



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

## Nationale Rioolwater Surveillance

o.a. [redacted] 5.1.2e, [redacted] 5.1.2e  
[redacted] 5.1.2e, [redacted] 5.1.2e,  
[redacted] 5.1.2e, [redacted] 5.1.2e  
[redacted] 5.1.2e

CIb Centrum Zoönosen en  
Omgevingsmicrobiologie (Z&O)

Met dank aan waterschappen,  
hoogheemraadschappen,  
waterbedrijf



In afstemming met Unie van  
Waterschappen

NRS | 04-02-2021




## Humane surveillance van COVID-19 in Nederland

### Wat?

-  - Symptomen: verkoudheidsklachten, hoesten, benauwdheid, verhoging of koorts, plotseling verlies van reuk of smaak
-  - Ziekenhuisopname en/ of Intensive Care Unit opname
- Aanwezigheid SARS-CoV-2
- Immuunrespons

### Bij wie?

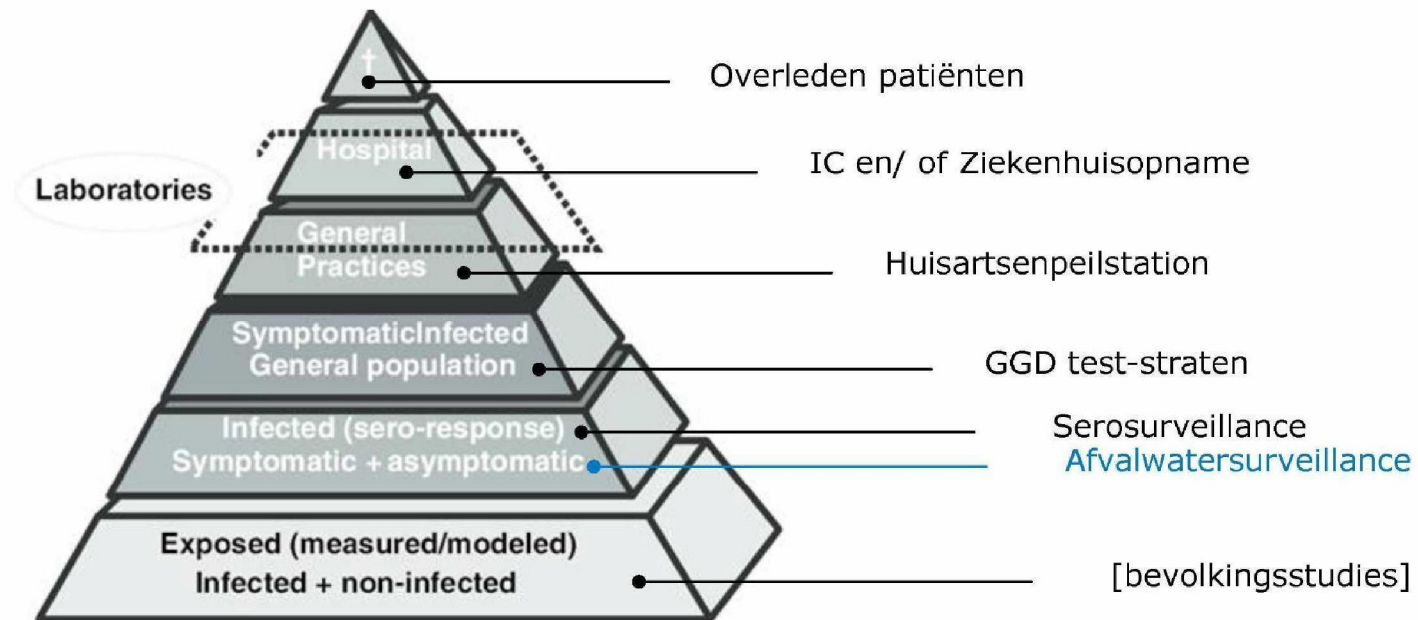
-  - Patiënten en hun contacten, zorgmedewerkers, bloeddonoren ea

### Hoe?

-  - Keel en/ of neus swab etc.
- Bloed
- Vragenlijsten



## COVID-19 surveillance





# Programmastructuur

## Nationale Rioolwater Surveillance

Nationaal  
Bijzondere  
locaties  
Validaties

Data-Analyse  
Data-Visualisatie  
Modelering  
Dashboard  
Protocol

Governance  
Communicatie  
Management



## Medisch-Ethische toetsing



Canadian Coalition on Wastewater-related COVID-19 Research

Ethics and communications guidance for wastewater surveillance  
to inform public health decision-making about COVID-19

Toets: Wet Medisch-Wetenschappelijk  
Onderzoek met mensen (WMO)  
Uitkomst: Nationale rioolwater  
surveillance niet WMO-plichtig



Rijksinstituut voor Volksgezondheid  
en Milieu  
Ministerie van Volksgezondheid,  
Welzijn en Sport

### Advies inzake WMO-plichtig onderzoek

Datum : 17-11-2020  
Onderzoeker(s) : [REDACTED], Eric Janssen  
Titel onderzoek : Nationale Afvalwater Surveillance  
RIVM studienummer : Z&O-473

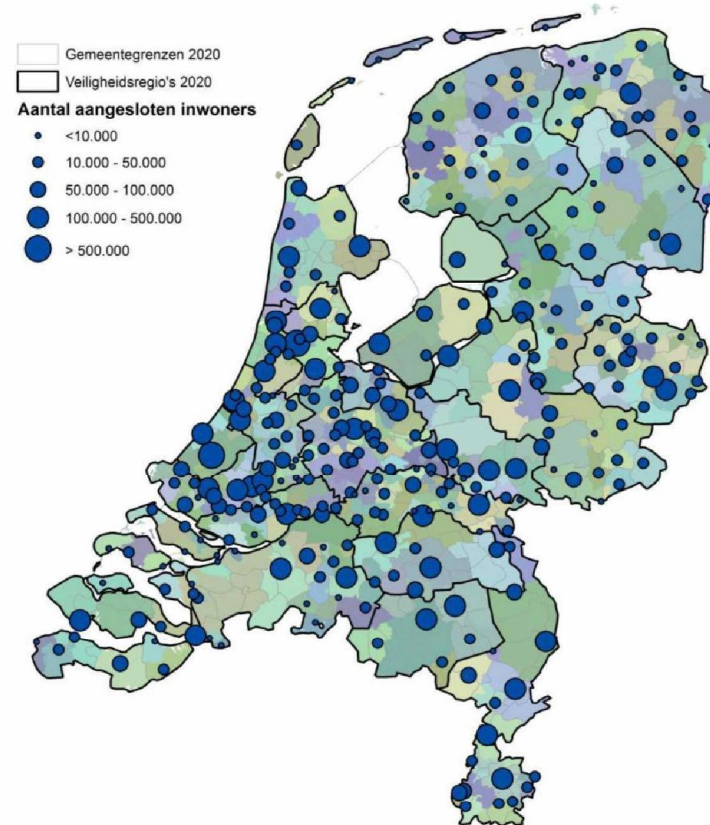
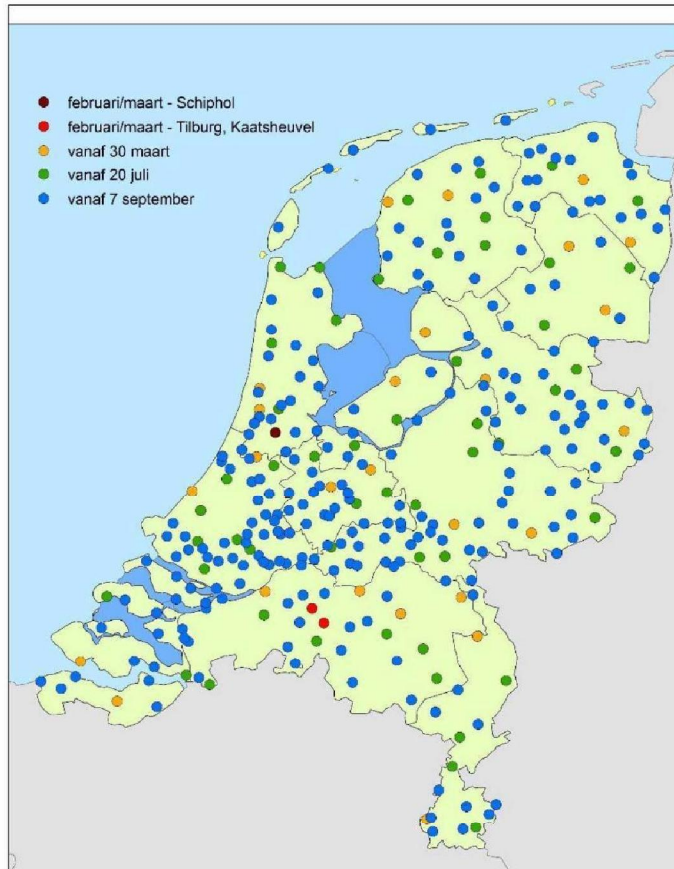
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3721 PA Bilthoven  
Postbus 1  
3720 BA Bilthoven  
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T 030 274 91 11  
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Hrudey and colleagues 2020





## Intensivering Nationale Rioolwater Surveillance van 1 naar 316 locaties





## Proofs of principle SARS-CoV-2 in rioolwater

Begin februari SARS-CoV-2 RNA in feces in ~50% rioolwaters  
onafhankelijk van GI en ernst

Virus soms gekweekt uit feces

Rioolwater van verschillende locaties SARS-CoV-2 gedetecteerd

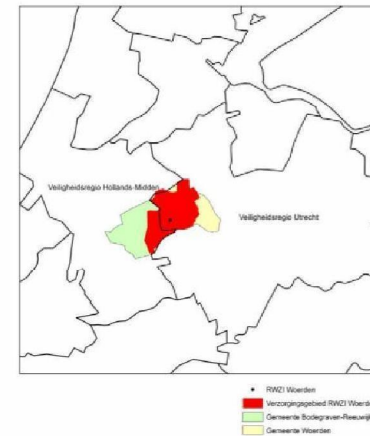
1. In afwezigheid van ziekteverschijnselen: in lijn met bijdrage van virus in feces of andere excreta van bijvoorbeeld presymptomaten
2. Nabij eerste gemelde ziektegeval: gevoeligheid rioolwater surveillance enkele gevallen onder 1000en aangesloten inwoners

- Rioolwater van belang voor COVID-19 surveillance
- Minder voor verspreiding van SARS-CoV-2
- Bescherming van diegenen die met menselijk afval en afvalwater werken



## Coronadashboard Rijksoverheid

- Toebedeling rioolwatermeting aan gemeenten en VR's
- Correcties van rioolmeetwaarden obv inwoners en debieten



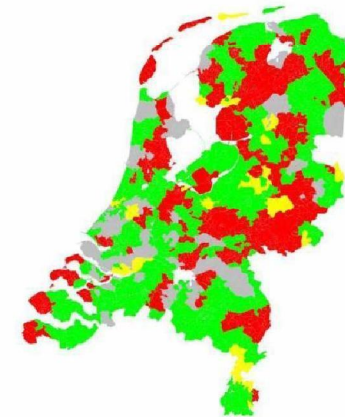
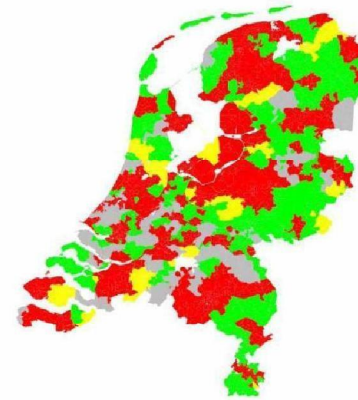
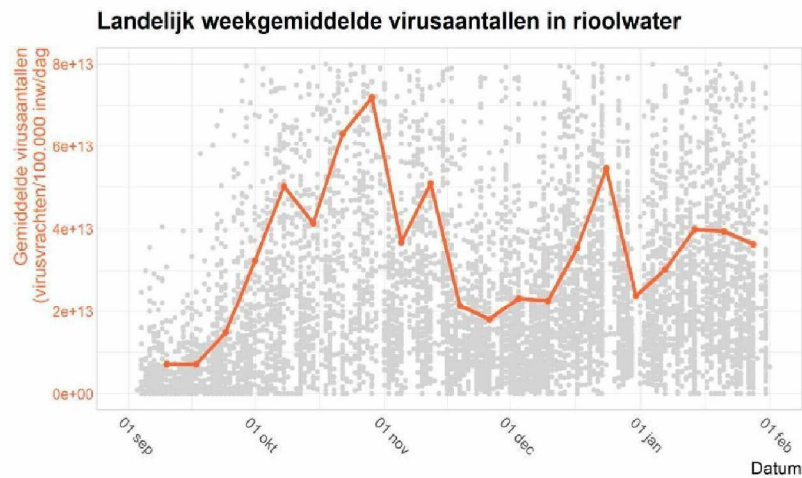
**Coronadashboard uitgebreid met  
rioolwaterdata van 10 miljoen  
mensen**





## Daling ingezet in week 4

Weeknummer	52	53	1	2	3	4
Percentage dalers (%)	29.9	76.1	38.3	30.7	45.3	55.5
Percentage gelijk blijvers (%)	6.9	6.3	8.1	8.5	7.5	7.2
Percentage stijgers (%)	63.2	17.6	53.6	60.7	47.2	37.4





## Validatiestudies

**Rioolwatersurveillance**  
Rijksinstituut voor Volksgezondheid  
 en Milieu  
 Ministerie van Volksgezondheid,  
 Welzijn en Sport

**Bunschoten**

**Doel:**  
 Leren over de relatie tussen de hoogte van het gemeten aantal virusdeeltjes in het rioolwater en het aantal mensen dat positief getest wordt.

**Onderzoeksvragen:**

- Wat is de relatie tussen het aantal positief geteste mensen en de hoogte van het gemeten aantal virusdeeltjes?
- Kun je een voorspelling doen van het aantal virusdeeltjes aan de hand van het aantal positief geteste mensen?
- Clusters worden aangetoond in rioolwater

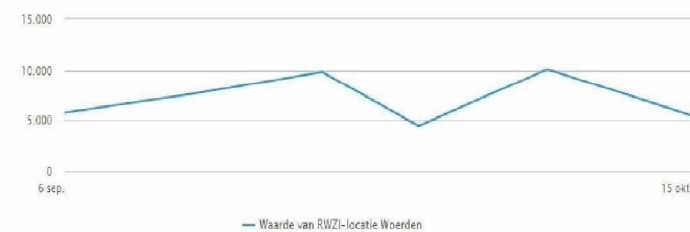
- Vervolgonderzoek notitie dagelijkse bemonstering
  - Verdere pilots bij 4 locaties in VR Friesland irt grootte RWZI
  - Samenwerking met internationale partners VK, ZW
- Pilots risicovolle locaties
  - Ziekenhuizen Utrecht en Tilburg
  - Verpleeghuizen in Utrecht en Amsterdam
  - Scholen in Utrecht
  - Slachthuizen en andere voedselproducenten
- Andere samplers
- Virus in riolering



## Hoe nu verder?

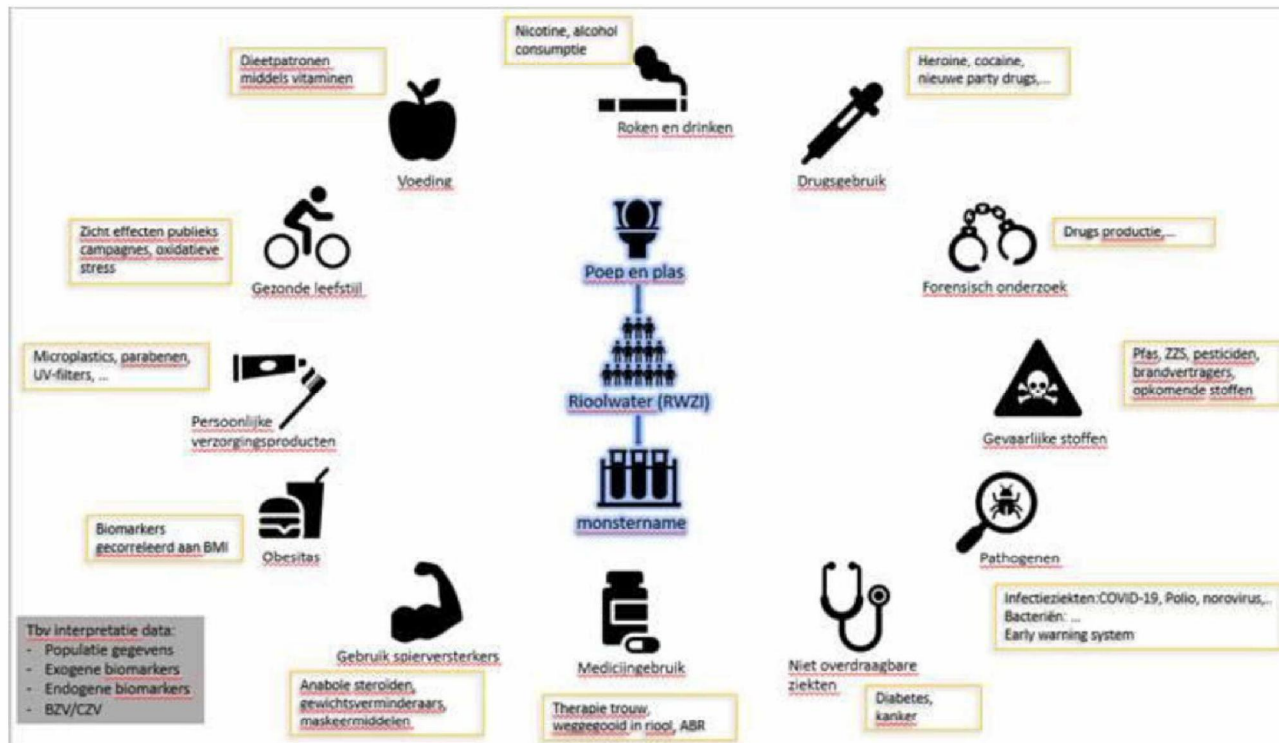
- Factsheet voor GGDen
- Werkgroep Protocol rioolmetingen gaat verder met ontwikkelen stappenplan/ beslisboom
- Op basis van
  - Signaalwaarden
  - Case studies op diverse locaties
    - > Woerden, Utrecht, Amsterdam

Verloop over tijd





# Human Biomonitoring







## Capacity building

- Bilateral requests
- Webinars
- Protocols
- Consumables
- Guidance documents



**Status of environmental surveillance for SARS-CoV-2 virus**  
 1 April 2020

**Summary**

The World Health Organization (WHO) is providing this document to inform countries of the current status of environmental surveillance for SARS-CoV-2 virus. The document is intended for countries that are currently conducting or planning to conduct environmental surveillance for SARS-CoV-2 virus. The document provides information on the current status of environmental surveillance for SARS-CoV-2 virus, including the number of countries that are currently conducting or planning to conduct environmental surveillance for SARS-CoV-2 virus, the methods used for environmental surveillance, and the challenges faced by countries in conducting environmental surveillance for SARS-CoV-2 virus.

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**Water, sanitation, hygiene, and waste management for SARS-CoV-2, the virus that causes COVID-19**  
 Interim guidance  
 29 April 2020

**Summary**

The World Health Organization (WHO) is providing this document to inform countries of the current status of water, sanitation, hygiene, and waste management for SARS-CoV-2, the virus that causes COVID-19. The document is intended for countries that are currently conducting or planning to conduct water, sanitation, hygiene, and waste management for SARS-CoV-2, the virus that causes COVID-19. The document provides information on the current status of water, sanitation, hygiene, and waste management for SARS-CoV-2, the virus that causes COVID-19, including the number of countries that are currently conducting or planning to conduct water, sanitation, hygiene, and waste management for SARS-CoV-2, the virus that causes COVID-19, the methods used for water, sanitation, hygiene, and waste management, and the challenges faced by countries in conducting water, sanitation, hygiene, and waste management for SARS-CoV-2, the virus that causes COVID-19.

**Background**

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