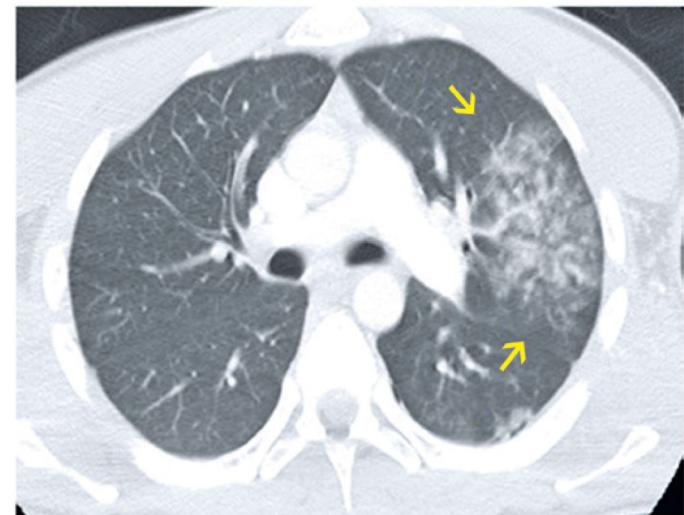
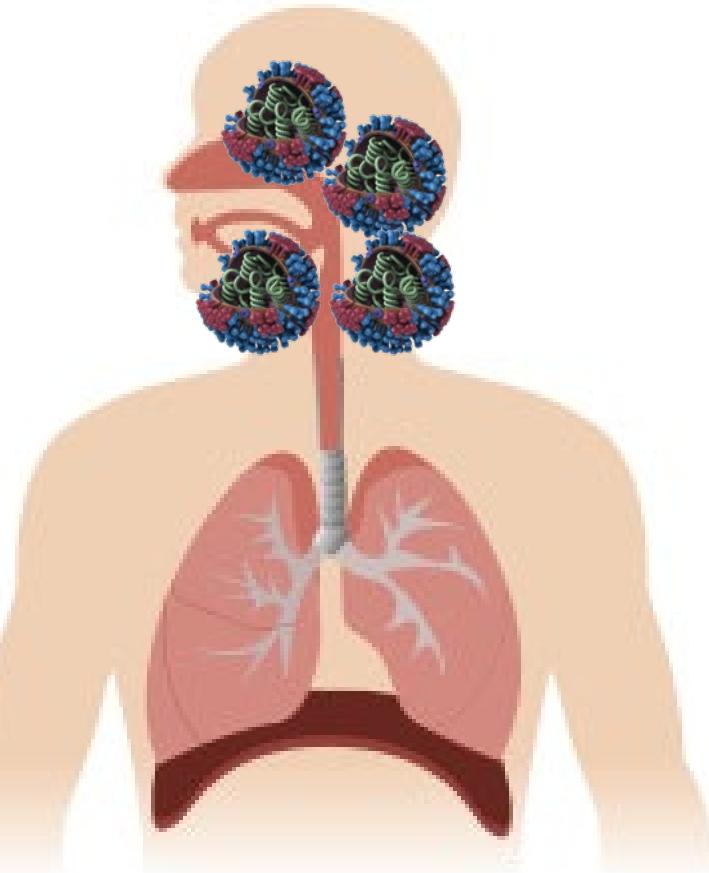
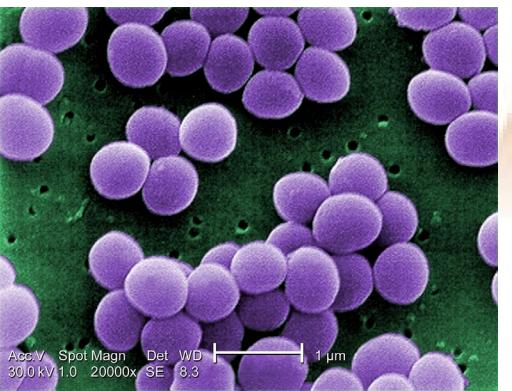
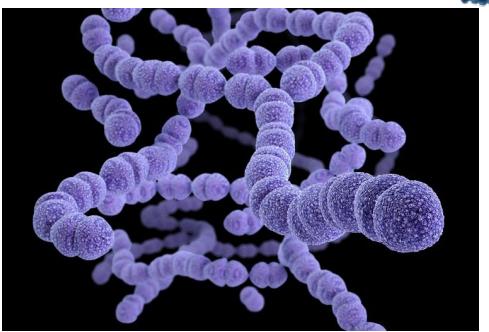
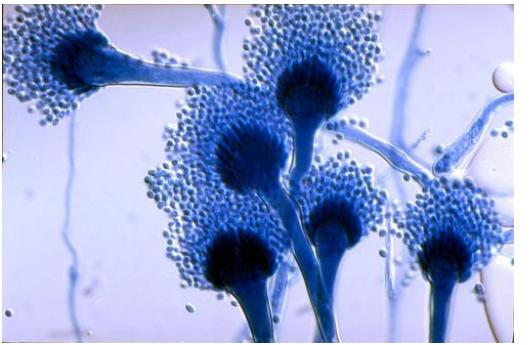


Gecompliceerde lagere luchtweg infectie bij een patiënt met obesitas

Marco Goeijenbier MD PhD

Disclosure belangen spreker

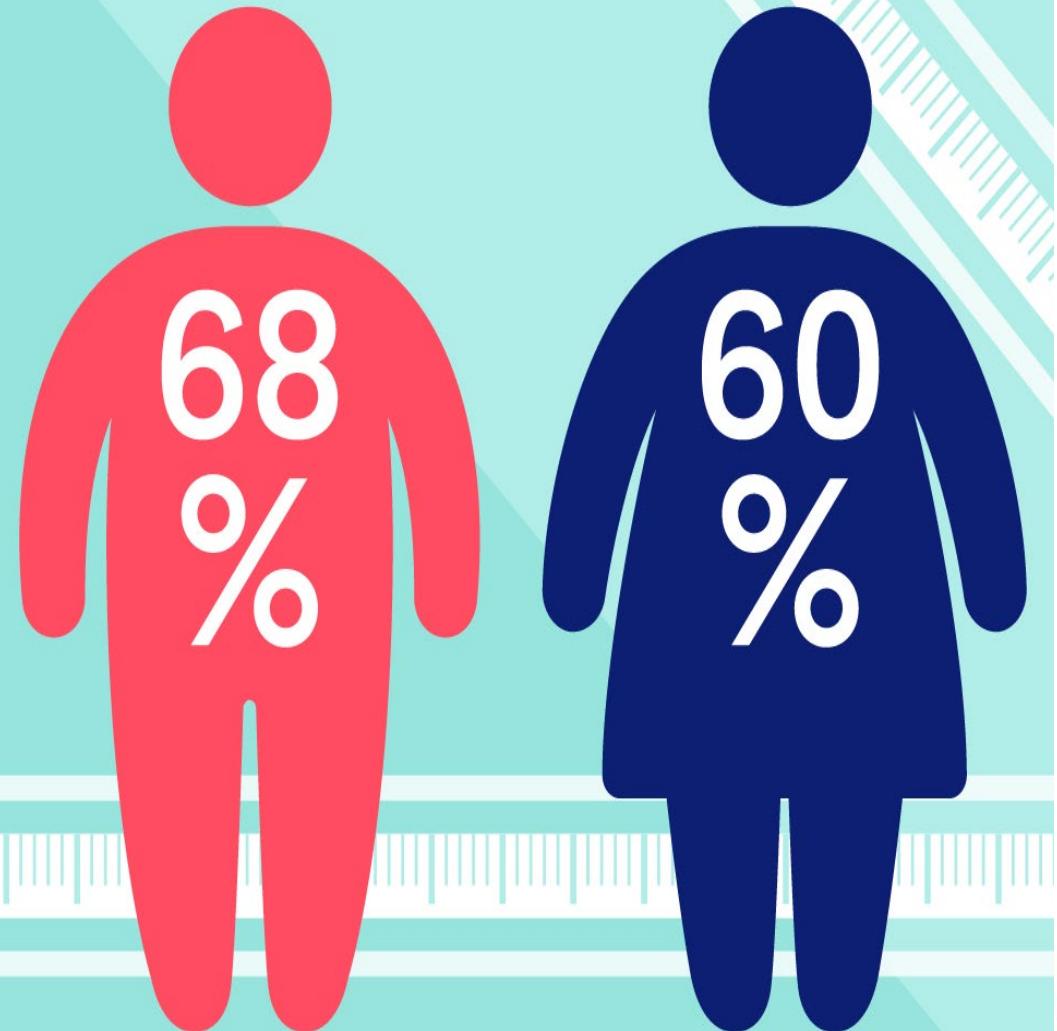
(potentiële) belangenverstengeling	Zie hieronder
Voor bijeenkomst mogelijk relevante relaties met bedrijven	Bedrijfsnamen
<ul style="list-style-type: none">• Sponsoring of onderzoeksgeld• Honorarium of andere (financiële) vergoeding• Aandeelhouder	<ul style="list-style-type: none">• Moderna; Sanofi• Pfizer, GSK, Nature Springer, Moderna/ Medscape• Vaccinatieboekje B.V.



Met een beetje
pech...

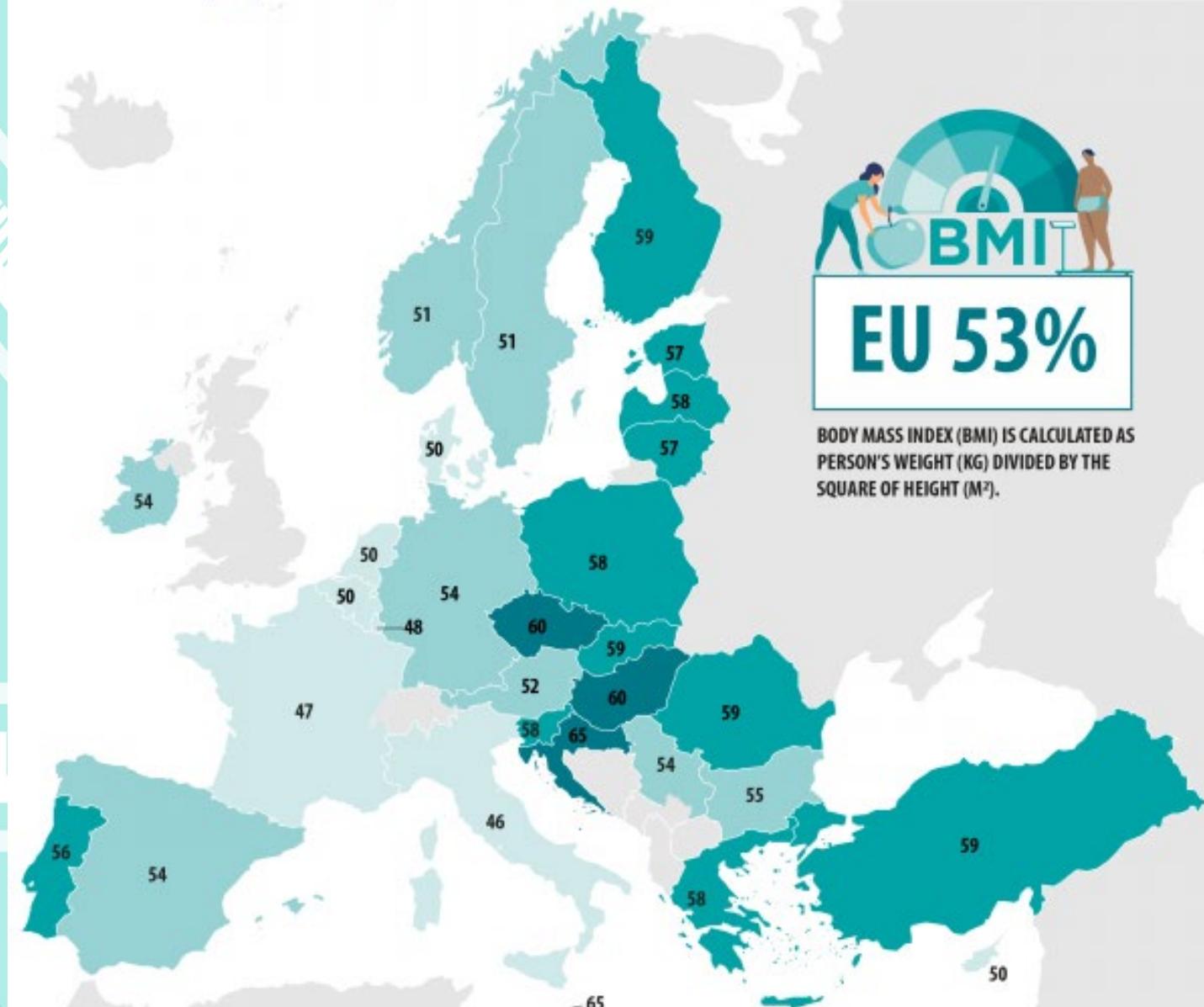


In 2022



Overweight population (BMI \geq 25)

% of adult population, 2019



Man 42 jaar,
blanco medische
voorgeschiedenis

Sinds 3 dagen hoesten en koorts via
huisarts naar eerste hulp



WAAROM WORDEN WE ZIEK?

INFLUENZA/ SARS CoV2/ *S. Pneumoniae* etc INFECTIE

ACTIVATION OF THE IMMUNE SYSTEM

METABOLIC CHANGES



LOSS OF APPETITE



FATIGUE



FEVER



A
B
C
D
E

$$\text{BMI} = \frac{\text{weight (kg)}}{\text{height}^2 (\text{m}^2)}$$



Normal
 $< 25 \text{ kg/m}^2$



Overweight
 $25 - 29 \text{ kg/m}^2$



Obese
 $\geq 30 \text{ kg/m}^2$





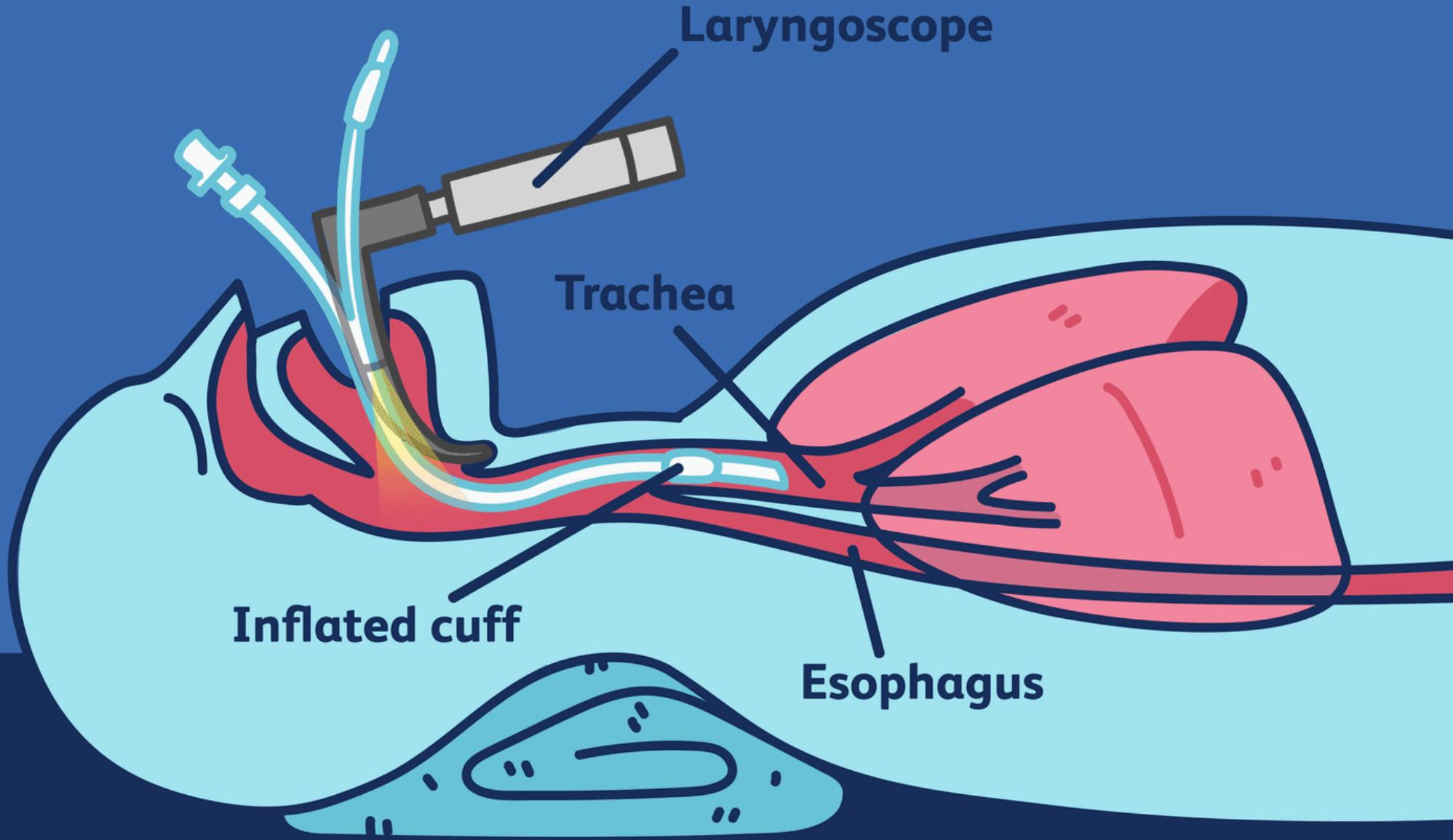
Influenza A PCR positief (TTD 90 minuten)

Urine Pneumokok antigen + (TTD 30 uur)

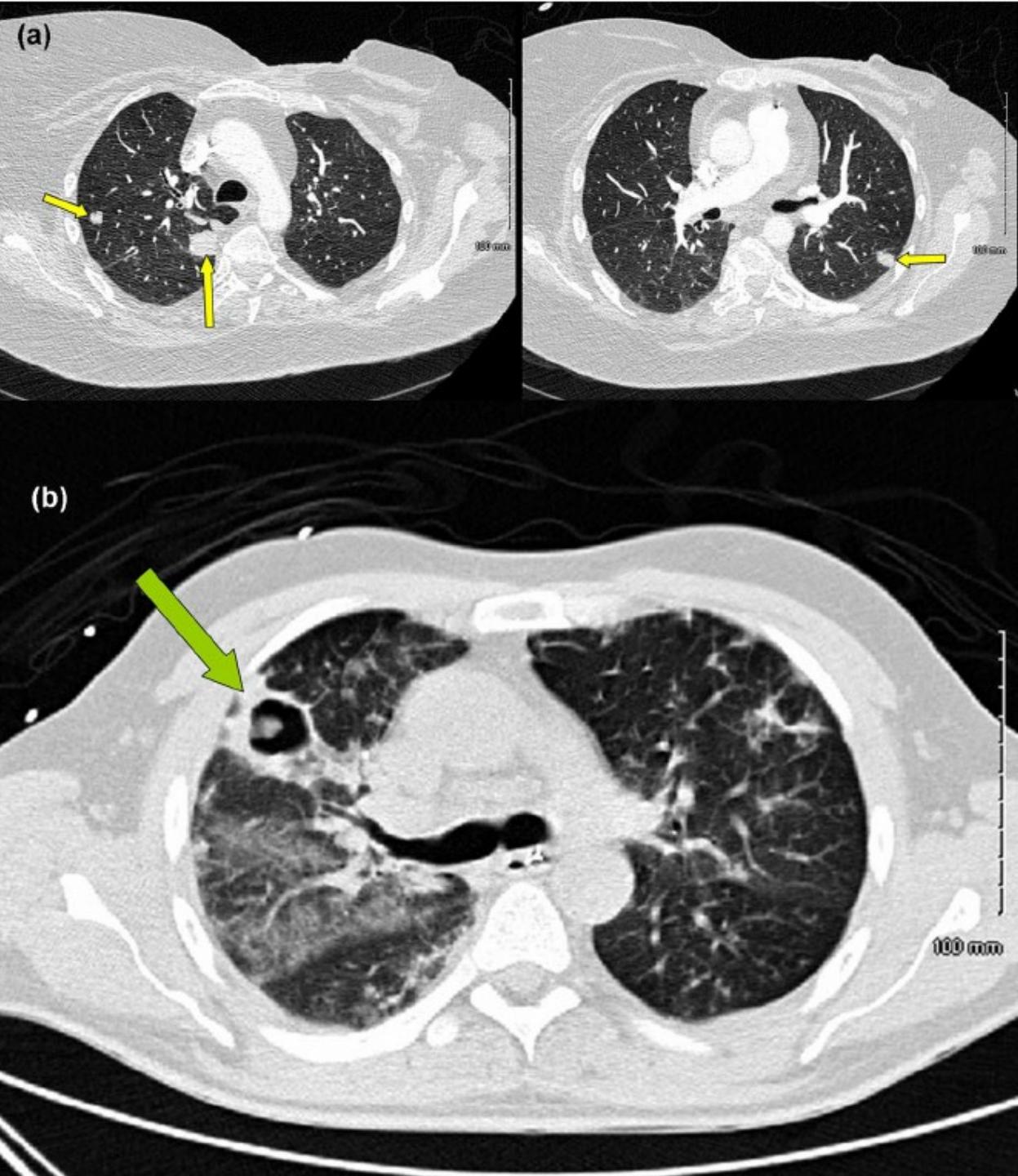
Opname met Hi flow / optiflow in eerste instantie op afdeling longgeneeskunde

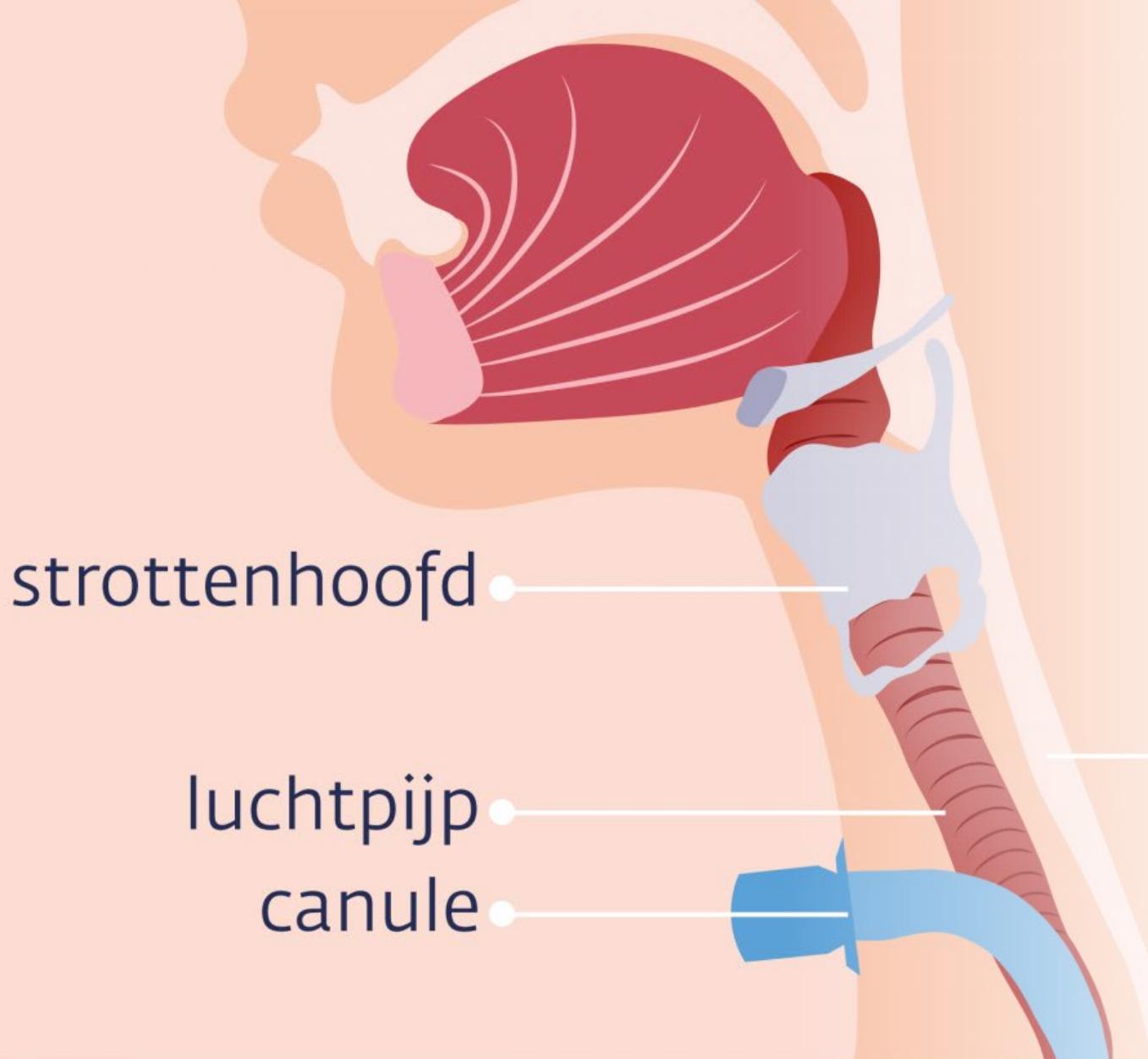
$$\text{ROX Index} = \frac{\text{SPO}_2/\text{FIO}_2}{\text{Respiratory Rate}}$$

Respiratory rate - OXygenation



Day 10 CT scan shows a cavity of $6\text{cm} \times 5\text{cm}$. Aspergillus fumigatus grew in a sputum sample and the galactomannan antigen (AGA) tested positive in BAL fluid.





strottenhoofd

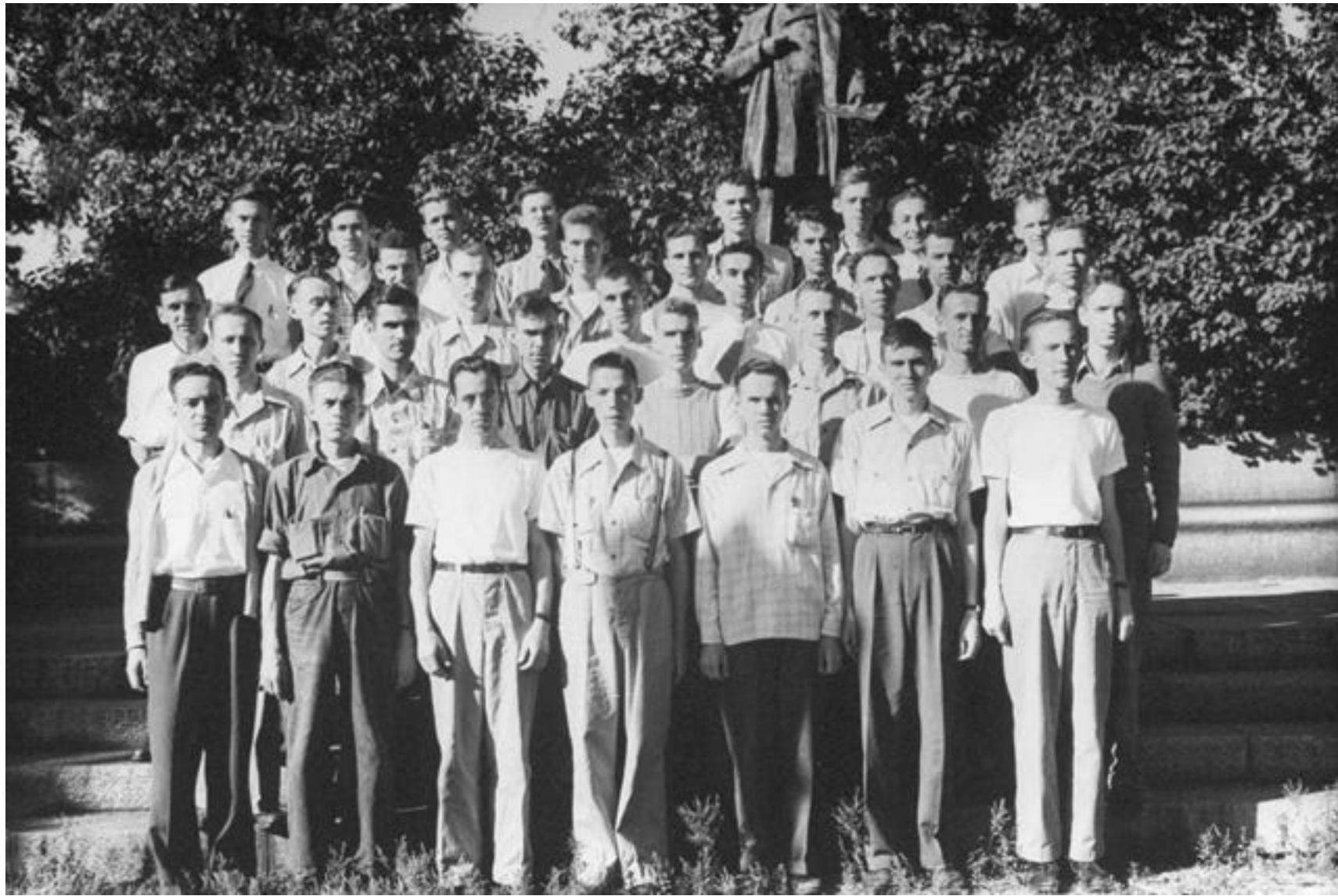
luchtpijp
canule

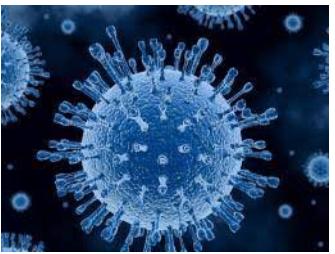
- Langdurige IC opname; behandeling met voriconazol na eerst dubbeltherapie, ceftriaxon en oseltamivir
- ICU acquired weakness
- Tracheostoma om 'geweaned' te worden met high flow en fysiotherapie



Wat is de rol van obesitas?







Infection

IFN γ



Muscle IR

↑↑↑ Glucose

Obesity



Liver IR

Pancreas

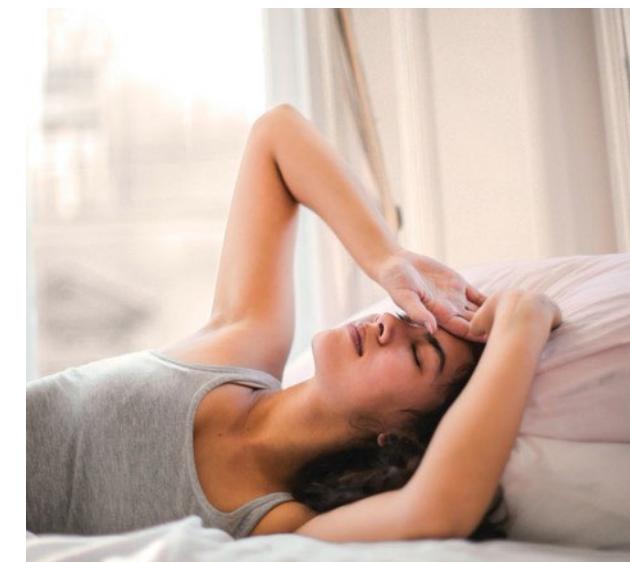


Insufficient Hyperinsulinemia

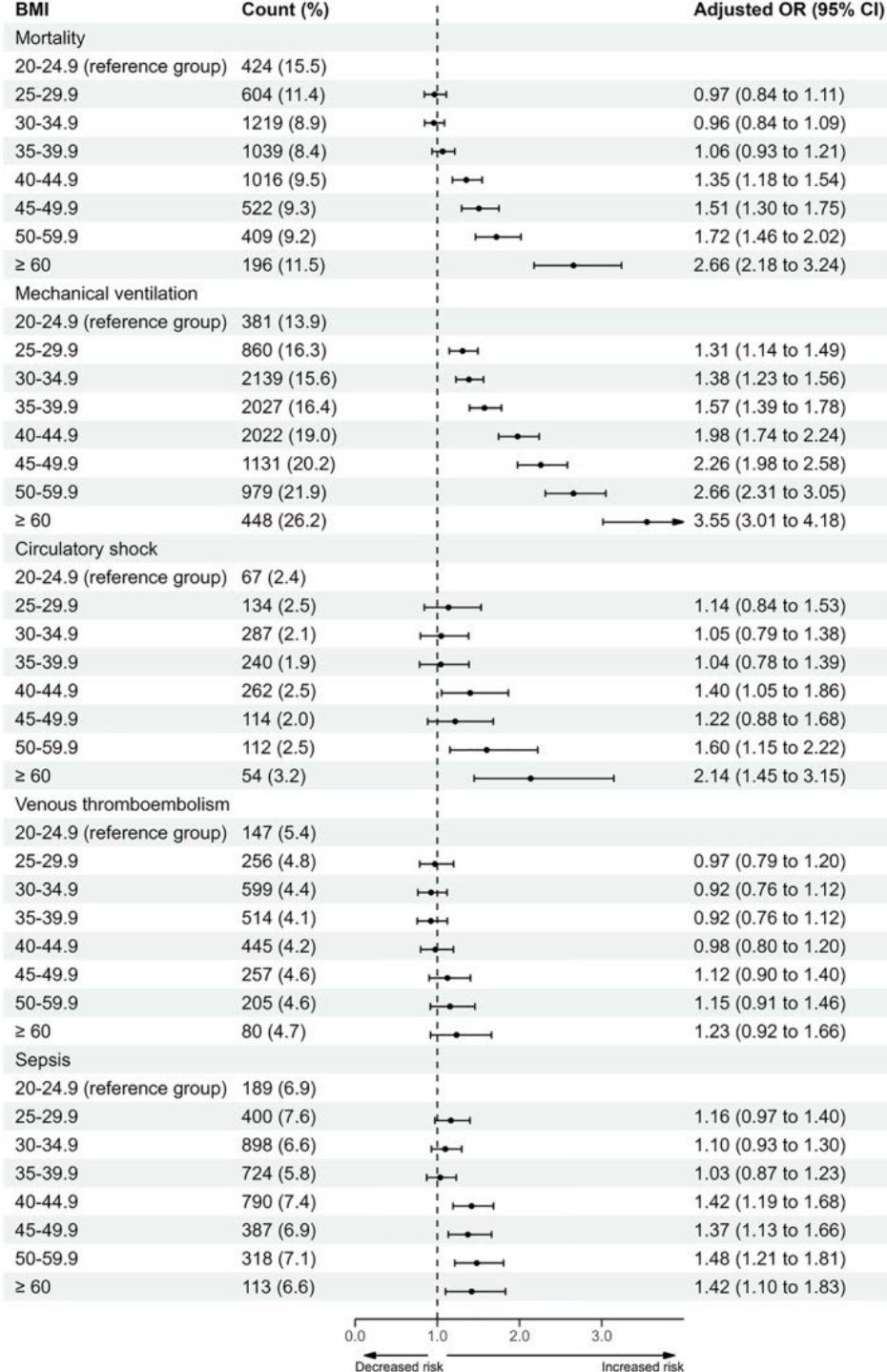


Euglycemia

Loss of glycemic control (DM2)



Šestan *Immunity* 2018
Wensveen lab 2023

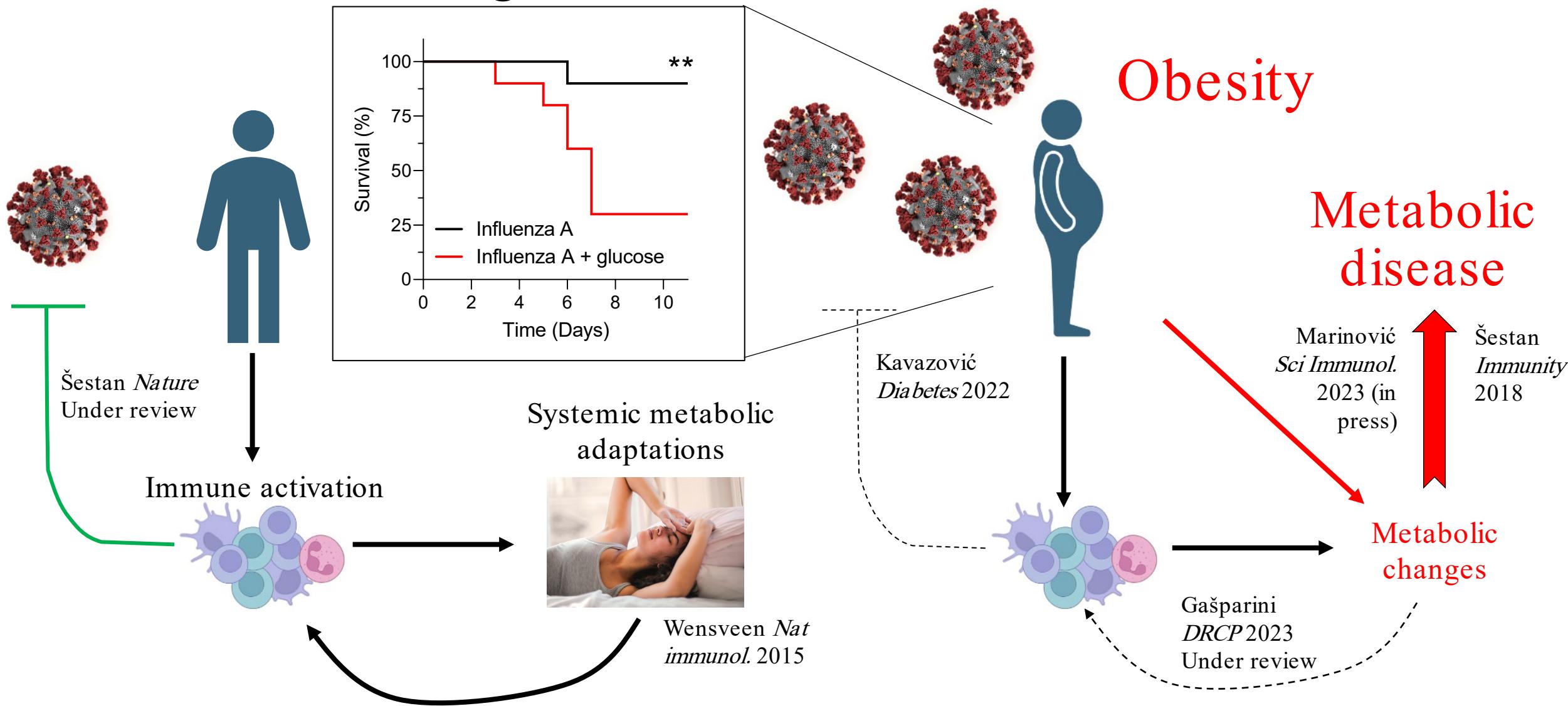


Obesity is independently associated with worse patient outcomes in COVID-19 hospitalizations, with higher mortality and rates of mechanical ventilation.

Obesity → increased risk of death upon seasonal influenza
 Not only increased the risk of death, but also significantly associated with hospital and intensive care unit admissions and subsequent need for ventilatory support

Aziz et al 2024 Obesities
 Miron et al 2024 Diab Metab Syndr Ob

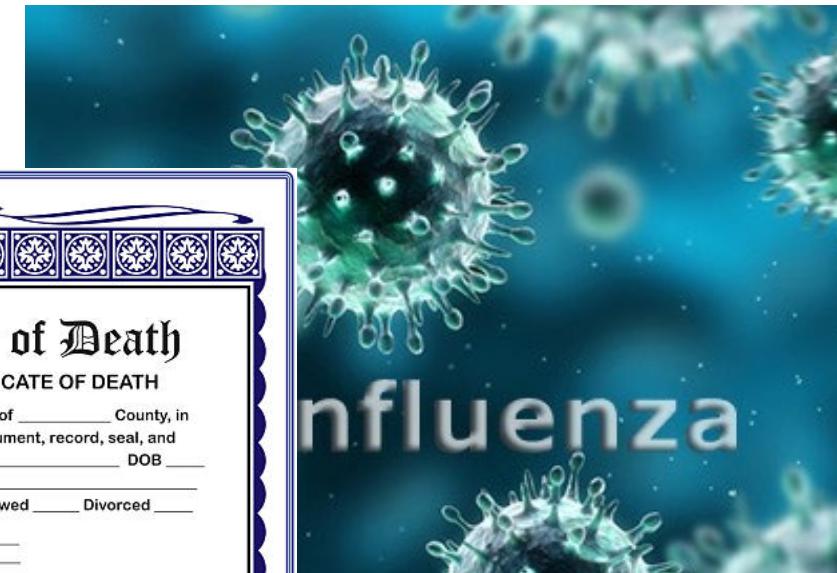
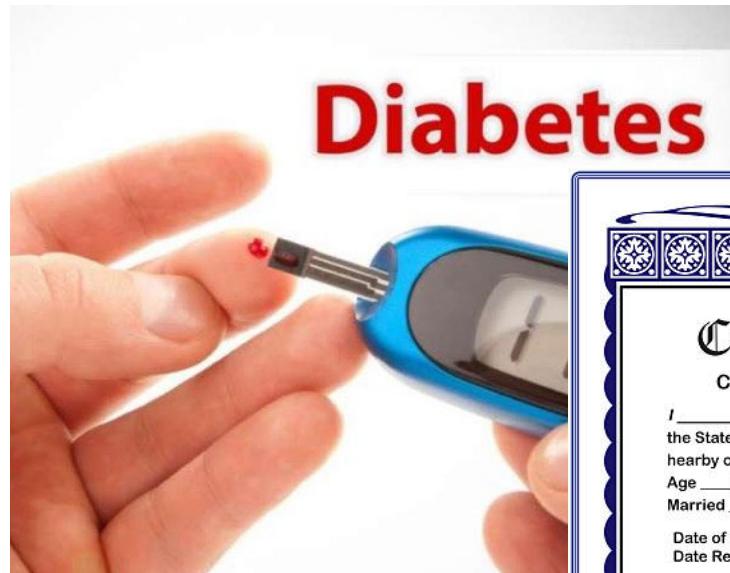
Metabolic changes in context of infection

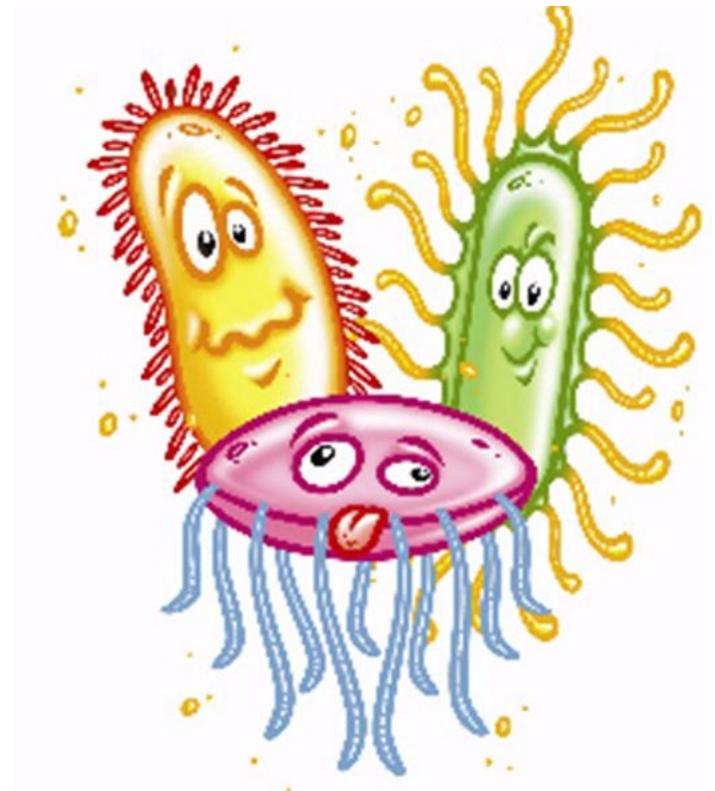




American journal of public health in 1999 Valdez et al.

Glucose intolerantie / variabiliteit





- diabetes over het algemeen slechtere uitkomst bij verscheidene infectieziekte. Meeste data voor TBC. (*Gupta et al 2007 inf dis clin north am*)
- “ higher infection-related mortality or morbidity rates in diabetic than in non-diabetic patients” (*Knapp et al 2013 gerontology*)
- Waarom is nog niet goed begrepen (*Goeijenbier et al 2012*)

2) Glucose?

- Hyperglycemia related with worse outcome in both bacterial and viral infections
(Gupta et al 2007)
- A prospective study showed a non-linear association of HBA1C with influenza mortality *(Breitling et al 2016)*

Glycemic Variability in Diabetes Increases the Severity of Influenza in vitro and in vivo
(Marshall et al Mbio 2020 and Hulme et al. 2022 and 2024)

Hba1C directly correlated to influenza severity and hampers the CD8 T cell response
(Hulme et al 2024)



- Mortality upon seasonal influenza virus infection was increased in a rodent model of diet-induced obesity (*Smith 2007 J Nutr*)
- reduced or delayed levels of antiviral and pro-inflammatory cytokines (*Guo et al 2022 Front Nutr*)



WilliamsRobin

“There is still a lot to learn
and there is always
great stuff out there.
Even mistakes can be
wonderful.”

Complexe longinfecties op de IC

Karin van Dijk, consultant microbioloog Amsterdam UMC

Kinetiek en doseringsaanpassingen bij patiënten met obesitas

Catherijne Knibbe, ziekenhuisapotheker-klinisch farmacoloog St. Antonius ziekenhuis

De behandeling van obesitas na de ziekenhuisopname, nieuwe ontwikkelingen

Victor Gerdés, internist Spaarne Gasthuis

