

# Major Health Challenges in the



# Philippines



## (Gene drive possibilities)

**YOUR  
HEALTH**

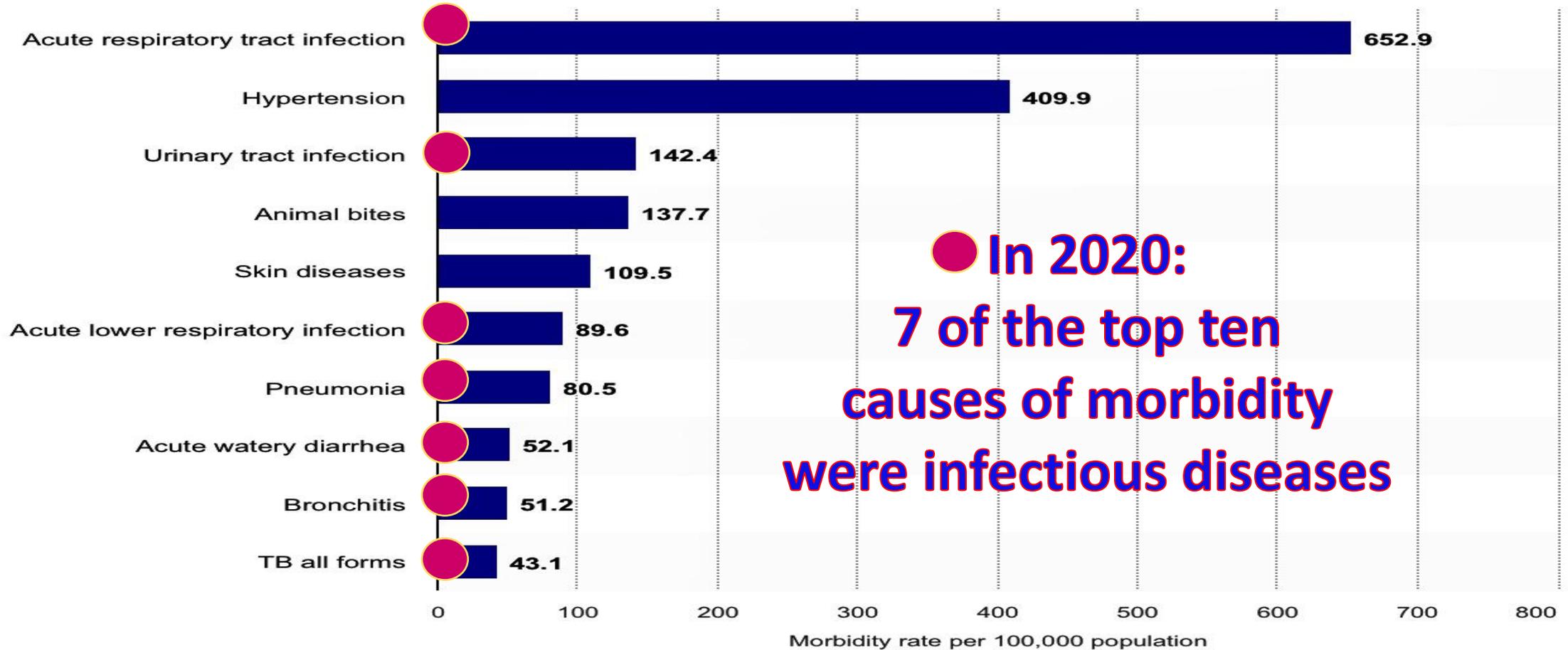


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# Morbidity rate of leading diseases in the Philippines (per 100,000 population)



**In 2020:  
7 of the top ten  
causes of morbidity  
were infectious diseases**

# The top 10 causes of death in the Philippines (PSA 2022)

1. Ischemic heart diseases
2. Cerebrovascular diseases
3. Neoplasms
4. Diabetes mellitus
5. Hypertensive diseases
6. Pneumonia ●
7. Other heart diseases
8. Chronic lower respiratory diseases ●
9. Remainder of diseases of the genitourinary system
10. Respiratory tuberculosis ●

Source: Philippine Statistics Authority

Note: Symptoms, signs, and abnormal clinical and laboratory findings, not elsewhere classified (R00-R99) are not included in the analysis due to the unspecified nature of these causes.

(P) - Preliminary

Latest years

Philippines - 2019

Data type

Number of deaths

Timestamp

8th October 2023 11:10

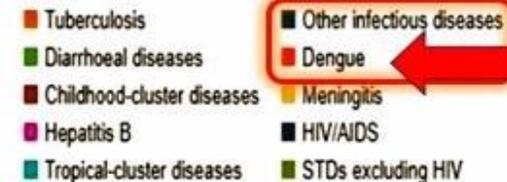
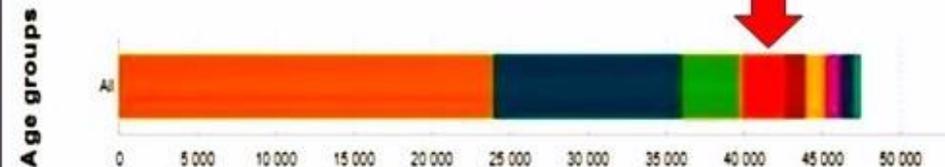
URL address

<https://platform.who.int/mortality/countries>



Dengue

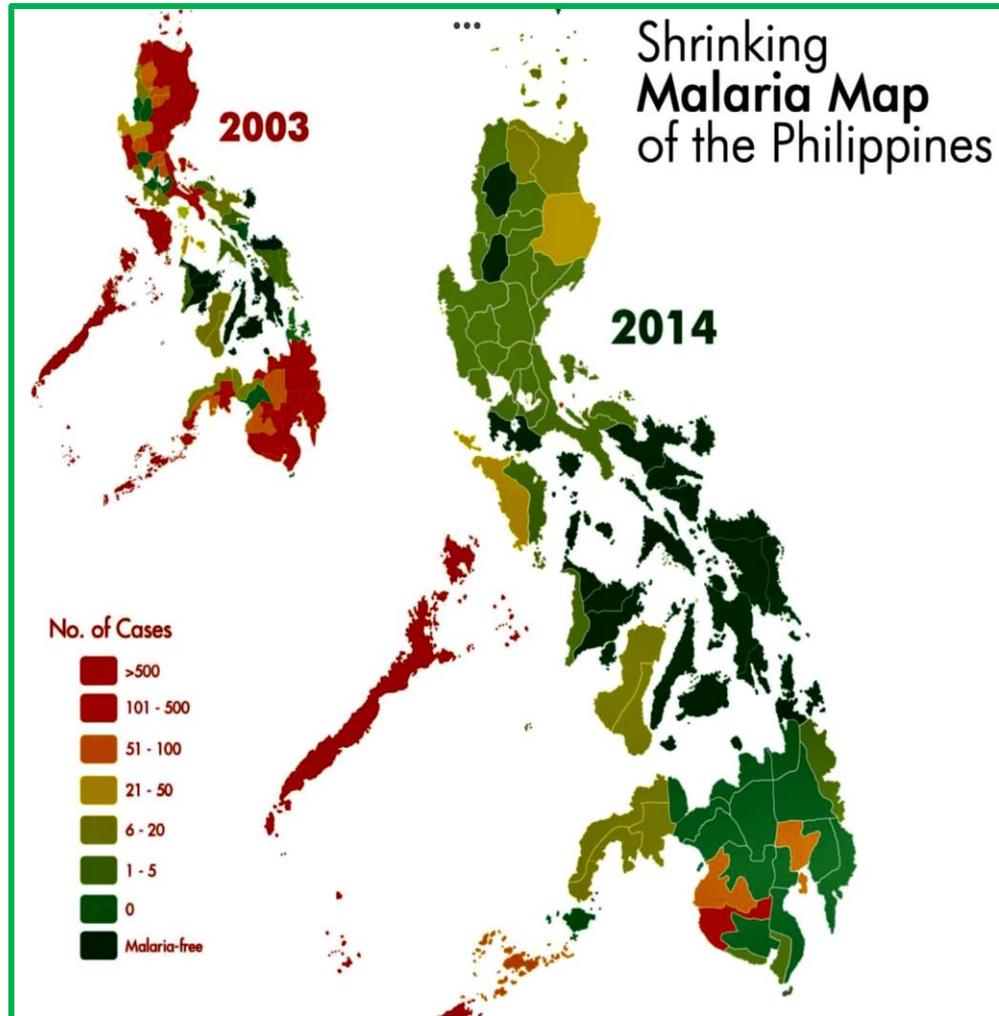
Infectious and parasitic diseases



# Vector-borne diseases (Mosquito Vectors: Anopheles)



## • Malaria – parasitic



## 2022 Malaria Free Provinces

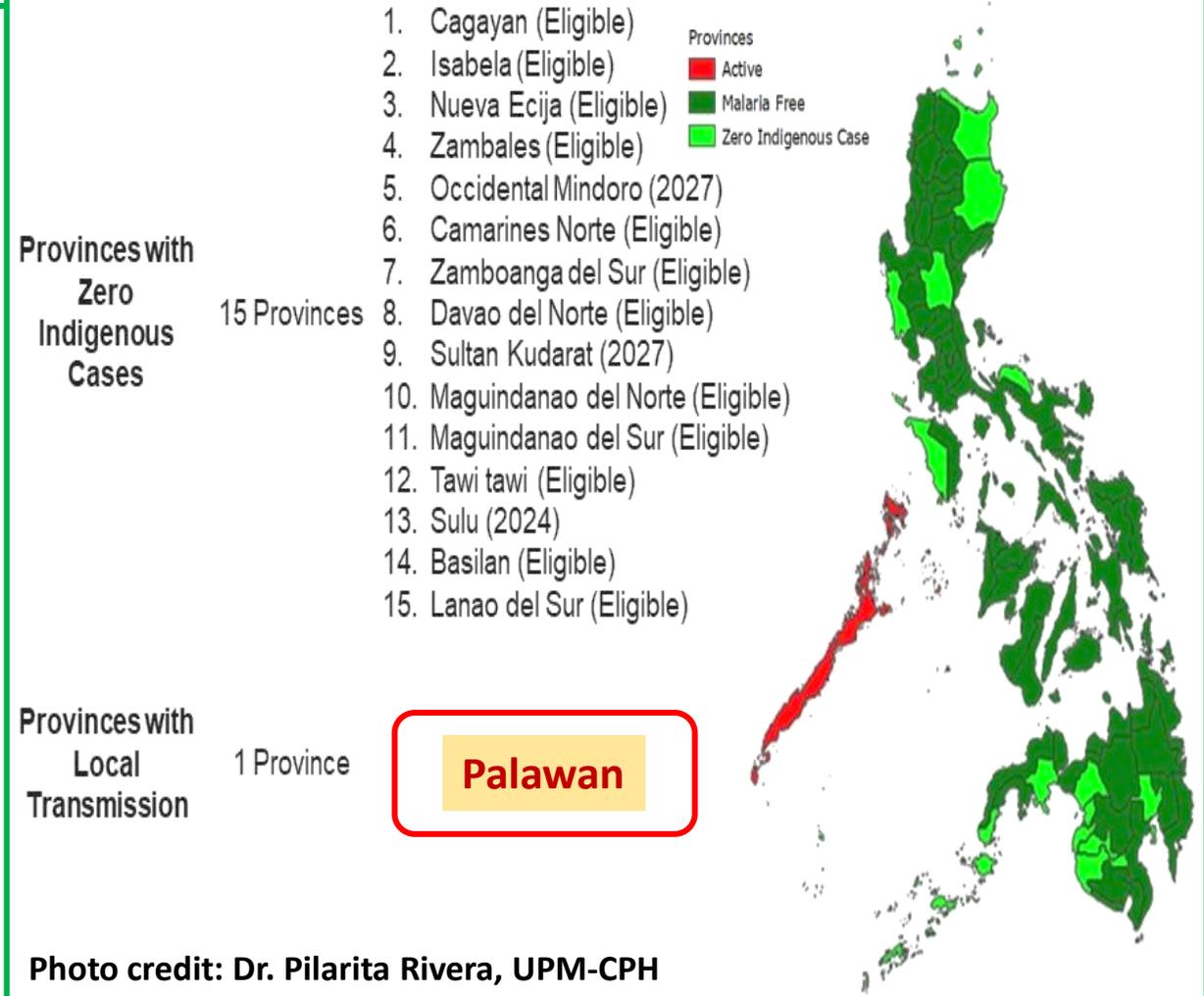


Photo credit: Dr. Pilarita Rivera, UPM-CPH

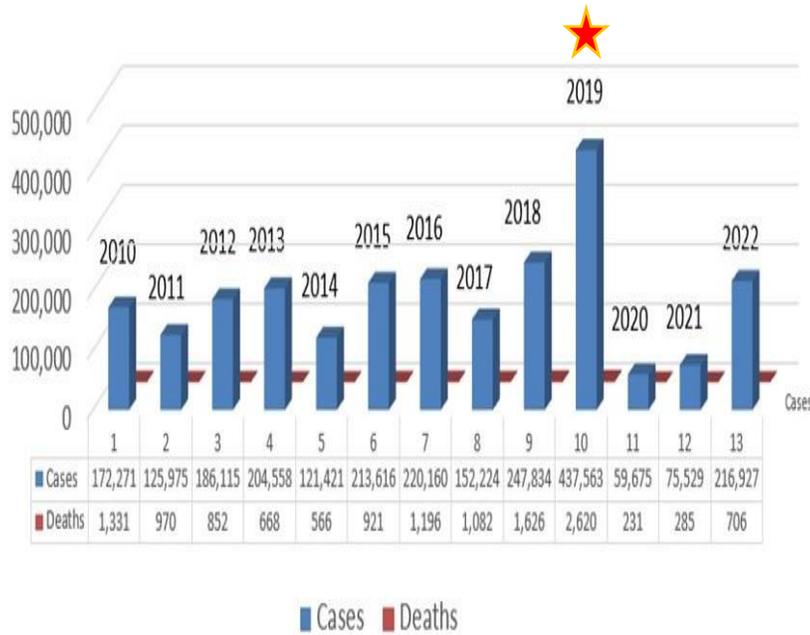
# Vector-borne diseases (Mosquito Vectors: *Aedes* spp)



## • Dengue- virus

### Dengue is still a public health concern in the Philippines

Dengue Cases and Deaths in the Philippines (2010-2022)



### Dengue cases and deaths in ASEAN from January 2023 to August 2023



Based on the dengue cases report from **January 2023 to August 2023**, the highest number of cases are observed in:

- Philippines- 80,318**
- Malaysia- 71,193
- Thailand- 65,552

**Other viruses:**

- Chikungunya
- Zika v
- Japanese encephalitis v

C- Cases D- Deaths

# Anti-Microbial Resistance

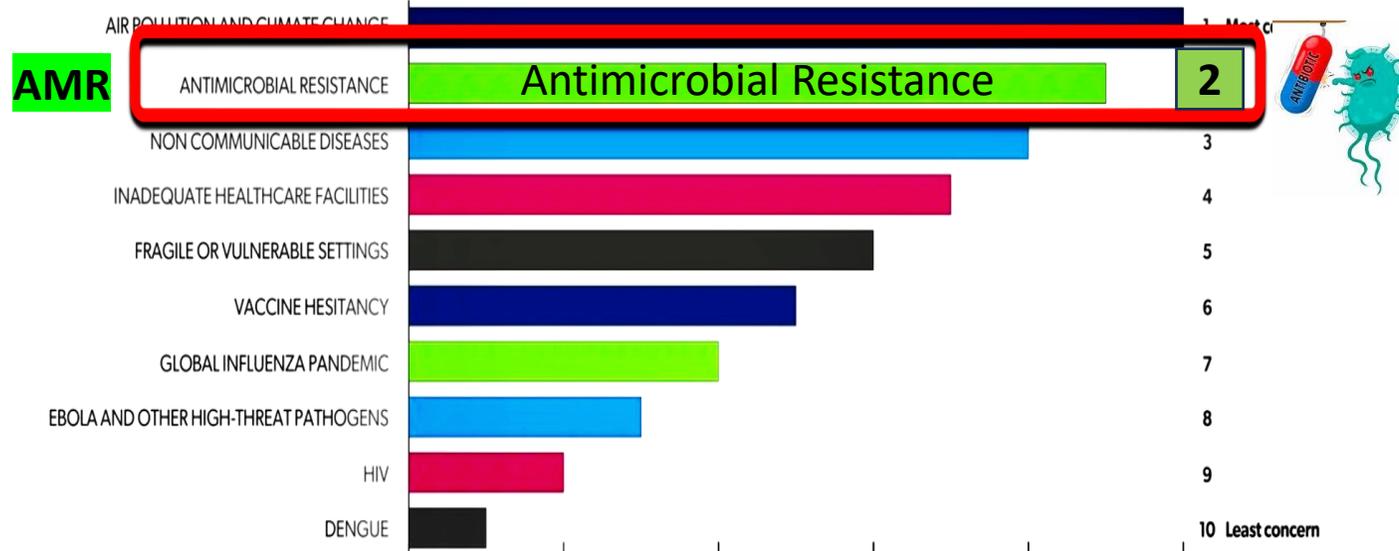


# Problem



M3 GLOBAL RESEARCH

## TEN THREATS TO GLOBAL HEALTH IN 2019



Source: Information extracted from an internal survey conducted amongst 3,604 M3 members in the UK, France, Germany, Italy, Spain, United States, Canada, and Brazil.

<https://m3globalresearch.blog/2019/03/27/ten-threats-global-health-2019/>

In 2019, **Philippines** had the **128th** highest age-standardized mortality rate per 100,000 population associated with **Anti-Microbial Resistance (AMR)** across 204 countries.

# NON-VECTOR-borne disease that could be addressed by Gene Drives

## ▪ Bacterial gene drives- Anti Microbial Resistance Genes

- a Pro-AG gene-drive system for the bacterium *Escherichia coli* inactivates an antibiotic resistance marker. Ref: A bacterial gene-drive system efficiently edits and inactivates a high copy number antibiotic resistance locus. J. Andrés Valderrama NATURE COMMUNICATIONS | (2019) 10:5726 | <https://doi.org/10.1038/s41467-019-13649-6> | [www.nature.com/naturecommunications](http://www.nature.com/naturecommunications)

## • Virus gene drives - Herpes group of viruses

- Successful transmission of a gene drive sequence between distinct strains of human herpesvirus 5 showed that gene drive viruses can efficiently target and replace wildtype populations in cell culture experiments.

- By targeting sequences necessary for viral replication, the results indicate that a viral gene drive can be used as a strategy to suppress a viral infection. Ref: Nature Communications (2020) 11:4884 | <https://doi.org/10.1038/s41467-020-18678-0> | [www.nature.com/naturecommunications](http://www.nature.com/naturecommunications)