Pandem-2

Meeting RIVM - Radboudumc - NUIG

Agenda points

- Possible scientific products WP4
- Publication policy Pandem-2
- Scientific work in other WPs

9 March 2021

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 883285

PANDEM-2
PANDEMIC PREPAREDNESS AND RESPONSE

End-user requirements and relevant projects

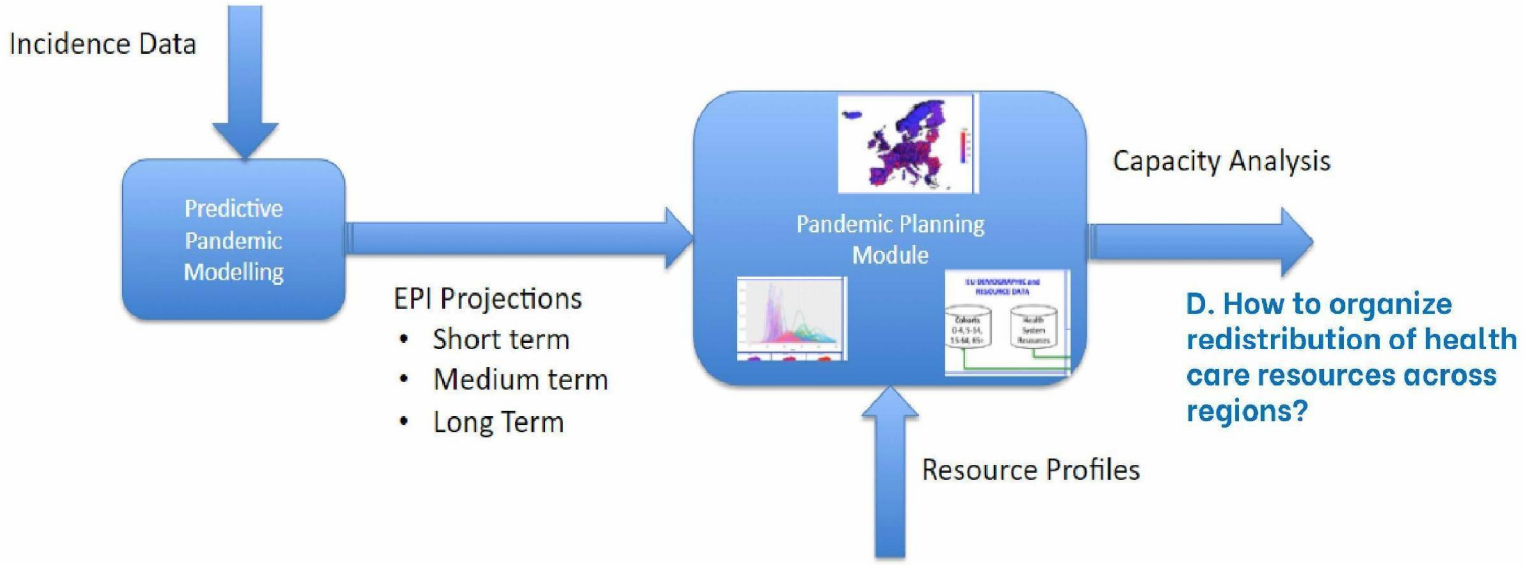
Overview | Functionality | Management | Surveillance | Laboratory | Countermeasures | Communications | Tools for policy setting | National/EC collab

Capability	Benefit	Role	Type	Frequency	Level	Graphic representation	Currently available (Y/N)	If Y, example url	If Y, data source
I want to know how many new disease cases there are over time	Estimate incidence rates	Epidemiologist	Epidemiology	Daily	National, regional, municipal	Epicurve, mapped per region	Yes (covid)	https://coronadashboard.rijksoverheid.nl/landelijk/positief-geteste-mense	https://data.rivm.nl/covid-19/COVID-19_aantallen_gemee
I want to know how many new disease deaths there are over time	Estimate case fatality rate	Epidemiologist	Epidemiology	Daily	National, regional, municipal	Line graph & map of cases per region	Yes (covid)	https://coronadashboard.rijksoverheid.nl/landelijk/positief-geteste-mense	https://data.rivm.nl/covid-19/COVID-19_aantallen_gemee
I want to know where people are likely to acquire infections	To inform measures & policy advise	Public health	Contact tracing	Weekly	National, regional				
I want to visualise the basic reproductive number over time		Epidemiologist	Epidemiology	Weekly	National, regional				
I want to know the age stratification of patients and deaths	To determine at risk age groups	Epidemiologist	Epidemiology		National	Histogram			
I want to have an overview of the travel history of positive cases	To inform travel advice	Epidemiologist	Points of entry						
I want to know how often people visit GPs with relevant symptom	Sentinel surveillance	Epidemiologist	Epidemiology	Weekly	National				
I want to be able to identify and visualise clusters of cases	Identify and manage transmission	Public health	Contact tracing		Regional, local	Map overlays, histogram			

Title of project	Lead institution	Type (National/EC/etc)	Project lead	Commencemen	Short description	Role RIVM/Radboud	Link
EC VITAL	UMC Utrecht	EC H2020				WP led by RIVM (5.1.2e 5.1.2e)	
Joint Action EU HEALTHY GATEWAYS		EC Third Health Programme (2014-2020)			Preparedness and action at points of entry	Work Package 9: 'Capacity building – training' led by RIVM	https://www.healthygateways.eu/
SHARP	Finnish Institute	EC			WP6 Preparedness and Response planning	WP6 led by RIVM (5.1.2e 5.1.2e)	https://www.sharpia.eu/about-us/work-packages/#WP6
VEO	ErasmusMC		5.1.2e 5.1.2e 5.1.2e 5.1.2e		WP10 is on ELSI related questions when cor	WP10 led by RIVM (5.1.2e 5.1.2e)	
ECRAID-Base	UMC Utrecht	EC H2020		2 March 2021			https://www.ecraid.eu/
CORESMA	HZI					WP3 led by RIVM (5.1.2e 5.1.2e)	https://www.coresma.eu/

PANDEM-2
PANDEMIC PREPAREDNESS AND RESPONSE

https://docs.google.com/spreadsheets/d/1USLYQ3lsXKeP_xfFNa--PDpp4oVfvbnS8cAzZJ_Bzcc/edit?usp=sharing



D. How to organize redistribution of health care resources across regions?

A. What are key health care resources during a pandemic? And what do we know about their availability?
B. What do we know about resource demand?
C. What are the consequences of gaps? And what are the interdependencies between resources?

WP4

PANDEM-2
PANDEMIC PREPAREDNESS AND RESPONSE

A. What are key health care resources during a pandemic? And what do we know about their availability?

AsiaFluCap

57 resource items
- Health care facilities and their bed capacities
- Human resources
- Equipment and machines
- Personal protective equipment (PPE)
- Drugs (antivirals, antibiotics, pneumococcal vaccines)
- Laboratory and investigation capacity
- Communication technology

Max #?

+

PANDEM
PANDEMIC RISK AND EMERGENCY MANAGEMENT

+

RESEARCH ARTICLE

A flexible method for optimising sharing of healthcare resources and demand in the context of the COVID-19 pandemic

5.1.2e

1 School of Mathematical Sciences, Queen Mary University of London, London, U
for Cross-Disciplinary Physics and Complex Systems IFISC (UIB-CSIC), Palma d
Centre for Predictive Modelling in Healthcare, University of Exeter, Exeter, Devon
4 Taunton and Somerset NHS Foundation Trust, Taunton, Somerset, United King
School: Population Health Sciences, University of Bristol, Bristol, United Kingdom
College of Engineering, Mathematics and Physical Sciences, University of Exeter
7 The Alan Turing Institute, British Library, London, United Kingdom

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Potential association between COVID-19 mortality and health-care resource availability

The ongoing epidemic of coronavirus disease 2019 (COVID-19) is devastating, despite extensive implementation of control measures. The outbreak was sparked in Wuhan, the capital city of Hubei province in China,

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SOUNDING BOARD

Fair Allocation of Scarce Medical Resources in the Time of Covid-19

5.1.2e 5.1.2e

(incl grey literature)

PANDEM-2
PANDEMIC PREPAREDNESS AND RESPONSE

A. What are key health care resources during a pandemic? And what do we know about their availability?

Some new views...

RadboudUMC
High Level Isolation Unit

Test and trace capacity (*dynamic workforce capacity*)

Research capacity (validation studies, sequencing, etc.) and channeling scientific output

Communication Resources

Literature search & online Delphi-study to identify most essential health care resources for pandemic response

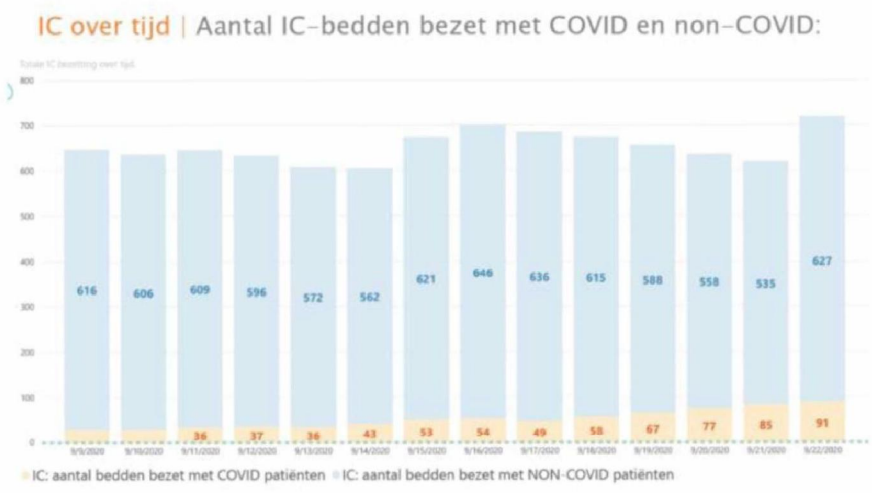
A. What are key health care resources during a pandemic? And what do we know about their availability?

Stand van de gegevens: 11 januari 2021

Actuele voorraad en bestellingen beschermingsmiddelen coronavirus

	Op voorraad	Verwachte vraag*	In bestelling
Brillen	2.943.052	3.700	62.672
Chirurgische maskers	726.100.244	578.000	137.977.274
FFP-maskers	25.924.725	166.000	46.674.842
Handschoenen	190.705.350	3.920.000	647.953.928
Jassen	61.775.409	183.000	--
Schorten	10.731.971	53.900	13.500
*Gemiddelde vraag gebaseerd op de aanvragen bij LCH in de afgelopen 3 weken			

Brontabel als csv (373 bytes)



Bekijk ook:

- Overzichtspagina Landelijk Consortium Hulpmiddelen (LCH)

https://lcps.nu/lcps-weer-van-start/

B. What do we know about resource demand?

Systematic search for depletion rate of health resources during an influenza pandemic.

A search performed in Pubmed, Embase and Cochrane library

Step 1 – Systematic literature search (search updated 23 October 2009)

Subset 1: influenza, influenza A virus, flu, H1N1, H5N1, novel influenza, swine influenza, Mexican flu, influenza pandemic, influenza outbreak

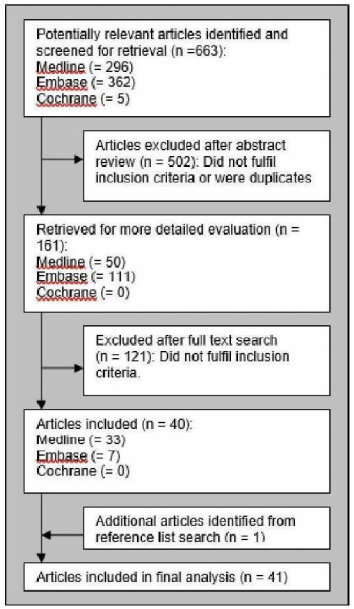
Subset 2: model, modelling, modeling, simulation, simulating, epidemic model, disease transmission model, disease progression model, stochastic, deterministic, prediction model, sensitivity analyses, Flusurge, FluAid, InfluSim, Community Flu, Monte Carlo method, model parameter(s), scenario(s)

Subset 3: capacity, health resources, medical resources, hospital beds, hospital bed capacity, intervention(s), antiviral(s)/antiviral agents, personnel, nurses, physicians, ventilators, ICU, gloves, masks, preparedness planning, health demand, health facility planning, hospital surge capacity, depletion rate, length of stay, needs assessment, disaster planning, resource gaps.

Search: Subset 1 AND Subset 2 AND Subset 3

Limitations: title, abstract, publication in English or Dutch

Result: 663 (296 Medline, 362 Embase, 5 Cochrane)



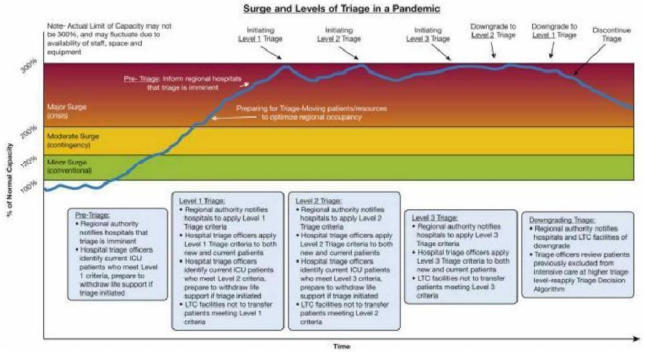
Item	Depletion rate
Hospital beds	**LOS hospitalized patients** • 5.0 days[1] (FluSurge 2.0 assumptions)[2-7] • 6.6 days for respiratory related hosp[8] • 7.0 days[9] • 6.6-9.0 days[10] • 8.0 days[11-13] • 6.7, 8.7 and 10.4 days[14] • 9.0 average length hospital stay, with 2.9-3.8 days of bed disability per case.[15] • 9-10 days[16] • 12 days[17] • 8.0-15 days (includes also ICU-patients)[18] •••••••••• Range 5-15 days **Age-dependent LOS** • 0-17: 4 days[15] • 18-64: 7 days[15] • 65+: 8 days[15] • 34% influenza cases require acute hospital beds[2] • (Home care (No AV): 8 days LOS; Home care (with AV): 5 days LOS.[1]
ICU beds	**LOS ICU patients** • 2, 6 and 10 days and critical admission rates of 5%, 15% and 25%[14] • 6 days[1] • 10 days, 15% admission rate on ICU (Flusurge 2.0 assumptions))[2-7] •••••••••• Range 2-10 days • 35% of all hospitalized cases[19] • 32% of hospitalized cases admitted to ICU (SARS scenario)[20] • 36% of all hospitalized admissions[21]
Personnel	• See appendix I: **table II and IV** of Phin et al. 2009. Results from a live exercise of 24 hours in a hospital in north-west England. Personnel adopted procedures described in UK pandemic influenza infection control guidance. Exercise

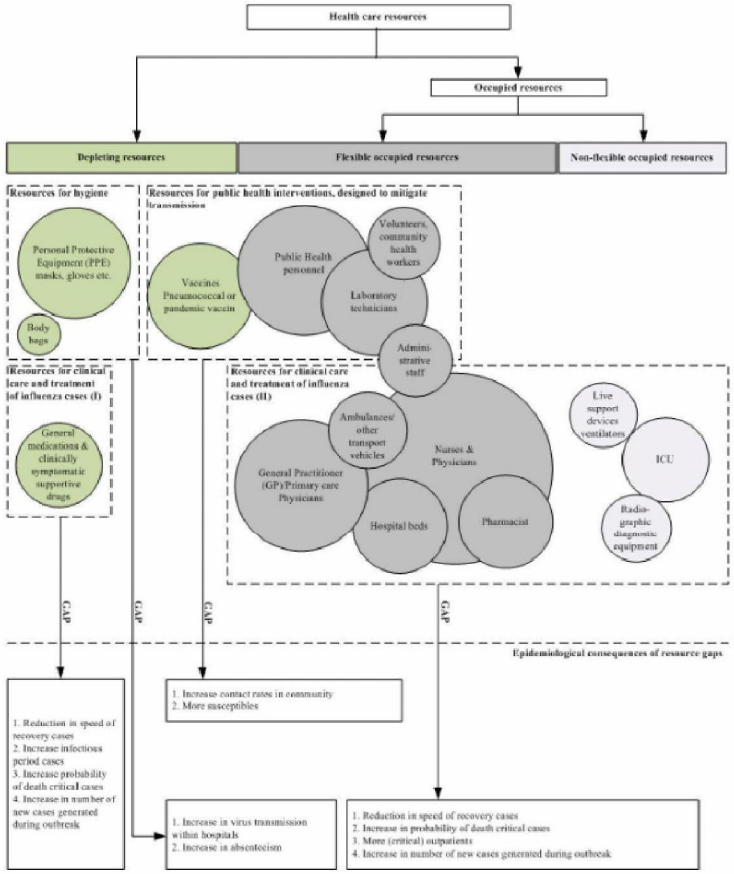
A literature review on depletion and occupancy rates of health care resources during 'a pandemic'

C. What are the consequences of gaps? And what are the interdependencies between resources?

- Resource classification and consequences of shortages
- Surge and levels of triage in a pandemic

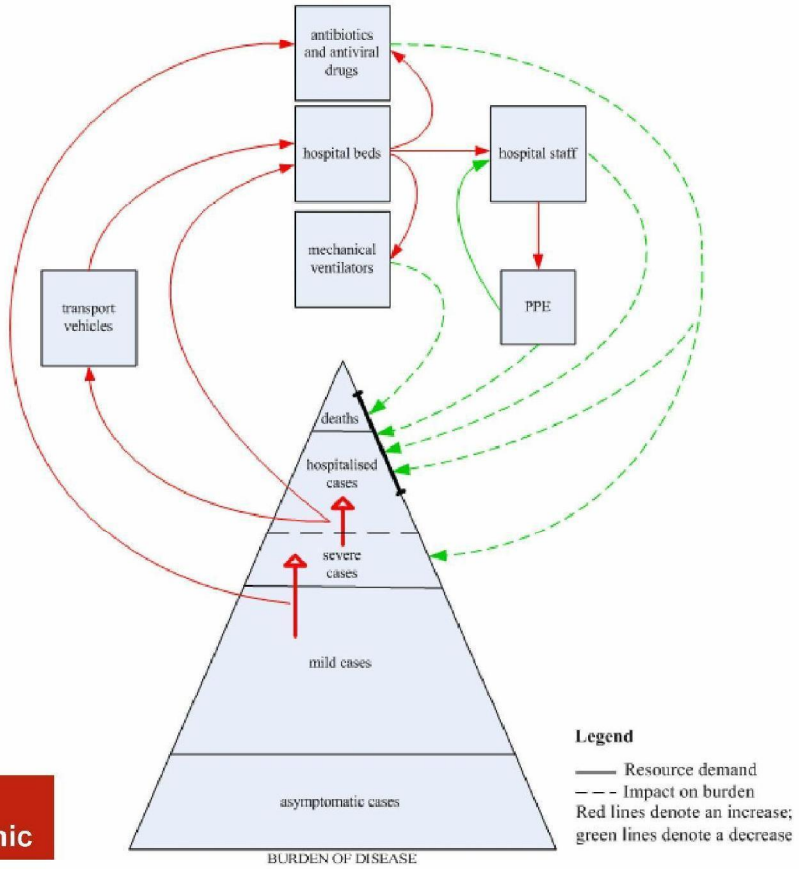
Maves et al 2020 CRITICAL CARE: SPECIAL FEATURES| VOLUME 158





C. What are the consequences of gaps? And what are the interdependencies between resources?

Resource 'networks' and their potential impact on pandemic influenza morbidity and mortality



A conceptual and analytical framework for health care resource management during a pandemic

D. How to practically organize redistribution of health care resources across regions/borders?

Allocating scarce intensive care resources during the COVID-19 pandemic: practical challenges to theoretical frameworks

Alexander Supady, J Randall Curtis, Darryl Abrams, Roberto Lorusso, Thomas Bein, Joachim Boldt, Crystal E Brown, Daniel Duerschmied, Victoria Metaxa, Daniel Brodie

The COVID-19 pandemic strained health-care systems throughout the world. For some, available medical resources could not meet the increased demand and rationing was ultimately required. Hospitals and governments often sought to establish triage committees to assist with allocation decisions. However, for institutions operating under crisis standards of care (during times when standards of care must be substantially lowered in the setting of crisis), relying on these committees for rationing decisions was impractical—circumstances were changing too rapidly, occurring in too many diverse locations within hospitals, and the available information for decision making was notably scarce. Furthermore, a utilitarian approach to decision making based on an analysis of outcomes is problematic due to uncertainty regarding outcomes of different therapeutic options. We propose that triage committees could be involved in providing policies and guidance for clinicians to help ensure equity in the application of rationing under crisis standards of care. An approach guided by egalitarian principles, integrated with utilitarian principles, can support physicians at the bedside when they must ration scarce resources.

Lancet Respir Med 2021
Published Online
January 12, 2021
https://doi.org/10.1016/S2213-2600(20)30580-4

Interdisciplinary Medical Intensive Care, Department of Medicine III, Medical Center (A Supady MD, D Duerschmied MD), Department of Cardiology and Angiology I, Heart Center, (A Supady, D Duerschmied), and Department of Medical Ethics

https://www.thelancet.com/action/showPdf?pii=S2213-2600%2820%2930580-4

RESEARCH ARTICLE

A flexible method for optimising sharing of healthcare resources and demand in the context of the COVID-19 pandemic

Lucas Lacasa[1,2*], **Robert Challen**[3,4], **Ellen Brooks-Pollock**[5], **Leon Danon**[6,7]

1 School of Mathematical Sciences, Queen Mary University of London, London, United Kingdom, **2** Institute for Cross-Disciplinary Physics and Complex Systems IFISC (UIB-CSIC), Palma de Mallorca, Spain, **3** EPSRC Centre for Predictive Modelling in Healthcare, University of Exeter, Exeter, Devon, United Kingdom, **4** Taunton and Somerset NHS Foundation Trust, Taunton, Somerset, United Kingdom, **5** Bristol Medical School: Population Health Sciences, University of Bristol, Bristol, United Kingdom, **6** Data Science Institute, College of Engineering, Mathematics and Physical Sciences, University of Exeter, Exeter, United Kingdom, **7** The Alan Turing Institute, British Library, London, United Kingdom

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Fair Allocation of Scarce Medical Resources in the Time of Covid-19

Ezekiel J. Emanuel, M.D., Ph.D., Govind Persad, J.D., Ph.D., Ross Upshur, M.D., Beatriz Thome, M.D., M.P.H., Ph.D., [redacted] Ph.D., Aaron Glickman, B.A., Cathy Zhang, B.A., Connor Boyle, B.A., Maxwell Smith, Ph.D., and James P. Phillips, M.D.

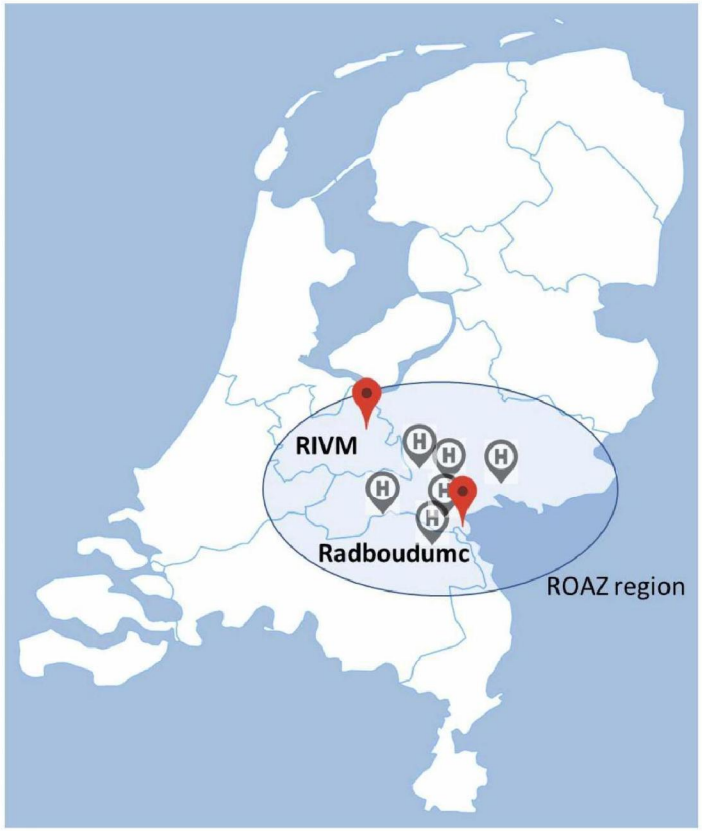
PANDEM-2
PANDEMIC PREPAREDNESS AND RESPONSE

Pilot testing of the health care resource model in the ROAZ region

Test the resource model in practice and collect experiences

Develop first connections between model developers and (other) model users

Rivers et al. 2019 Nature Communications
Knight et al. 2016 International Journal of Infectious diseases



PANDEM-2
PANDEMIC PREPAREDNESS AND RESPONSE

Pandem-2

Meeting RIVM - Radboudumc - NUIG

Agenda points

- Possible scientific products WP4
- **Publication policy Pandem-2**
- **Scientific work in other WPs**

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PANDEM-2
PANDEMIC PREPAREDNESS AND RESPONSE