen

- Neutralising antibody titre
 - Hoe hoger de antistoffen hoe minder positieve kweken
 - 1:80 <5% kans op positieve kweek

Figure 1.

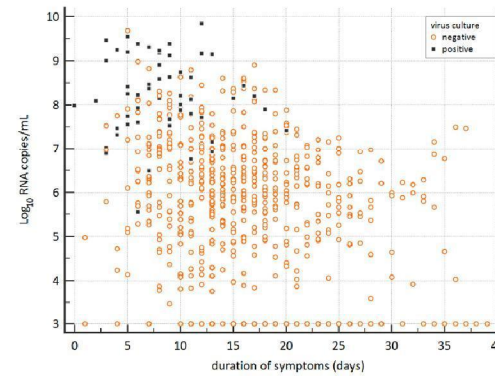
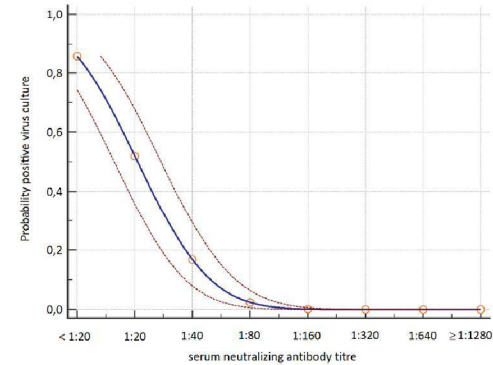


Figure 2 – lower panel



Overwegingen

- 8-10 dagen
- Viruskweek factoren
- Eenzelfde tijdspad
- Weinig >7 dagen
- Kweken = infecteren?
- Geen meldingen
- Isolatie bij klachten
- Consequentie aanpassing



- Nee
- Behoud 7 dagen en 24 uur klachtenvrij



Dank voor jullie aandacht