



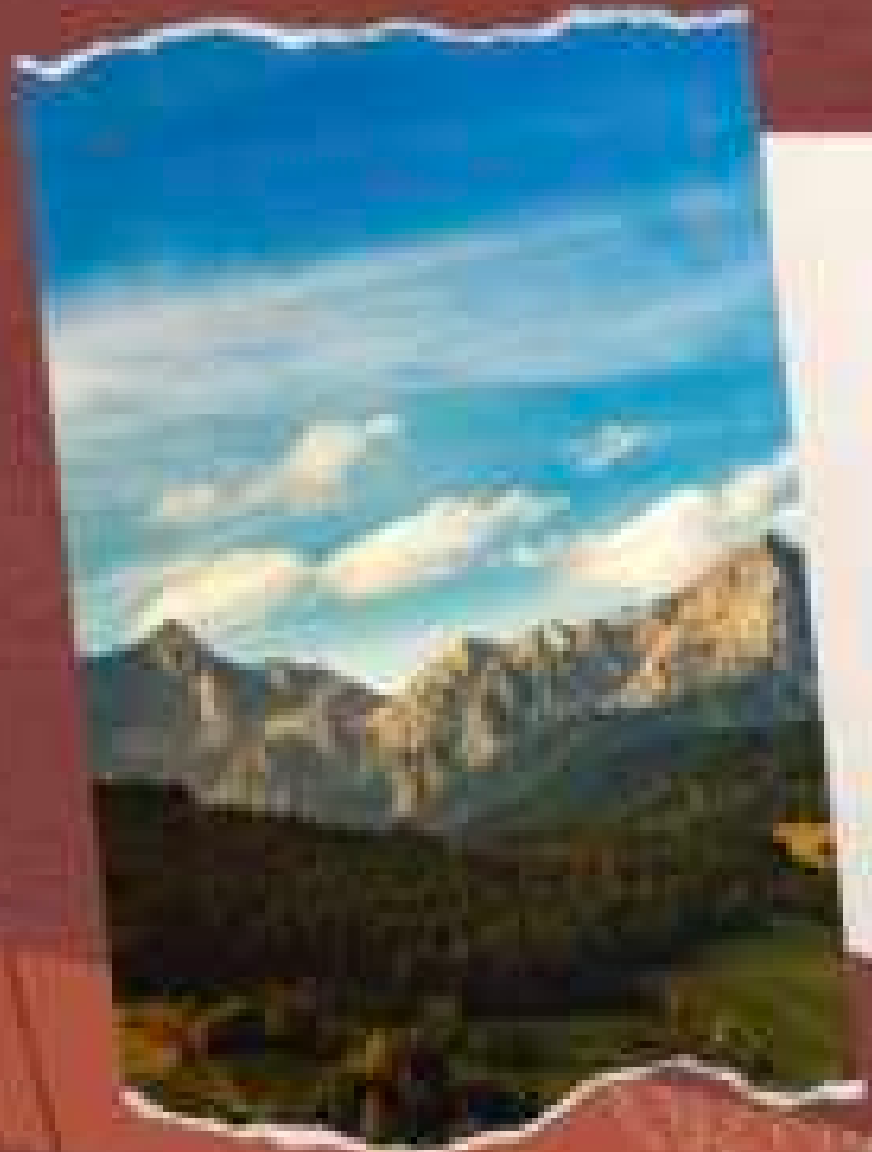
Global Health

AN INTRODUCTION

Katie Koval MD, MPH
Department of Emergency Medicine

LEARNING OUTCOMES

- Define Global Health
- Understand categorization of countries by income
- Understand achievements of Millennium Development Goals
- Understand targets of Sustainable Development Goals
- Understand calculations of population health markers
- Understand value of tranexamic acid (TXA) in PPH
- Recognize nuances of terminology in global health
- Define changes of an epidemiological transition
- Understand calculation of DALY



WHAT IS GLOBAL HEALTH?

DEFINITIONS OF GLOBAL HEALTH

• "A field of study, research, and practice that places a priority on improving health and achieving equity in health for all people. Global health involves multiple disciplines within and beyond the health science, is a synthesis of population-based prevention with individual level clinical care, promotes interdisciplinary collaborations, and emphasizes transnational health issues and determinants"

-Koplan 2009



Definitions of Global Health

	Geography	Cooperation	Populations	Access	Disciplines
Global Health	Health issues that transcend national boundaries	Global	Prevention and clinical care	Health equity among nations	Highly interdisciplinary and multidisciplinary
International Health	Focus on issues outside of one's own country	Bi-national	Prevention and clinical care	Help other nations	Embraces a few disciplines
Public Health	Focus on specific communities or countries	National	Prevention	Health equity within a nation or community	Multidisciplinary, particularly with health and social sciences

Source: Koplan JP et al. *Lancet* 2009; 373:987-9 pp 1001-1005.



Point being...

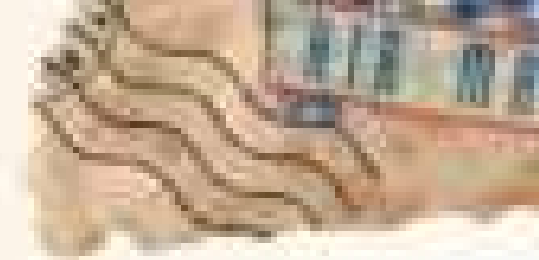

- Global health is broad!
- Most definitions place emphasis on HEALTH EQUITY
- Most definitions place emphasis on SOCIAL DETERMINANTS OF HEALTH

Global Health in South Carolina?



- In certain counties...
1 / 3 people live in poverty
- Unemployment > 15%
- Limited access to healthcare

Rural counties suffer disproportionately from poorer health outcomes

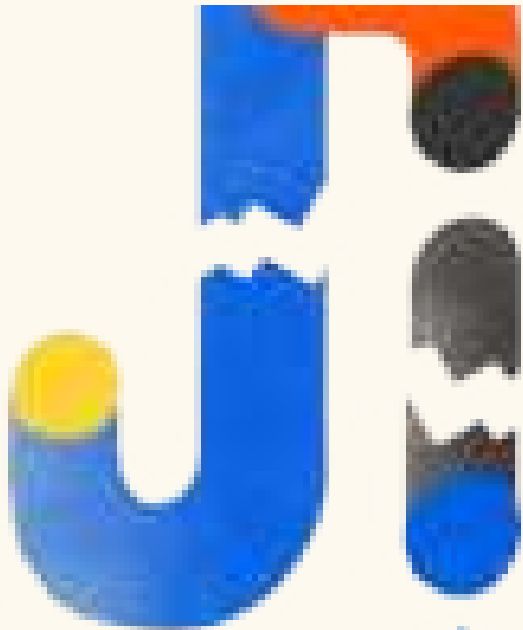


How many people in the US are estimated to lack access to running water and basic indoor plumbing?

- a) 0, the US is too developed for this
- b) 100,000 primarily located in SC
- c) 1 million in rural Alaska
- d) 2 million



Black and Latinx households are twice as likely as white households to lack indoor plumbing.

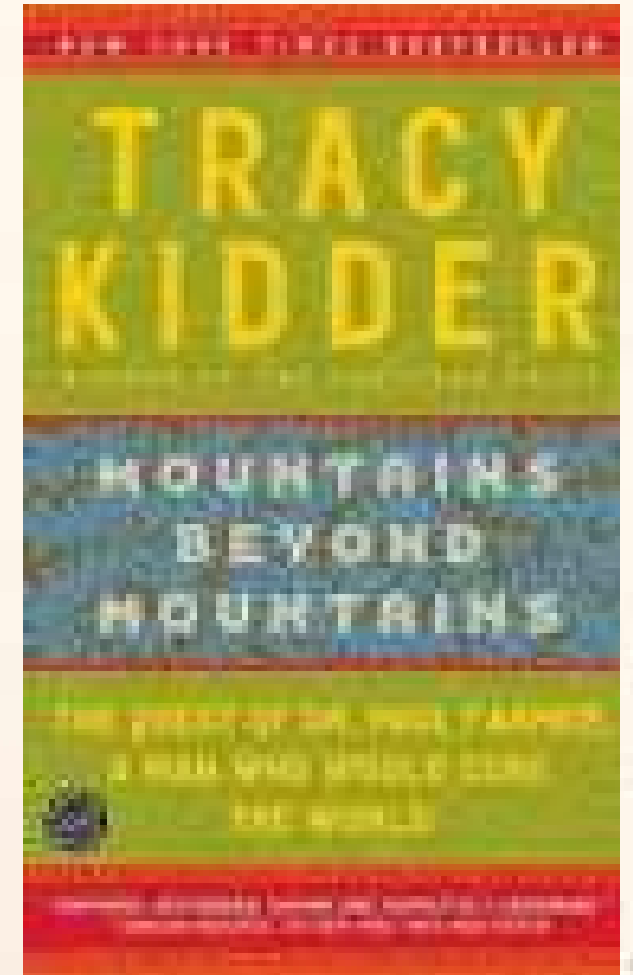
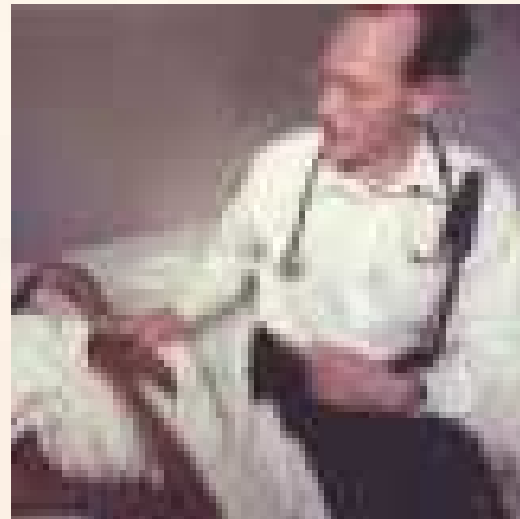


Native American households are 19 times more likely than white households to lack indoor plumbing.

Dr. Paul Farmer

RIP February 21, 2022

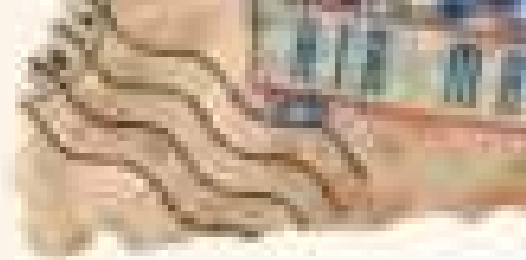

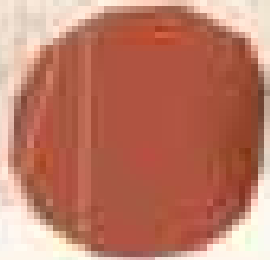
“There was no point in treating patients for diseases only to send them back into the desperate circumstances that contributed to them in the first place.”





Why should you care about global health?

1. SC population is diverse!
 - Refugees, immigrants, people with diverse cultural background
2. Health disparities and inequities exist in SC
 - Often relevant to social determinants of health (like rest of the world)
3. Appreciation for different health systems and health beliefs
 - Biomedicine not only way of looking at health
4. Preventing epidemics abroad can prevent them at home
 - Examples: MDR-TB, Ebola, **COVID-19**
5. Drugs used in US are often developed and tested elsewhere
 - Example: Pre-exposure prophylaxis for HIV
6. We can learn from each other
7. Diversity and fulfillment in your career is good burnout prevention





How do we decide where to invest our efforts?

- Based on a country's income \$
 - Based on international organizations recommendations
 - Based on population health indicators
 - Whether a country is "developed" or not?
 - Based on burden of disease?
- 
- 

How do we decide where to invest our efforts?

- Based on income



THE WORLD BANK

IBRD • IDA

- **GNI** versus GDP

- (1) Low-income (<\$1,045/capita)
- (2) Low-middle income (\$1,045-\$4,095/capita)
- (3) Upper-middle
- (4) High income

US GNI \$76,770

How do we decide where to invest our efforts?

- Based on international organization recommendations



**United
Nations**

unicef



**World Health
Organization**

**BILL &
MELINDA
GATES
foundation**

CONFLICT IS THE BIGGEST



THREAT TO HUMAN DEVELOPMENT





Ensure healthy lives and promote well-being for all at all ages

Reproductive, maternal and child health

- Maternal mortality
- Access to birth control
- Skilled birth attendants
- Pregnancies in children aged 10-14
- Neonatal mortality
- Under-5 mortality

Infectious diseases

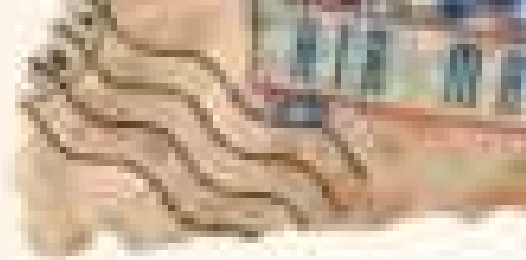

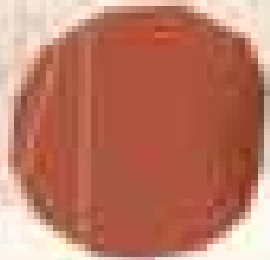
- HIV
- TB
- Malaria
- Hep B
- Neglected Tropical Diseases

Non-communicable diseases, mental health and environmental risks

- THE BIG 4: Cardiovascular disease, cancer, diabetes or chronic respiratory disease
- Suicide
- Substance abuse
- Tobacco abuse
- Unintentional poisonings
- Road traffic accidents

Health Systems and Funding

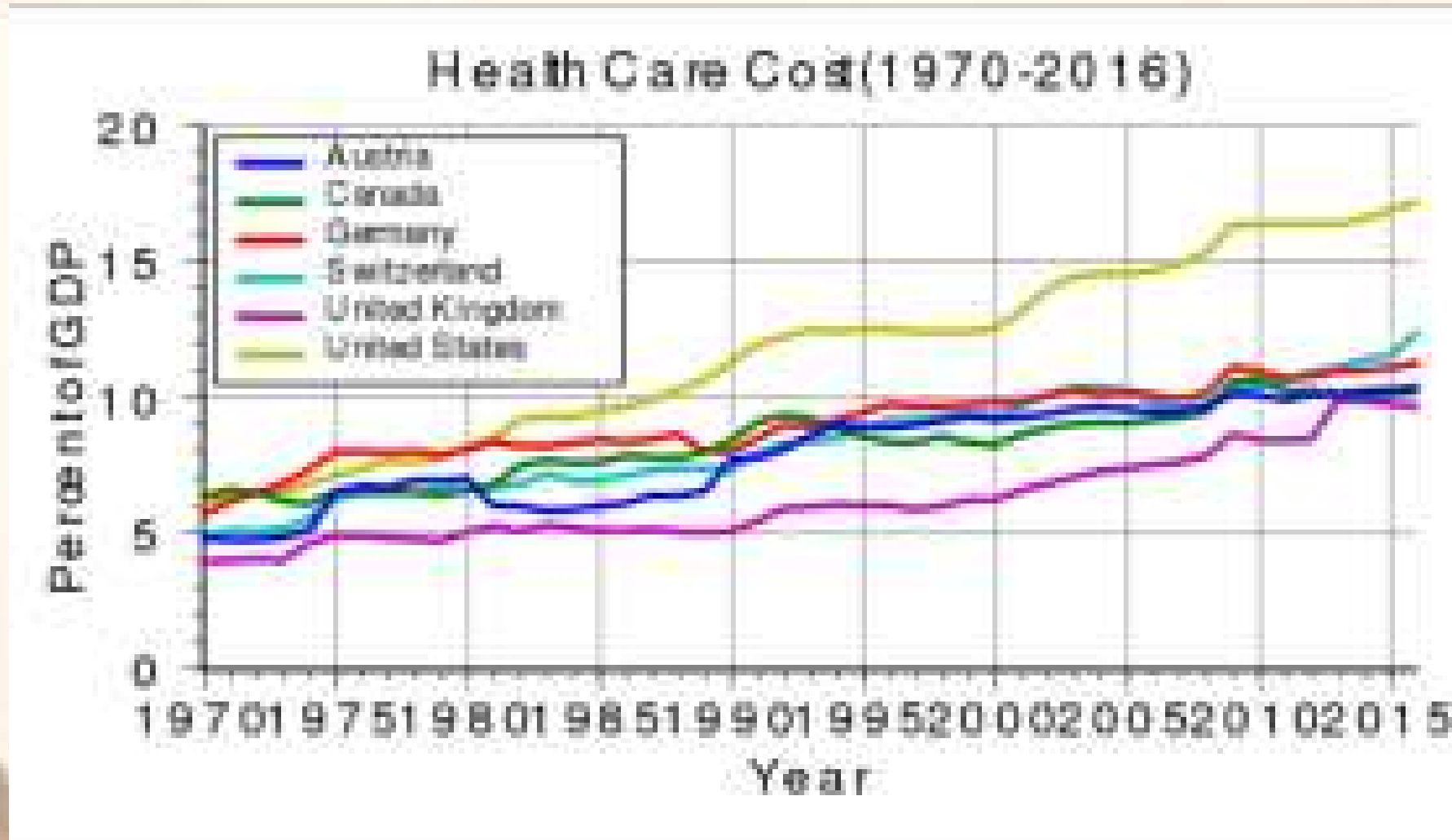
- Immunization
- Healthcare workforce
- Healthcare funding
- Healthcare partnerships



How do we decide where to invest our efforts?

- Based on population health indicators
- 
- 

Healthcare Spending by Country



19% of
US
GDP!

Measurement of health status



Maternal mortality ratio

- The number of women who die as a result of childbirth and pregnancy-related complications per 100,000 live births in a given year while pregnant or within 42 days of birth (puerperium)*

Country	Most Recent Year	Most Recent Value	
Sierra Leone	2018	1,778.00	
United States	2018	19.00	
Macau (China)	2018	0.00	
Brunei Darussalam	2016	0.00	
Luxembourg	2015	0.00	



Top 3 Causes of Maternal Mortality?

- Hemorrhage
 - Hypertensive disorders
 - Sepsis
- 
- 



E

*Early detection of
postpartum hemorrhage*



M

*Massage
of uterus*



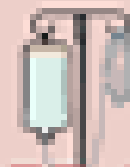
O

*Oxytocin
drug*



T

*Tranexamic
acid*



IV

IV fluids

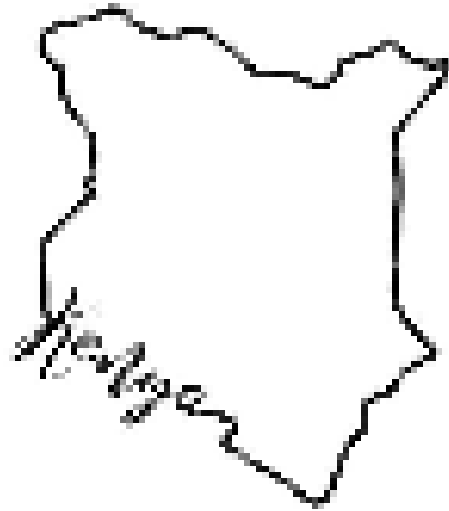


E

*Examination of
the genital tract
+ Escalation*



*Treatment for
Refractory PPH*



210,132
patients

Endpoints

PPH > 1000

Laparotomy for bleeding

Maternal death



E M O T I V E

Early Detection and Trigger Criteria

Collapsed drape for the the collection of blood, with trigger lines at 100 ml and 200 ml for the first 10 after birth.

Observations (Blood loss, blood flow, uterine tone) every 15 min documented on the blood loss monitoring chart.

Blood pressure and pulse monitored once in the first 10 post partum and documented on the blood loss monitoring chart.

Trigger Criteria

Clinical judgment

Blood loss >100 ml

Blood loss >200 ml plus one abnormal observation

Massage of Uterus

Massage until uterus has contracted or for 1 min

Oxytocic Drugs

10 IU IV oxytocin injected or diluted in 200–500 ml crystalloid administered over 10-min period, plus a repeat tentative dose of 20 IU IV oxytocin diluted in 1000 ml saline administered over 10-min period (with misoprostol 800 µg if used)

Tranexamic Acid

1 g IV tranexamsic acid injected or diluted in 200 ml crystalloid administered over 10-min period

IV Fluids

IV fluids in addition to the infusion should be given if clinically indicated for resuscitation and will require a second intervention stage.

Examination and Escalation

Inspect bladder is empty, evacuate clots, check for tears with an internal examination and placenta for complications.

Escalate if bleeding does not stop after first response or clinician is unable to identify or manage cause of bleeding.

Implementation Strategies

Audit newsletters: Sharing with all staff monthly rates of detection and bundle use, along with rates of PPH, severe PPH, blood transfusions, laparotomy, and death from PPH and giving feedback at monthly departmental meetings.

Champions: Midwife and doctor to oversee change, troubleshoot, give feedback on audit newsletters, connect with other champions by means of chat, meetings, and webinars for sharing knowledge and lessons learned.

Trolley or carry case: Restocking of all medicines and devices used for treatment of PPH after every use and completion of a stocking checklist at the start of every shift.

Training: Drills, simulation based, and peer assisted training, lasting from 30 min to an entire workshop, facilitated by the use of provider guides, flowcharts, and job aids displayed in labour wards.



Top 3 Causes of Maternal Mortality?

- Hemorrhage
- Hypertensive disorders
- Sepsis

Honoring Dr. Shalon Irving, A Champion for Health Equity

Tanjala S. Purcell, Wanda Irving, Soleil Irving, Lauren Underwood, Rangan McDonald-Mosley,
Chidima Ibe, Debra Hickman, and Janice Bowie



Honoring Dr. Shalon Irving, A Champion
for Health...



www.healthaffairs.org



Measurement of health status

Neonatal mortality rate

- *The number of deaths in infants under 29 days per 1,000 live births for a given year*

Country	Most Recent Year	Most Recent Value	
Kenya	2020	44.30	
United States	2020	3.40	
Japan	2020	0.80	

Neonatal mortality rate

- Leading cause of neonatal mortality?
- Systematic Review 2022
- 11 included studies
- The meta-analysis demonstrated:

**a reduction in
the risk of overall death**
(OR 0.67; 95% CI 0.57-0.8)

Perinatal Asphyxia



Measurement of health status

Infant mortality rate





- *The number of deaths in infants under 1 year per 1,000 live births for a given year*

Country	Most Recent Year	Most Recent Value	
Sierra Leone	2020	80.10	
United States	2020	9.40	
Cuba	2020	4.10	
Iceland	2020	1.50	

Measurement of health status

Child mortality rate (Under-5 mortality)

- The probability that a new-born will die before reaching the age of five years, expressed as a number per 1,000 live births*

Country	Report Period (Year)	Report Period Value	
Somalia	2020	114.00	
United States	2020	6.35	
Uruguay	2020	6.20	
San Marino	2020	1.00	

Measurement of health status

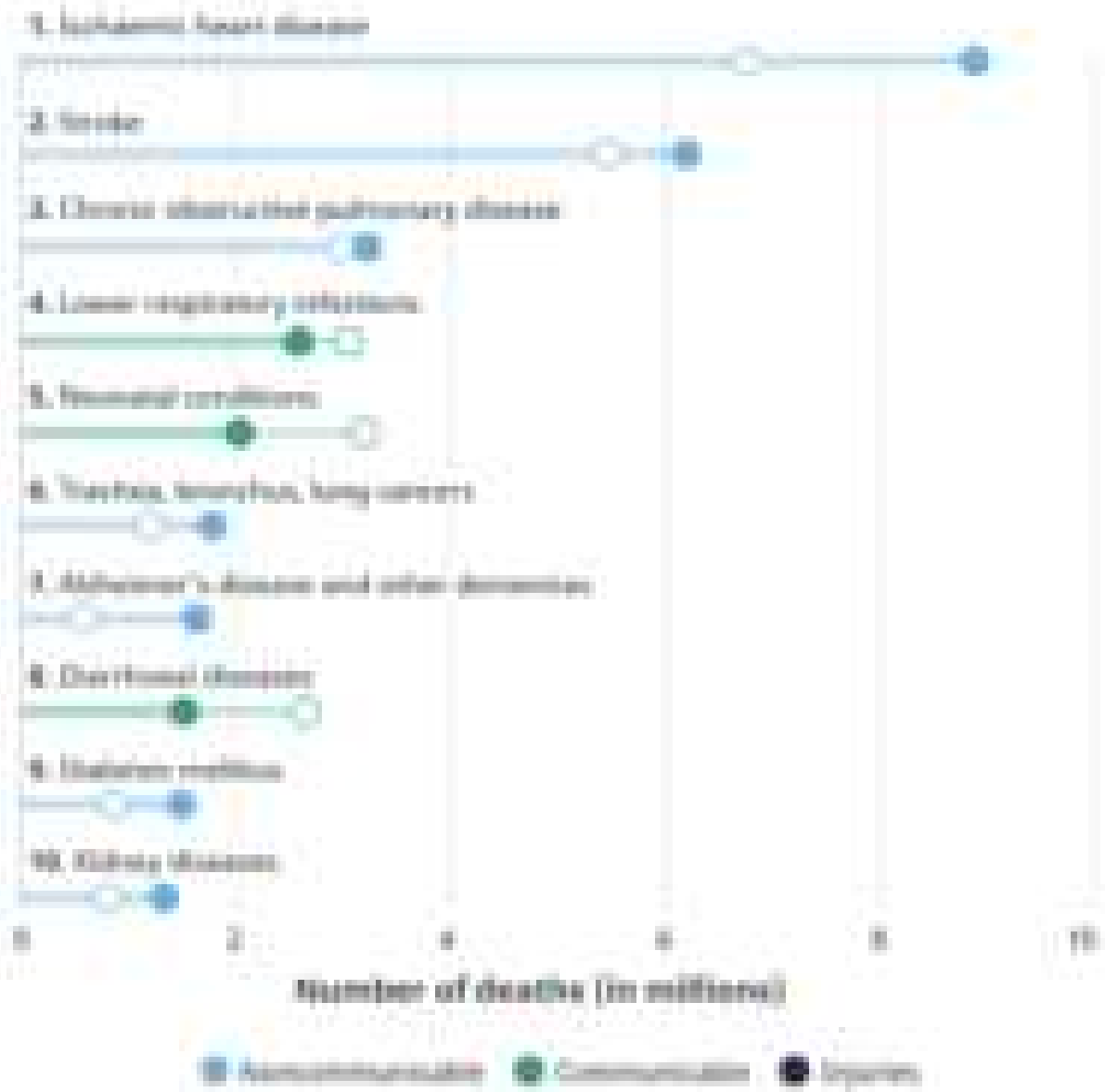
Life expectancy at birth

- The average number of years a new-born baby could expect to live if current trends in mortality were to continue for the rest of the new-born's life*

Country	Most Recent Year	Most Recent Value	
Hong Kong SAR, China	2020	84.83	
Japan	2020	84.65	
United States	2020	78.85	
Central African Republic	2020	53.88	


Leading causes of death globally

○ 2000 ● 2019




Source: WHO Global Health Observatory

WHO. (2020). The Top 10 Causes of Death. Retrieved from <https://www.who.int/news-room/fact-sheets/detail/the-top-10-causes-of-death>



How do we decide where to invest our efforts?

- Whether a country is “developed” or not?
- 

Terminology Matters

- First, Second, and Third World
- Global North and Global South
- Developed vs. Developing nations

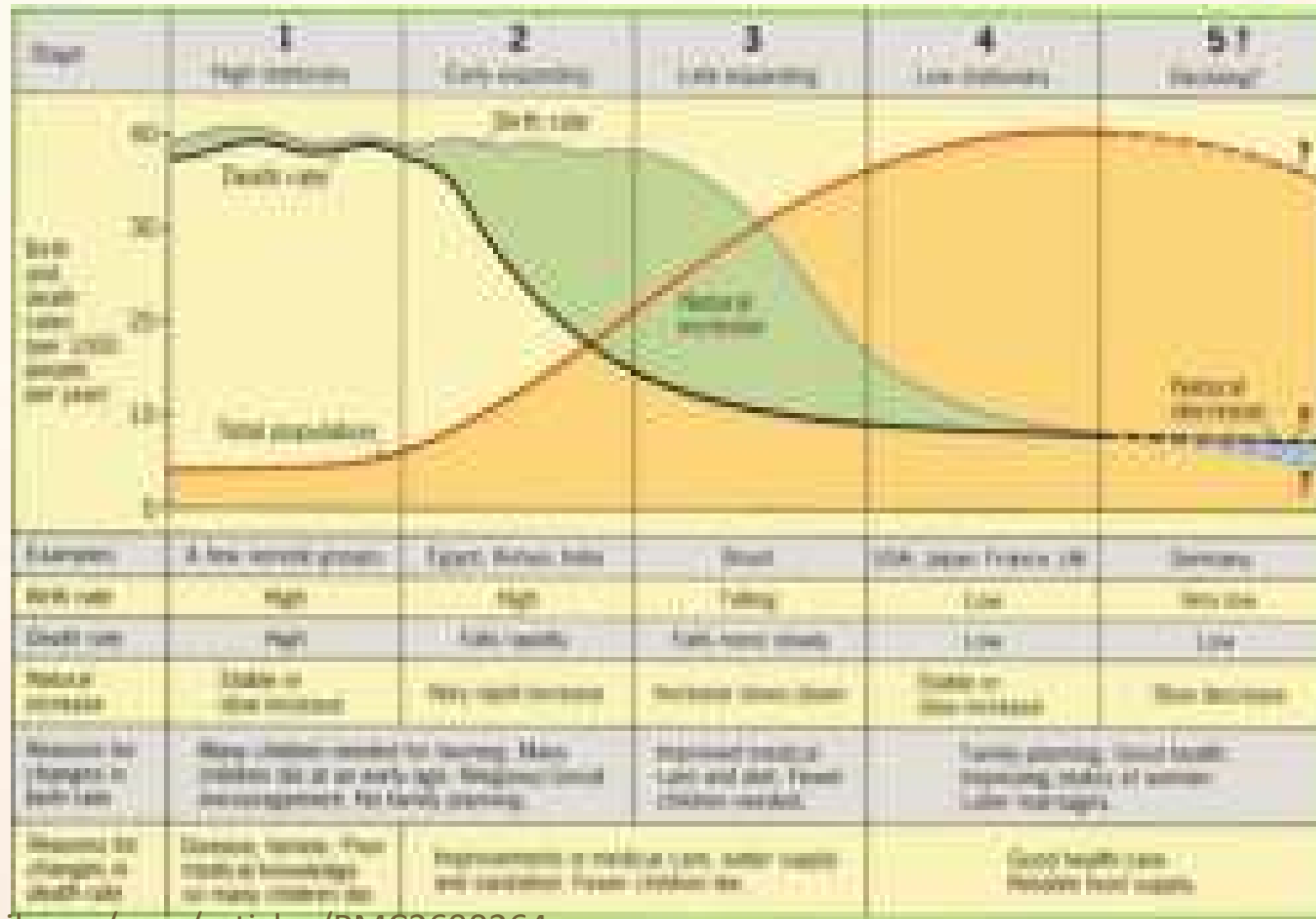
"I dislike the term 'developing world' because it assumes a hierarchy between countries."

-Shose Kessi

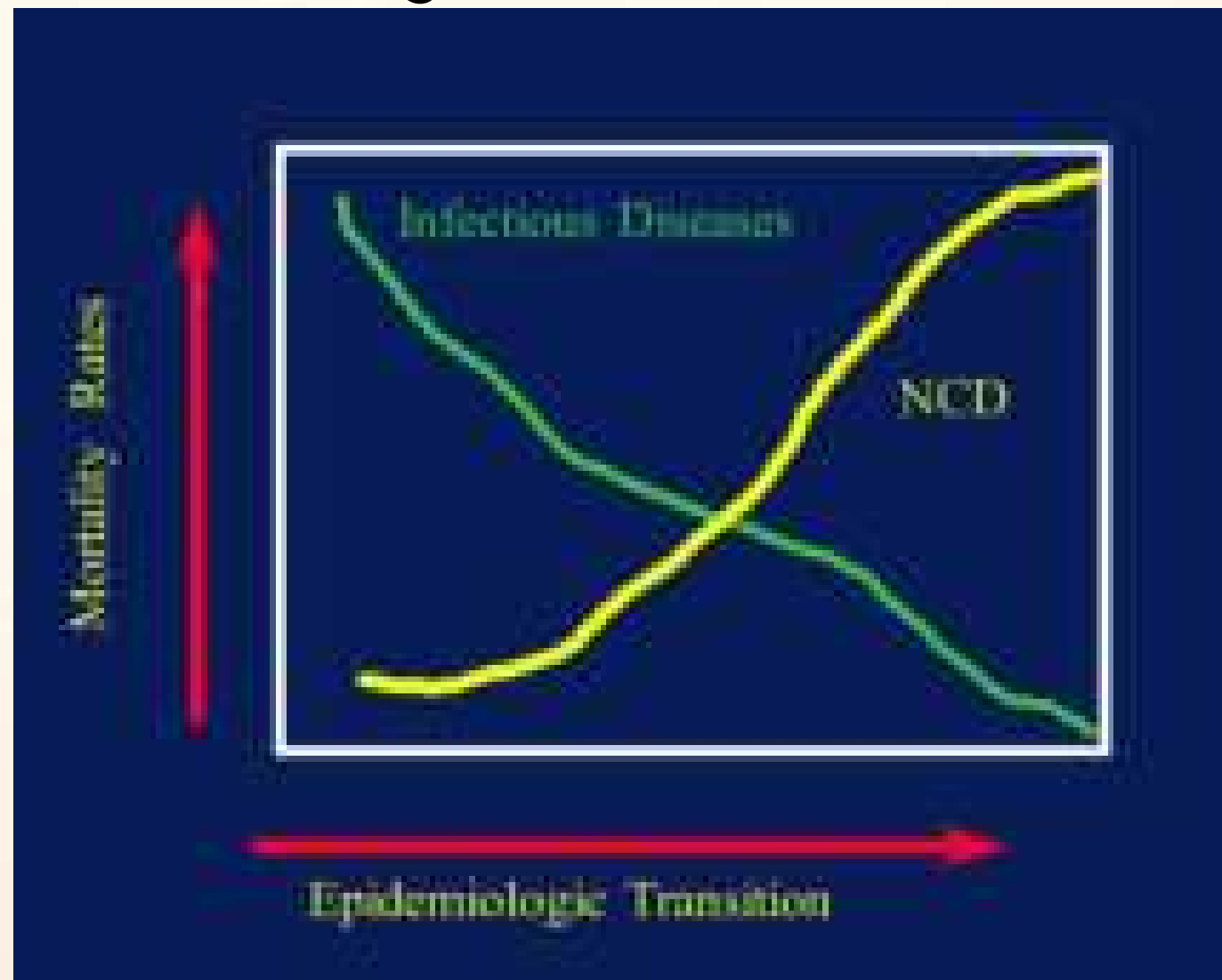
- “Majority World”
- “Fat” vs. “lean” countries
- “Countries that are growing”
- High, middle, and low income countries



Epidemiologic Transition

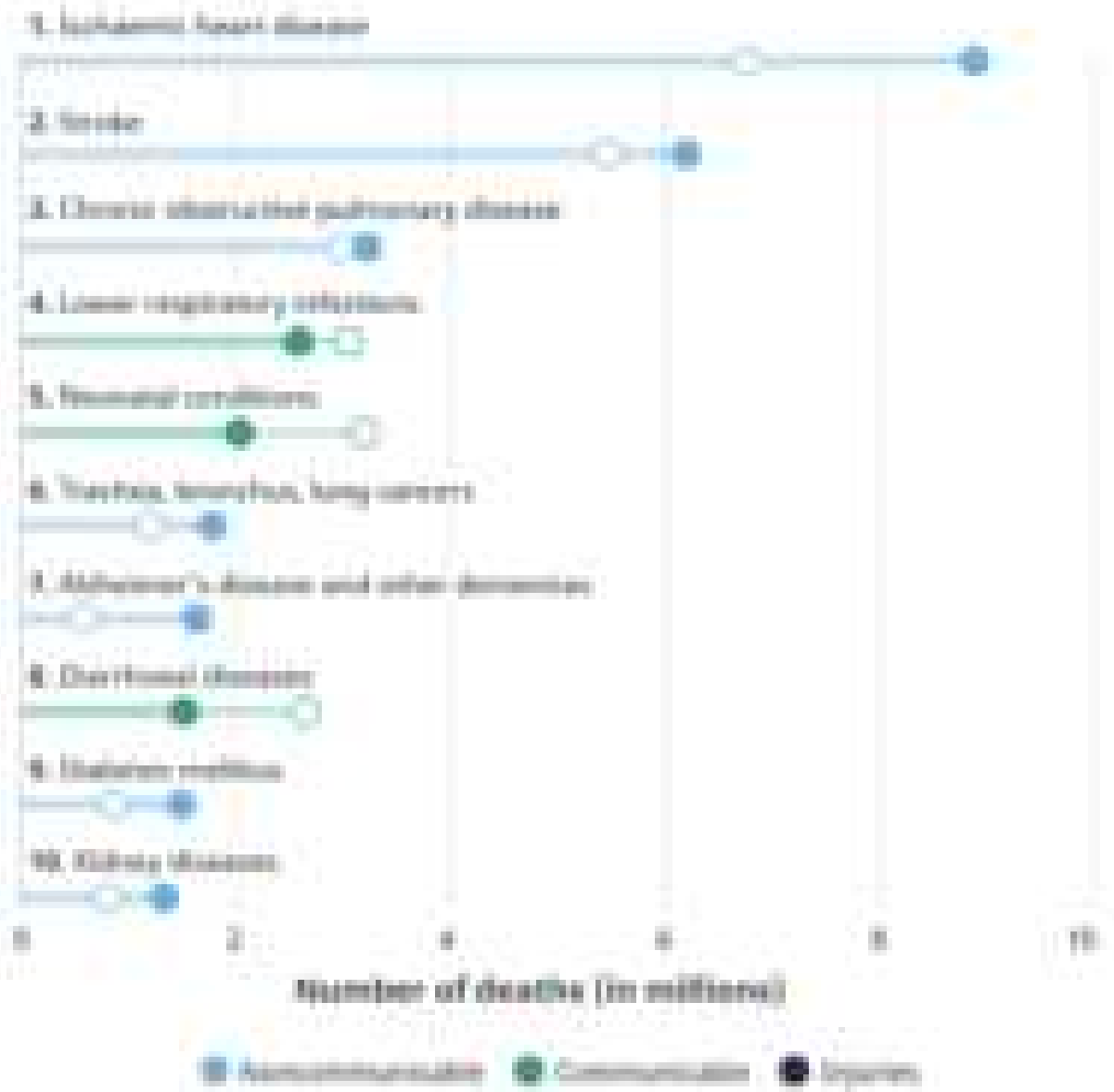


Epidemiologic transition



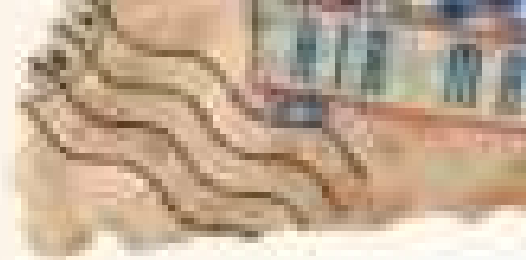

Leading causes of death globally

○ 2000 ● 2019



Source: WHO Global Health Observatory

WHO. (2020). The Top 10 Causes of Death. Retrieved from <https://www.who.int/news-room/fact-sheets/detail/the-top-10-causes-of-death>



How do we decide where to invest our efforts?

- Based on burden of disease
- 
- 

Burden of Disease

DALY

Disability Adjusted Life Years is a measure of overall disease burden, expressed as the sum of years lost due to ill-health, disability or early death.

$$= \text{YLD} + \text{YLL}$$

Years Lived with Disability + Years of Life Lost



Graphic from: https://en.wikipedia.org/wiki/Disability-adjusted_life_year

Max Roser and Hannah Ritchie (2021) - "Burden of Disease". Published online at [OurWorldInData.org](https://ourworldindata.org). Retrieved from: <https://ourworldindata.org/burden-of-disease> [Online Resource]

Burden of Disease

Top 10 global causes of death in 2018

1. Ischaemic heart disease
2. Stroke
3. Chronic obstructive pulmonary disease
4. Lower respiratory infections
5. Mental conditions
6. Trachea, bronchus, lung cancers
7. Alzheimer disease and other dementias
8. Diabetes mellitus
9. Diabetes mellitus
10. Kidney diseases

Top 10 global causes of disability-adjusted life years (DALYs) in 2018

1. Mental conditions
2. Ischaemic heart disease
3. Stroke
4. Lower respiratory infections
5. Diabetes diseases
6. Road injury
7. Chronic obstructive pulmonary disease
8. Diabetes mellitus
9. Tuberculosis
10. Congenital anomalies

How do we decide where to invest our efforts?

- Based on a country's income \$
- Based on international organizations recommendations
- Based on population health indicators (MMR, neonatal, etc)
- Whether a country is "developed" or not? (LMIC)
- Based on burden of disease (DALY)





THANK YOU!

Consider joining the Global Health
FLEX Program this year!

