

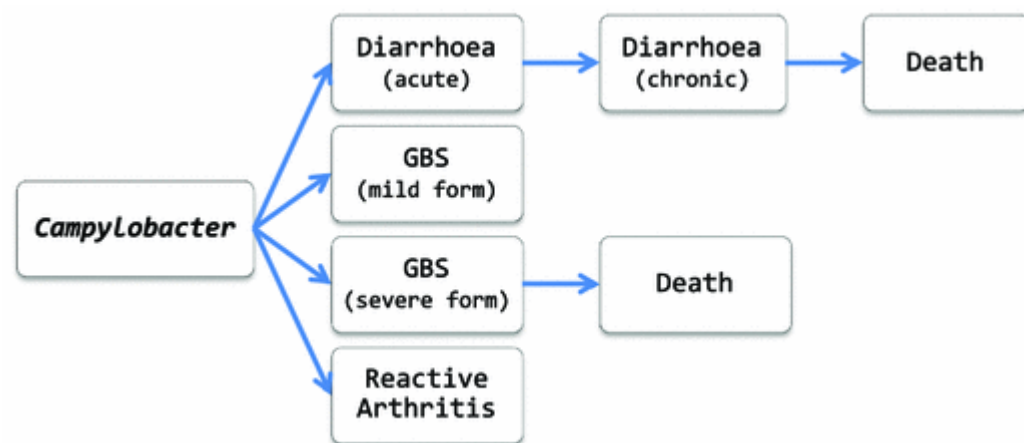
# Estimating the Burden of COVID-19

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Adult Immunization Board (AIB) Technical meeting, 20 - 21 April 2023 Antwerp

# Burden of infectious diseases

- Aim to estimate the public health impact of infectious diseases
  - Ranking, policy prioritisation
  - Heterogeneity of clinical course, severity, sequelae and mortality of diseases
- Hazard, incidence-based approach



Source: [DALY calculation in practice: a stepwise approach](#)

# European Burden of Disease Network



# European Burden of Disease Network

working groups

WG1 – NCDs and Injuries



Read more ...

WG2 – Infectious Diseases



Read more ...

WG3 – Risk Factors



Read more ...

WG4 – Methods



Read more ...

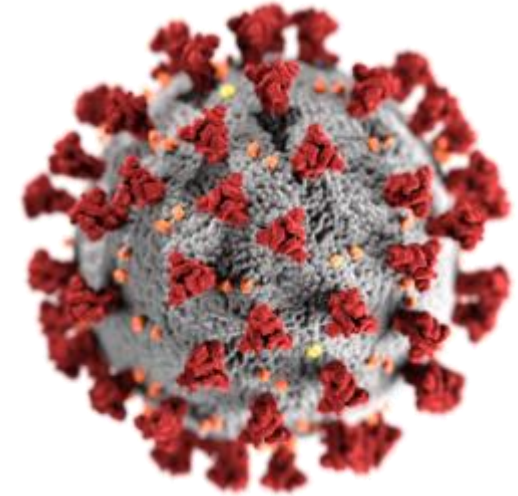
WG5 – Knowledge Translation



Read more ...

# COVID-19

- Infectious disease by SARS-CoV-2
- Declared as a pandemic by WHO in March 2020
- High public health impact globally



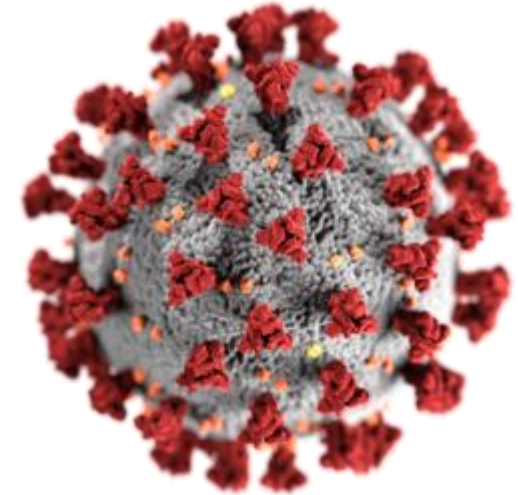
# COVID-19

## Challenges

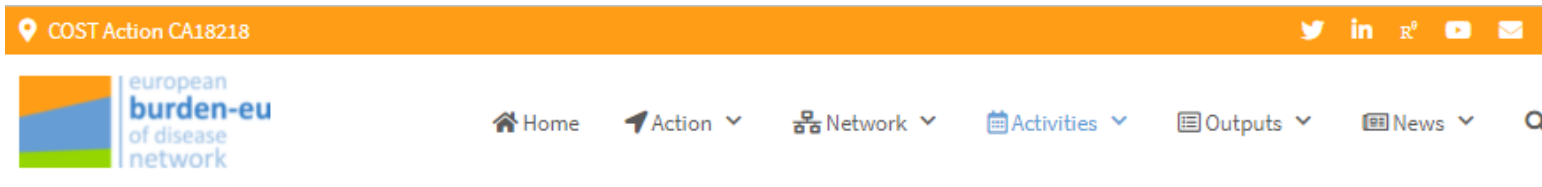
- Emerging virus
  - Lack of data
  - Lack of knowledge on health effects

## Opportunities

- We were ready
- Abundant data



# Burden of COVID-19 Task Force



## Burden of COVID-19 Task Force

The European Burden of Disease Network established the Burden of COVID-19 Task Force, as a sub-group of [WG2 Infectious Diseases](#). The TF welcomes members who are conducting or interested in launching national studies to estimate the burden of disease of COVID-19.

Its aims are to:

- Share experiences in national burden of COVID-19 studies
- Support each other with calculations, model assumptions, data gaps
- Harmonize methodologies and align strategies for communicating results
- Discuss research projects and upcoming evidence on long-COVID

The TF meets approximately every six weeks. We select a different topic for each meeting, and focus mostly on technical discussions. We also have the opportunity to arrange ad-hoc meetings and discussions as needed/requested by members of the TF, and to use the [burden-eu discussion forum](#).

You can find the minutes of our meetings on the [Google Drive](#).

If you are interested in joining, contact [Sara Pires](#).

Other resources on COVID-19 disease burden are available on [this page](#).

# Burden of COVID-19 Task Force



COST Action CA18218  
European Burden of Disease Network

**Burden of disease of COVID-19  
PROTOCOL FOR COUNTRY STUDIES**

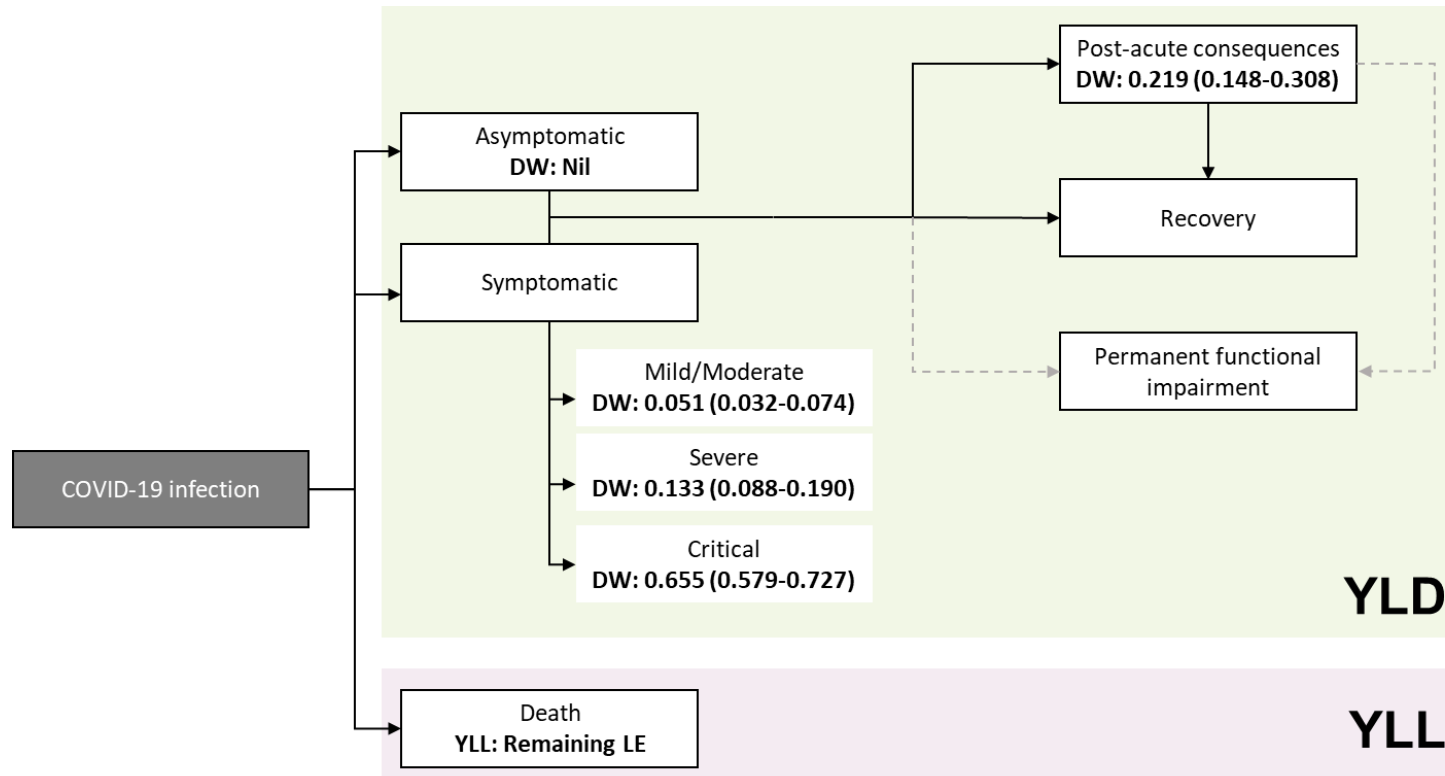
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Provide guidance for data requirements, methodology and communicating results



# Burden of COVID-19 Disease model (Version 1)



# Burden of COVID-19 Data Requirements

- Incidence - Individuals **testing positive** for SARS-CoV-2
- Incidence (Proportion) of **symptomatic** cases
- **Number of hospitalized and ICU cases**
- **Number of COVID-related deaths**
- **Duration** of disease
- Demographics data
- Disability weights and life expectancy

# Burden of COVID-19 Data Requirements

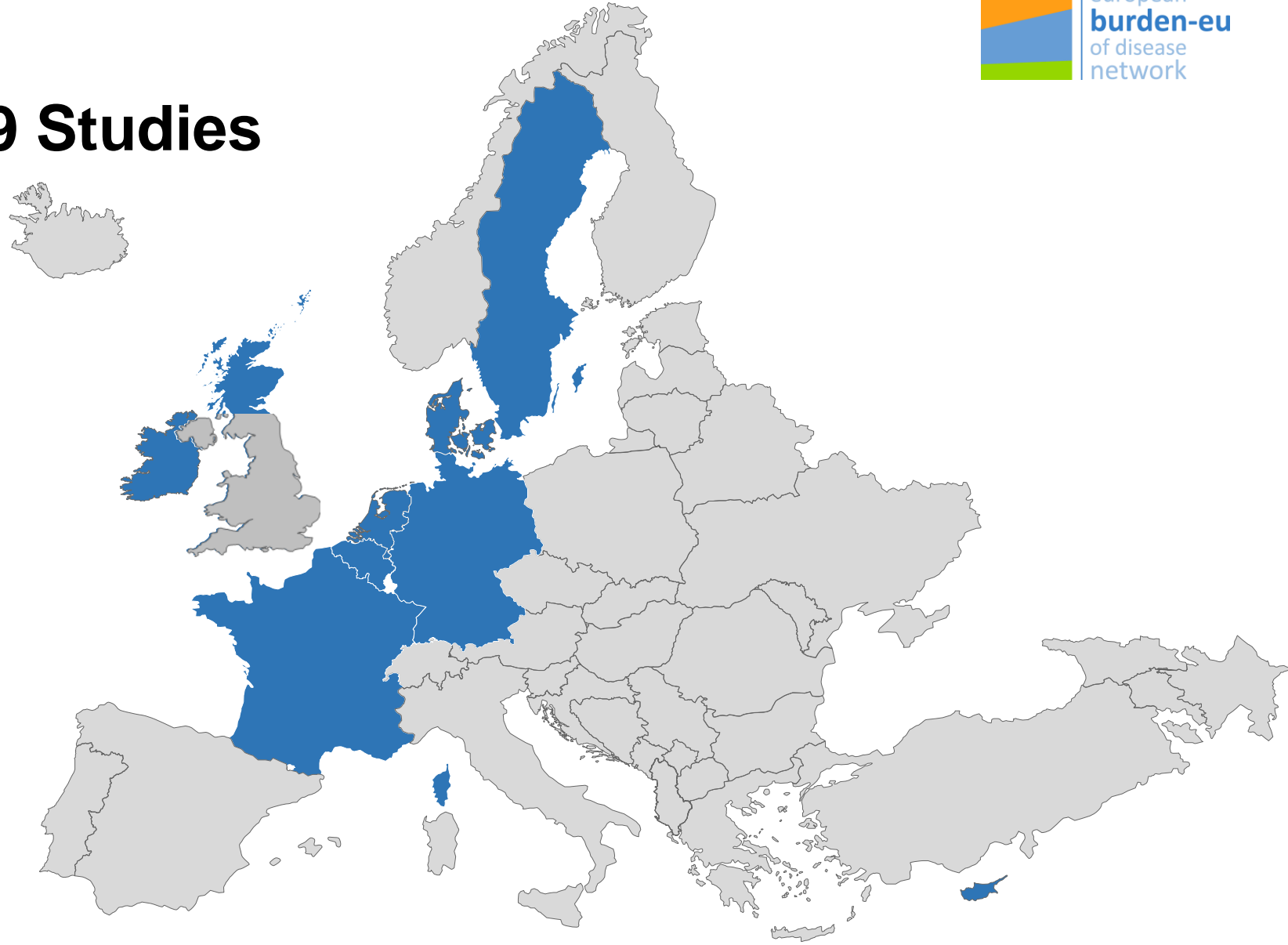
- *Definitions (example):*
  - **Admission:** ‘COVID-19-related’ if patient had confirmed SARS-CoV-2 and 1st positive test performed 14 days prior to admission until date of discharge
  - **Intensive care treatment:** ‘COVID-19-related’ if IC provided during a COVID-19-related admission
  - **Death:** ‘COVID-19-related’ if it occurred within **30 days** from first positive test

# COVID-19 health states and disability weights

Type	Name	Description	Disability weight (95% uncertainty interval)
<b>Acute, infectious disease</b>	Asymptomatic	Has infection but experiences no symptoms	Nil
	Moderate	Has a fever and aches, and feels weak, which causes some difficulty with daily activities.	0.051 (0.032-0.074)
	Severe	Has a high fever and pain, and feels very weak, which causes great difficulty with daily activities.	0.133 (0.088-0.190)
	Intensive care	Intensive care unit admission	0.655 (0.579-0.727)
<b>Chronic, infectious disease</b>	Post-acute consequences (fatigue, emotional lability, insomnia)	Is always tired and easily upset. The person feels pain all over the body and is depressed.	0.219 (0.148-0.308)

# BoD COVID-19 Studies

BoD-COVID Studies
Netherlands
Scotland
Germany
Malta
Ireland
Denmark
France
Belgium
Ireland
Sweden



# BoD COVID-19 Studies

Country	Period of analysis	Long-COVID included	DALY/100,000	% YLD
Australia	1 Jan-31 Dec 2020	Yes, estimated	32.7	3.5%
Belgium	Mar 2020- 31 Dec 2021	Yes	1,968	5%
Cyprus	9 March 2020 – 8 March 2021	N/A	1,881 YLL	NA
Denmark	28 Feb 2020-28 Feb 2021	No	520	1.6%
France	Jan- 31 Dec 2020	Yes, limited	1,472	1%
Germany	1 Jan-31 Dec 2020	No	368	0.7%
Ireland	1 Mar 2020 – 28 Feb 2021	Yes, estimated	1,033	1.3%
Malta	7 Mar 2020-31 Mar 2021	Yes, limited	1,086	5%
Netherlands	1 Jan-31 Dec 2020	No	1,570	1%
Scotland	1 Jan-31 Dec 2020	Yes, limited	1,770- 1,980	2%
Sweden	Mar 2020- Oct 2021	Yes	1,418	0.7%

# BoD COVID-19 Studies

- National burden of COVID-19 ranged between **32 and app. 2,000 DALYs/ 100,000** inhabitants
- Consistent large contribution of **mortality** to the burden, between **95% and >99%**

# BoD COVID-19 Studies

- Harmonized efforts and methodologies have allowed for **comparable estimates** and **communication** of results
- Future studies should evaluate the **impact of interventions** and unravel the indirect health impact of the COVID-19 crisis
- Burden of disease indicators, and standardization of approaches where applicable, can be useful for **monitoring within- and across-country public health in an ongoing pandemic**



# Impact

What can we learn from these estimates?

- BoD useful to measure effect of interventions, e.g. vaccination programs
  - Within and across populations
  - Across population groups
- Standardization of methods and sharing of capacity is key

# Impact

What is to be done?

- Expand to include long-COVID-19
- Measure effect of interventions



A woman who has had COVID-19 attends a physiotherapy session in Madrid. Credit: Pierre-Phillipe Marcou/AFP/Getty

[The pandemic's true health cost: how much of our lives has COVID stolen? \(nature.com\)](https://www.nature.com/news/the-pandemic-s-true-health-cost-how-much-of-our-lives-has-covid-stolen-1.4577777)

# Burden of COVID-19

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