



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

# Assessing the burden of COVID- 19 in the Netherlands:

*exploration of the  
necessary decisions and  
assumptions*

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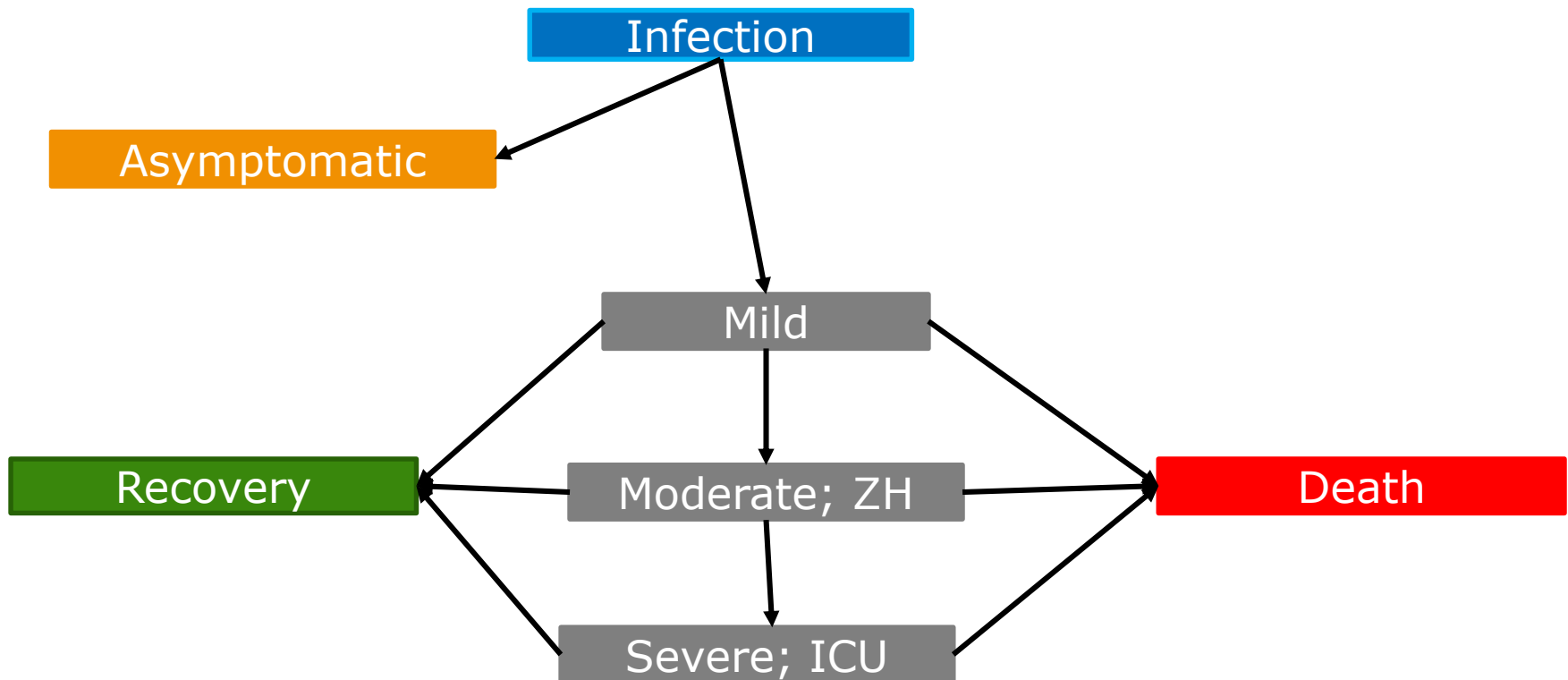


## Situation in the Netherlands

- Number of positive tested / died patients are notified (via Municipal Health Services/Labs) at the RIVM
- Stichting NICE; National Intensive Care Evaluation
- Statistic Netherlands (CBS); cause of death



## Outcome tree / Clinical pathway





## Estimation of the YLD

- Completeness of data
  - › Mild cases – most not tested in the beginning of the pandemic except for some healthcare workers in Brabant
  - › Hospital cases – follow-up missing
  - › Fatal cases – cases without being tested
- Comorbidity of patients
  - › Effect on YLD
- Long-term complications
  - › Little evidence available, e.g. mental problems, post-intensive care syndrom (PICS)



## Estimation of the YLD – Decisions we made

- Completeness of data
  - › Mild cases - from other sources (e.g. ratio mild – ZH from august and extrapolate to April)
  - › Hospital cases – RIVM database versus NICE
  - › Fatal cases – excess mortality models
- Comorbidity of patients
  - Effect on YLD – investigated with multiplicative methods, but not incorporated due incompleteness and incomparability with other infectious diseases
- Long-term complications;
  - Little evidence available – included in the future



# Estimation of the YLD – *Provisional first results*

- First wave (01-03 until 30-06)

|                   | Incidence | YLD |
|-------------------|-----------|-----|
| Mild              | 34.000    | 48  |
| Hospital – not IC | 11.600    | 50  |
| Hospital IC       | 2.900     | 110 |
| Fatal             | 6.200     | 9   |



## Estimation of the YLD – *Provisional first results*

- First wave (01-03 until 30-06)

|                   | Incidence | YLD | Corrected incidence | Corrected YLD |
|-------------------|-----------|-----|---------------------|---------------|
| Mild              | 34.000    | 48  | 340.000             | 480           |
| Hospital – not IC | 11.600    | 50  | 14.000              | 56            |
| Hospital IC       | 2.900     | 110 | 2.900               | 110           |
| Fatal             | 6.200     | 9   | 9.900               | 14            |





## Estimation of the YLL

- Test-capacity/reality; people died before being tested
- Life expectancy of fatal cases; especially the 85+ cases  
(*NL table from 2019*)
- Underlying diseases ; all fatal cases also due to COVID-19
  - Correction for severity / LE ; healthy-quality of life measure



## Estimation of the YLL – Decisions we made

- Test-capacity/reality; people died before being tested  
*Excess mortality models & cause of death administration*
- Life expectancy of fatal cases; especially the 85+ cases  
*For comparability; GBD LE table (aspirational)*  
*Country specific; LE of 90year old?*
- Underlying diseases ; all fatal cases also due to COVID-19
  - Correction for severity / LE ; healthy-quality of life measure



## Estimation of the YLL – *Provisional first results*

- Test-capacity/ reality; people died before being tested

|             | <b>Incidence</b> | <b>YLL</b> | <b>Corrected incidence</b> | <b>Corrected YLL</b> |
|-------------|------------------|------------|----------------------------|----------------------|
| Fatal cases | 6.200            | 58.000     | 9.900                      | 88.000               |



## Estimation of the YLL – *Provisional first results*

- Life expectancy of fatal cases; especially the 85+ cases

| Netherlands<br>COVID-19 |            | GBD   |             | Netherlands – other<br>studies |             |
|-------------------------|------------|-------|-------------|--------------------------------|-------------|
| 75-84                   | 9.38 years | 75-79 | 12.85 years | 75-79                          | 11.03 years |
|                         |            | 80-84 | 9.34 years  | 80-84                          | 7.85 years  |
| 85+                     | 4.35 years | 85+   | 5.05 years  | 85+                            | 5.35 years  |



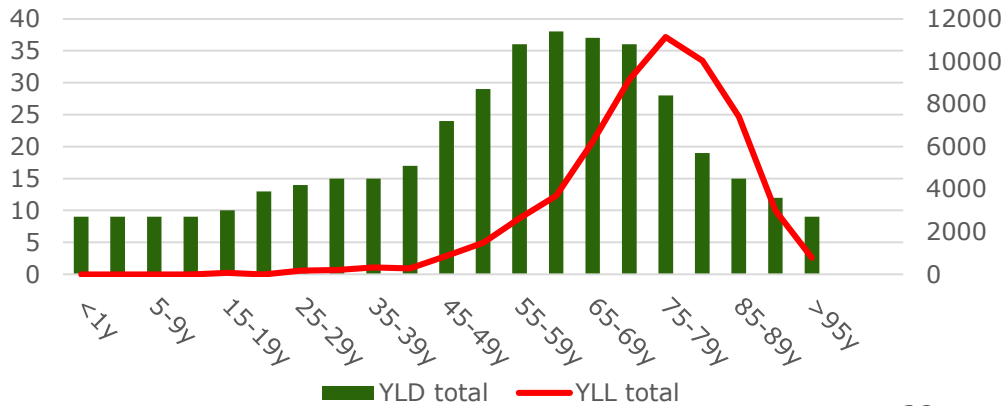
## Estimation of the YLL – *Provisional first results*

- Underlying diseases
  - Survival / LE for this year;
    - › First results: around 10.000 deaths with COVID-19 as cause
  - Correction for severity / LE ; healthy-quality of life measure



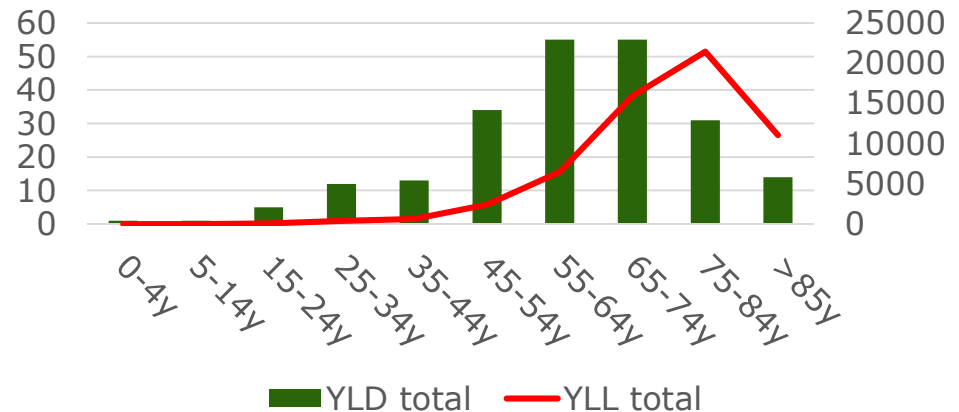
# Estimated YLL comparing 5- vs 10-year age-groups

Total burden  $\approx$  57.850 DALYs



Without excess mortality

Total burden  $\approx$  58.540 DALYs







## Summary

- Clinical pathway
  - *mild phase also for moderate/severe phases*
  - *Inclusion of long term complications*
- YLD estimate
  - *Comorbidity*
  - *Correction for underestimation*
- YLL estimation
  - *Cause of death, with or due to COVID-19*
  - *Choice of LE table*
  - *Correction underlying disease / age*



# Questions