MEP Lung Health Group

BREATHE FOR 2030 VISION

# Respiratory Funding

Eva Polverino

European Respiratory Society

February, 2024, Brussels

#KeepBreathing

# Examples of Respiratory Burdens of Disease

| Disease | Burden | Deaths | Health Years Lost |
|---|---|---|---|
| **Asthma** | 43.5 million | 17,000 | 2 million |
| **COPD** | 41.3 million | 349,000 | 7.7 million |
| **Lung Cancer** | 726,000 | 464,000 | 10.3 million |
| **Lower Respiratory Tract Infections** | 947,000 | 273,000 | 5.6 million |
| **Tuberculosis** | 357,000 | 25,000 | 990,000 |
| **Interstitial Lung Disease** | 716,000 | 25,000 | 496,000 |
| | 88 MILLION | 1,2 MILLION | 27 MILLION |

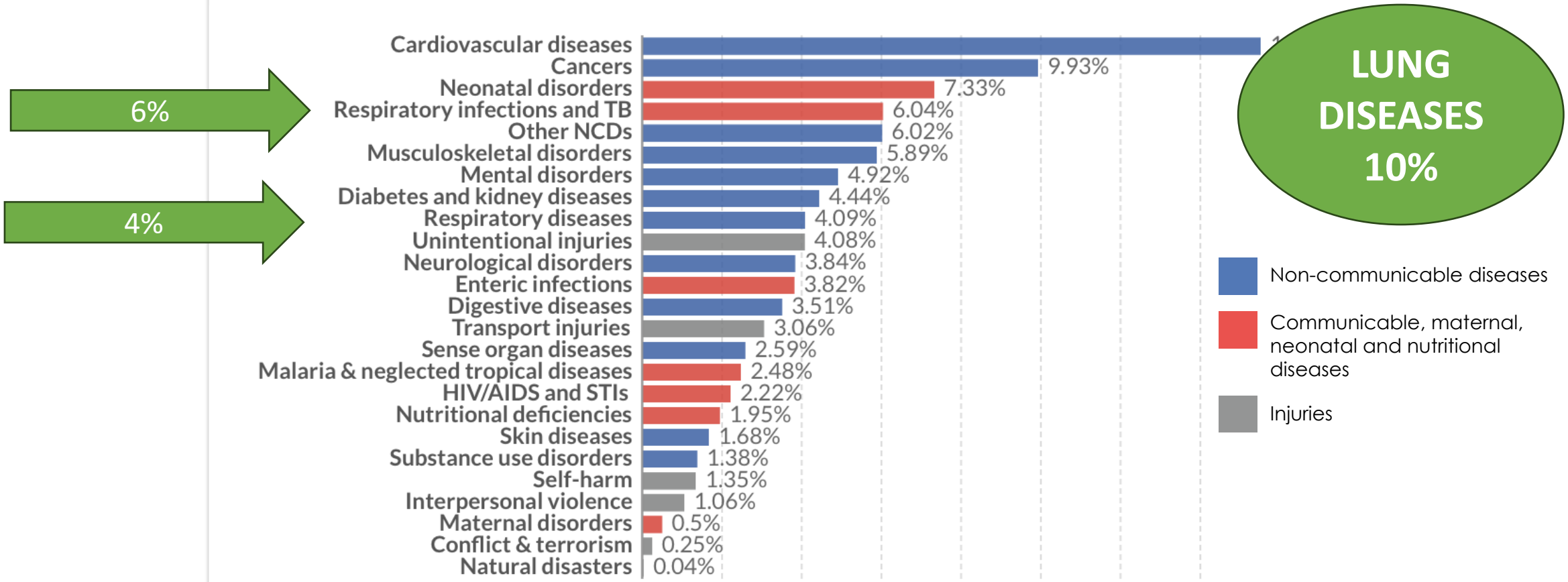
***In 2019 in the EU the societal cost for 7 major lung conditions was €422 billion***

*2019 WHO European Region IRC, Lung Facts - Europe*

# Share of total disease burden by cause, World, 2019

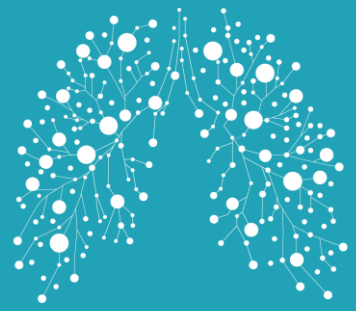
Total disease burden, measured in Disability-Adjusted Life Years (DALYs) by sub-category of disease or injury.
DALYs measure the total burden of disease – both from years of life lost due to premature death and years lived with a disability. One DALY equals one lost year of healthy life.

Change country or region




Source: IHME, Global Burden of Disease (2019)
OurWorldInData.org/burden-of-disease • CC BY
Note: Non-communicable diseases are shown in blue; communicable, maternal, neonatal and nutritional diseases in red; injuries in grey.

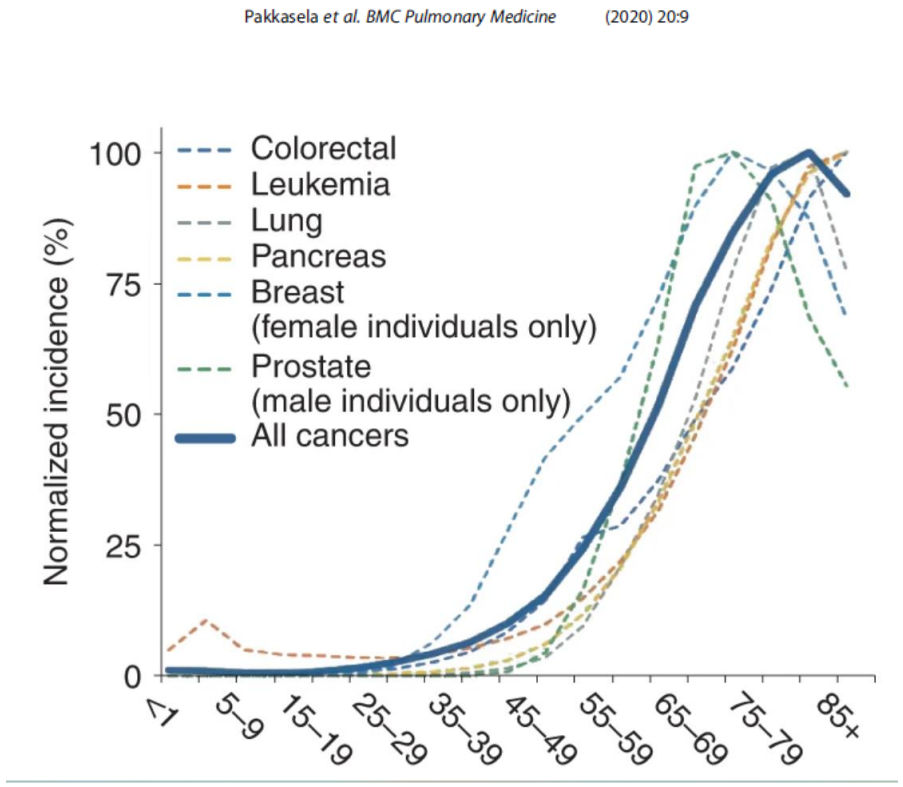
BREATHE FOR 2030 VISION



# Europe an ageing population

## What does it mean for Lung Health?

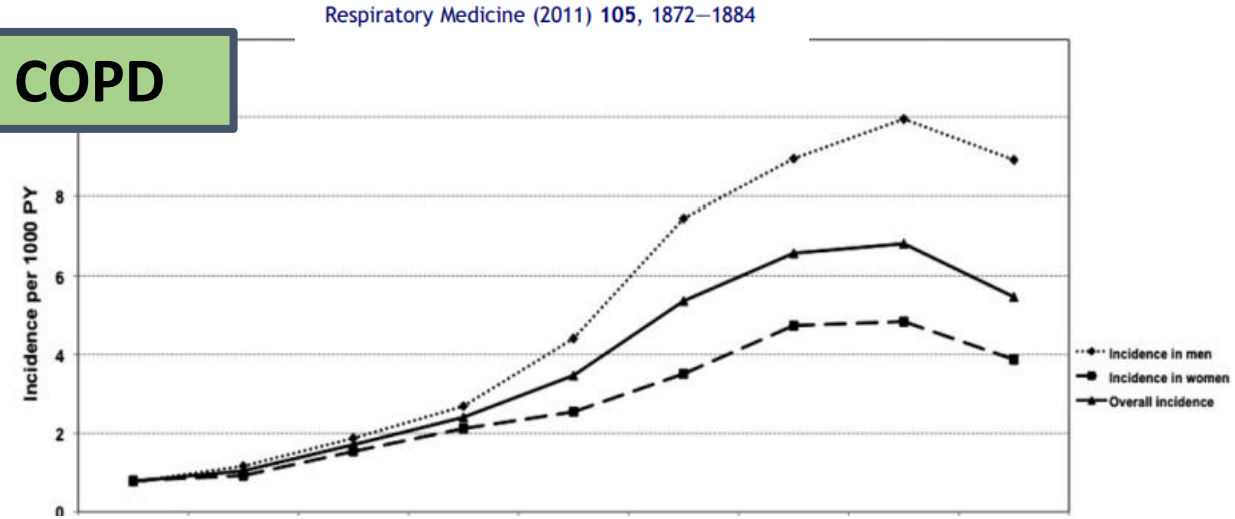
# Cancer with ageing




NATURE AGING | VOL 2 | MAY 2022 | 365–366 | www.nature.com/nataging

# COPD & asthma with ageing

## COPD




## ASTHMA

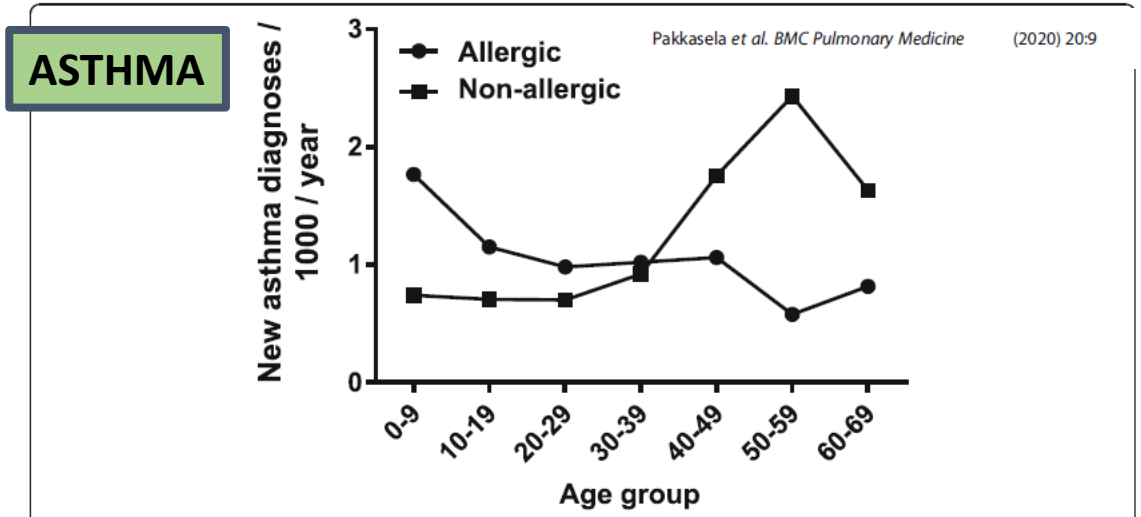
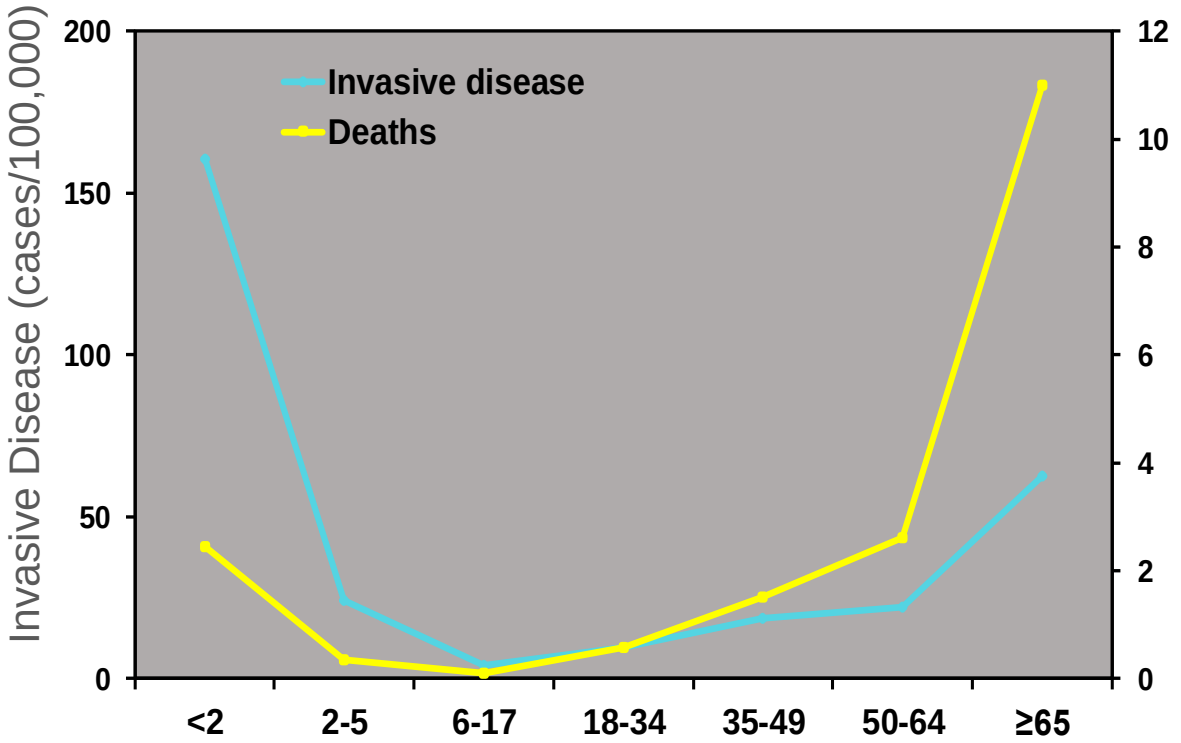



**Fig. 2** Incidence of new asthma diagnoses/1000 person-years divided into allergic (subjects with allergic rhinitis) and non-allergic (subjects without allergic rhinitis) cases in different age groups

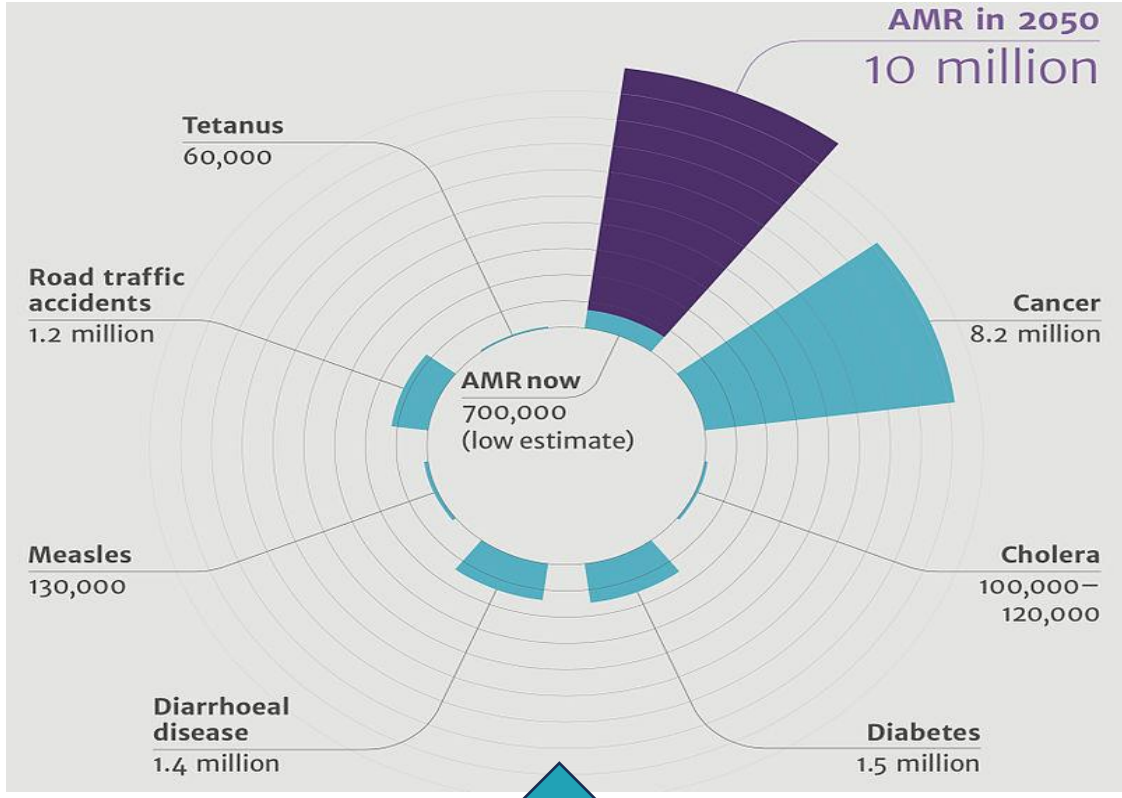
# PNEUMONIA WITH AGEING
(invasive pneumococcal disease)

World Health Organization

***WHO has declared that AMR is one of the top 10 global public health threats facing humanity.***



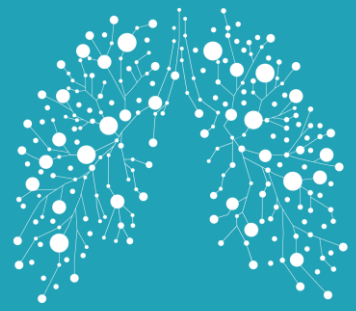

**85% of all IPD is pneumonia**




**10 million deaths in 2050**

Butler JC, Schuchat A. *Drugs & Aging*. 1
1):11-19.

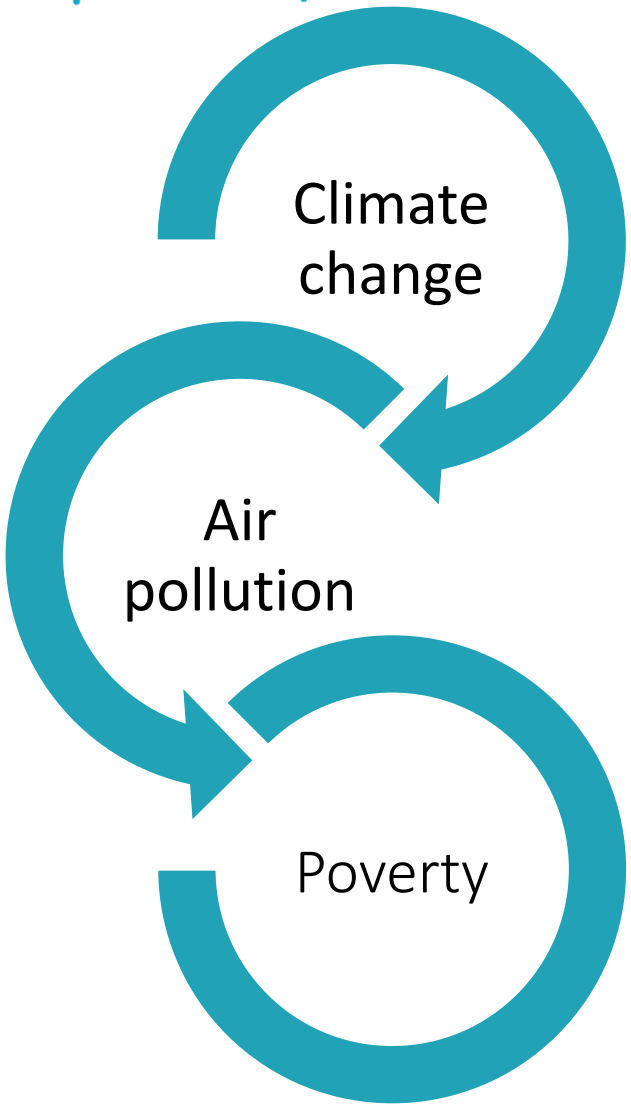
BREATHE FOR 2030 VISION

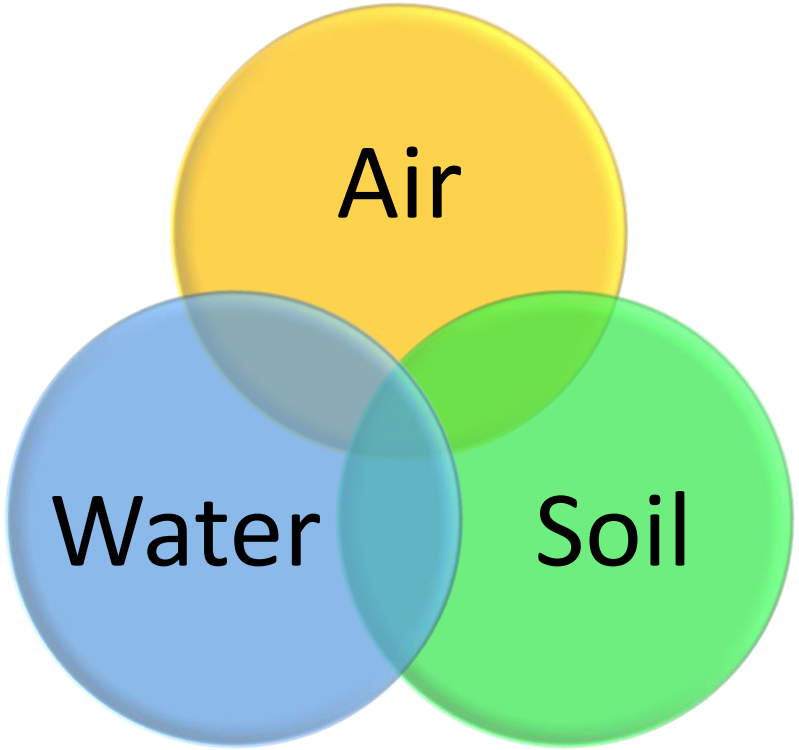


# Pollution and Climate Crisis

## Consequences on the Lungs of the EU Population

# Changing the rules of our PLANET...

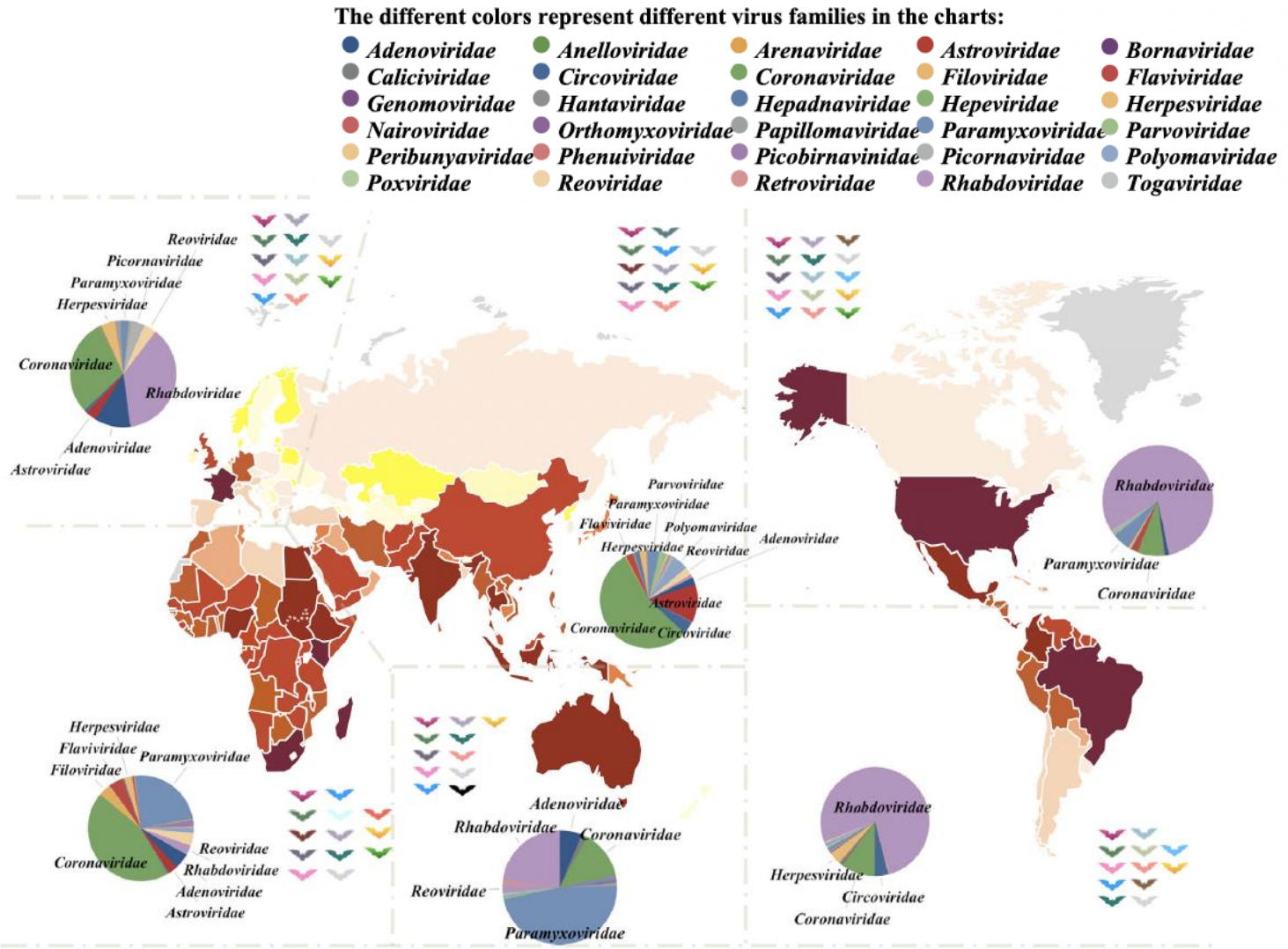



- Virus
- Bacteria
- Fungi
- Parasites
- Animals
- Humans
- Plants

# EMERGING VIRUSES

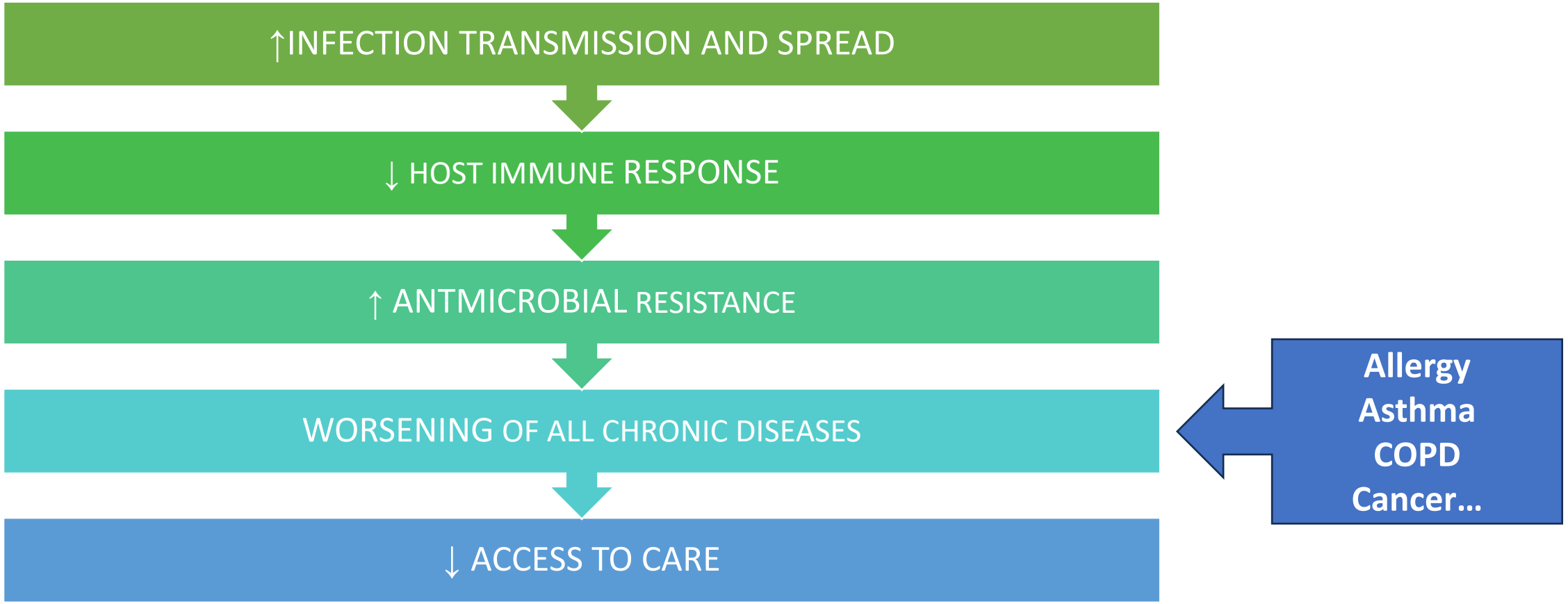
- MERS-CoV
- SARS-CoV
- SARS-CoV-2
- Nipah
- Hendra
- Ebola
- Marburg virus
- rotaviruses




***2019 – "During the past decade several notable viruses have suddenly emerged from obscurity or anonymity to become serious global health threats, provoking concern regarding their sustained epidemic transmission in immunologically naive human populations."***


Cell Rep. 2022 Jun 14;39(11):110969.
Clin Exp Immunol. 2019 May;196(2):157-166.

# POLLUTION & CLIMATE CHANGE:
# What are the consequences for the EU population?



EUROPEAN RESPIRATORY JOURNAL
ORIGINAL RESEARCH ARTICLE
Z. YU ET AL.

Is this reversible?
YES!

# Associations of improved air quality with lung function growth from childhood to adulthood: the BAMSE study

Zhebin Yu[1], Simon Kebede Merid[2], Tom Bellander[1,3], Anna Bergström[1,3], Kristina Eneroth[4], Antonios Georgelis[1,3], Jenny Hallberg[2,5], Inger Kull[2,5], Petter Ljungman[1,6], Susanna Klevebro[2,5], Massimo Stafoggia[1,7], Gang Wang[1,2], Göran Pershagen[1,3], Olena Gruzieva[1,3] and Erik Melén[2,5]

**Reduced air pollution is improving lung function (from 8 to 24 yrs of age)**

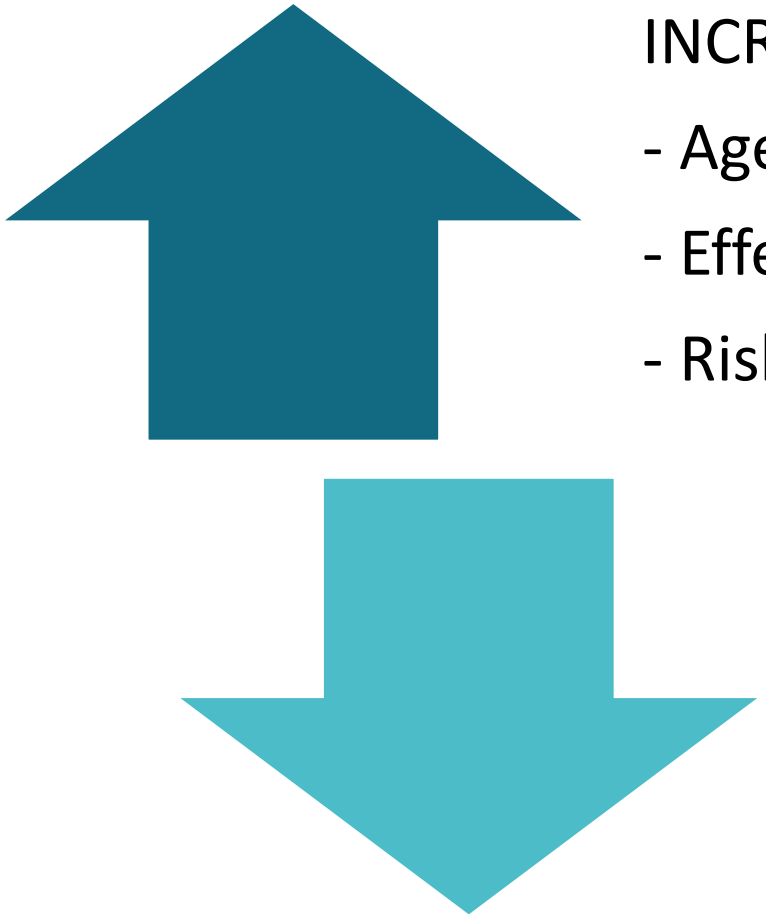
**TABLE 4** Association between improvement of air quality and differences in lung function growth from age 8 to 24 years

| | Unit of improvement in exposure | Raw value | | GLI z-score | |
|---|---|---|---|---|---|
| | | Difference in $FEV_1$ growth, mL per year (95% CI)[#] | Difference in FVC growth, mL per year (95% CI)[#] | Difference in $FEV_1$ growth, SD per year (95% CI) | Difference in FVC growth, SD per year (95% CI) |
| $PM_{2.5}$ | 2.19 $\mu g \cdot m^{-3}$ | 4.63 (1.64–7.61) | 9.38 (4.76–14.00) | 0.03 (0.02–0.04) | 0.04 (0.03–0.05) |
| $PM_{10}$ | 1.00 $\mu g \cdot m^{-3}$ | 0.72 (−0.91–2.35) | 2.77 (0.19–5.35) | 0.01 (0.00–0.02) | 0.01 (0.01–0.02) |
| BC | 0.28 $\mu g \cdot m^{-3}$ | 2.80 (0.66–4.93) | 5.59 (2.30–8.87) | 0.02 (0.01–0.03) | 0.02 (0.01–0.03) |
| $NO_x$ | 6.17 $\mu g \cdot m^{-3}$ | 1.70 (−0.16–3.57) | 3.29 (0.35–6.23) | 0.01 (0.01–0.02) | 0.01 (0.01–0.02) |

GLI: Global Lung Initiative; $FEV_1$: forced expiratory volume in 1 s; FVC: forced vital capacity; $PM_{2.5}$: particulate matter with diameter ⩽2.5 µm; $PM_{10}$: particulate matter with diameter ⩽10 µm; BC: black carbon; $NO_x$: nitrogen oxides. [#]: estimates were adjusted for age, sex, height, body mass index (BMI) at age 8 years, municipality at birth, parental education level at birth, parental occupation at birth, maternal smoking during pregnancy, environmental tobacco smoke at 8 years, air pollution exposure during the first year of life, BMI at 16 and 24 years, active smoking at 16 and 24 years, and education level at 24 years. Estimates were interpreted as the difference in 1-year growth (95% CI) in $FEV_1$ and FVC for per unit improvement of air pollution concentrations, with positive values indicating positive associations between improved air quality and increased rate of $FEV_1$ or FVC growth.

# LUNG HEALTH: What is the story right now?

#KeepBreathing

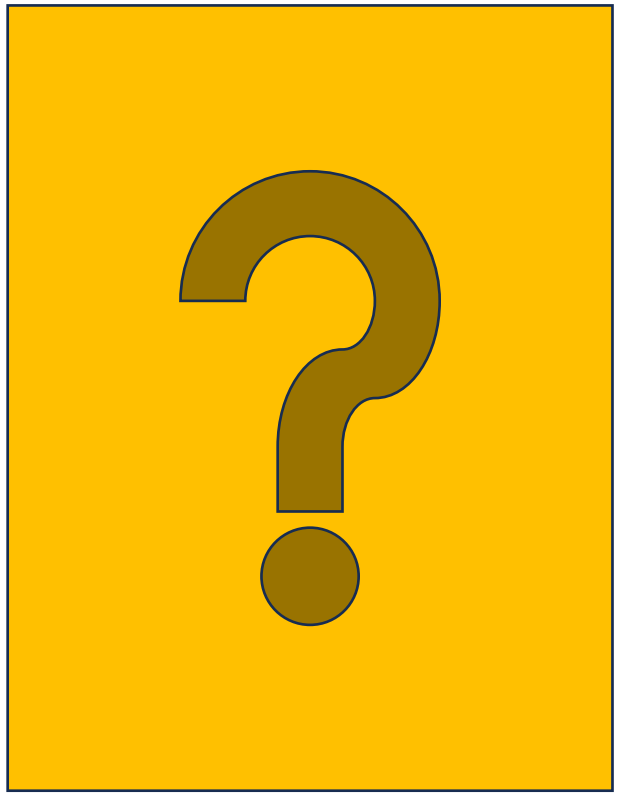


INCREASING BURDEN due to

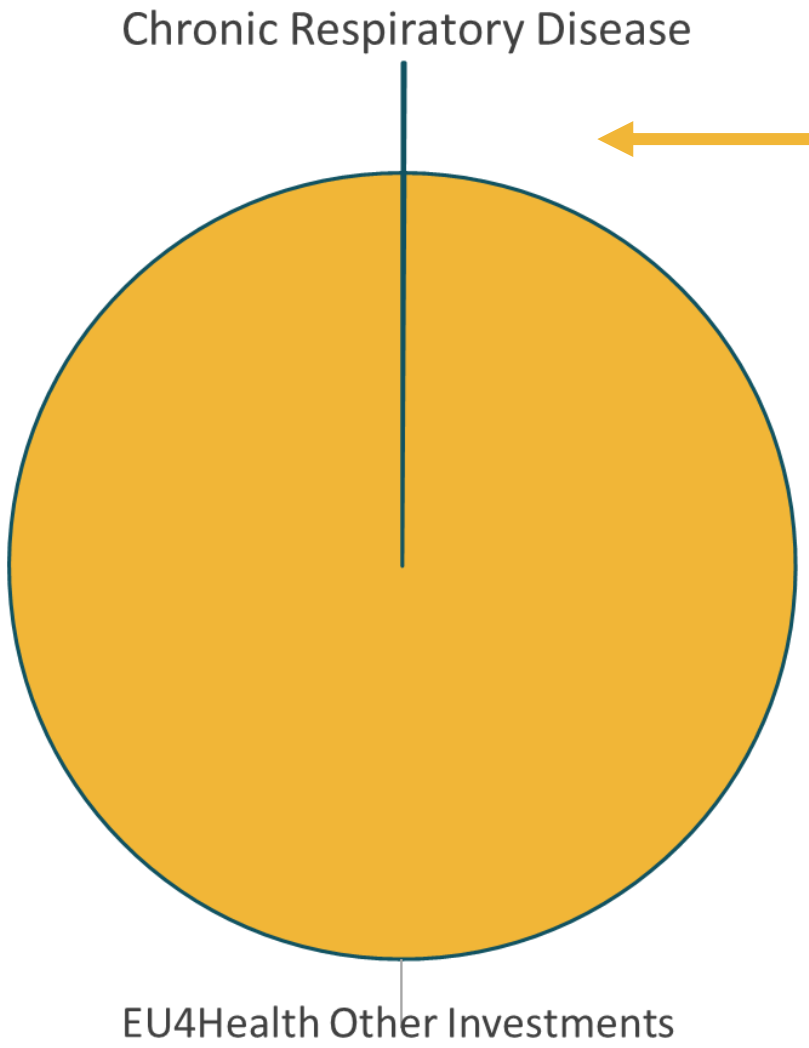
- Ageing
- Effects of climate changes/pollution
- Risk of (viral) pandemics

REDUCED BUDGET

- for research
-for prevention and care



# EU4Health 2021-2027




**0,1% invested in Chronic Respiratory Disease so far**

| | |
|---|---|
| **EU4 Health Budget** | **5.3 Billion** |
| **Chronic Respiratory Disease** | **5 Million** |

#KeepBreathing

# EU4Health Budget

- The European Council recently adopted a decision, where 1 billion euros (out of 5.3 billion) are to be taken out of the EU4Health Budget
- Given the massive societal burden,  funding for respiratory should still continue to be allocated from the remaining funds.
- It is question of political priority.

***Yearly Societal Cost of 7 Major Lung Diseases: €422 billion***