



UNIVERSITÀ DEGLI STUDI DI MILANO



FOCUS ON GLOBAL HEALTH
17 MARZO 2021 – Ore 17.00-19.00



Global Health - An introduction

Mario C. Raviglione
Global Health Centre



UNIVERSITÀ DEGLI STUDI
DI MILANO

The big themes

- Definition of Global Health, evolution of GH, the future of GH
- Global burden of disease
- Social determinants of health
- The era of the UN Sustainable Development Goals (SDG)
- Governance: World Health Organization and other GH actors
- International cooperation
- Big challenges: climate change, migration, antimicrobial resistance, and, of course, pandemics...



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What is Global Health?



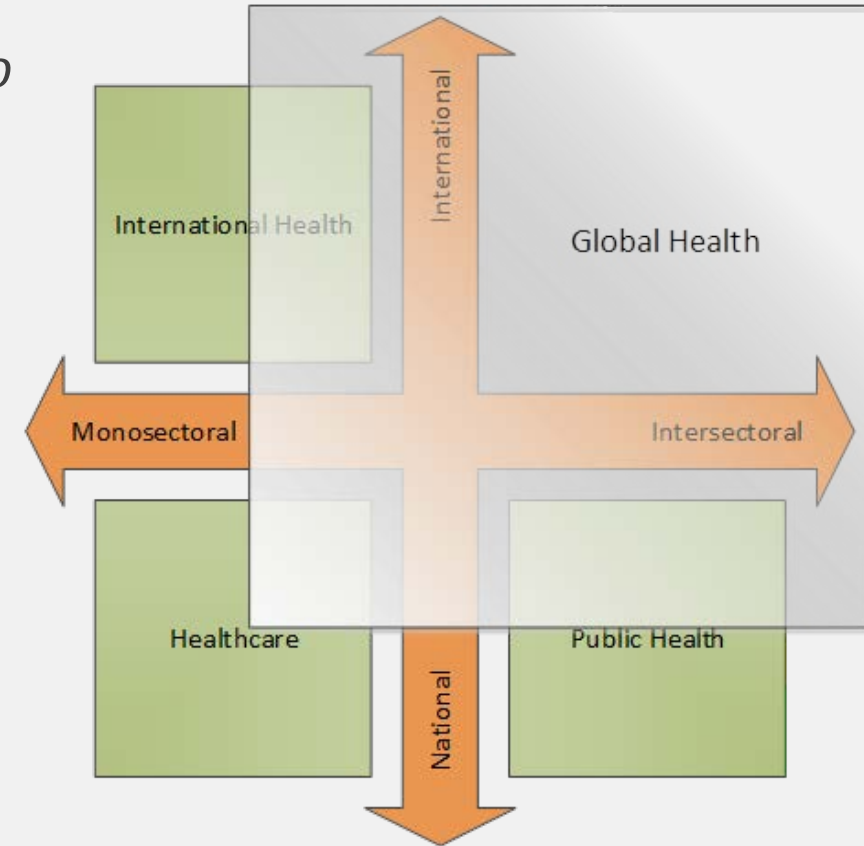
Global Health is an area (or a “cross-discipline”) for study, research, and practice that places a priority on improving health and achieving **equity** in health for all people worldwide.

Global Health emphasizes **trans-national** health issues, determinants, and solutions; involves many disciplines within and **beyond the health sciences**; promotes **inter-disciplinary collaboration**; and is a synthesis of population-based **prevention** with individual-level clinical **care**

Scope and definition of global health

“Within the normative framework of human rights, global health is a system-based, ecological and transdisciplinary approach to research, education, and practice which seeks to provide innovative, integrated, and sustainable solutions to address complex health problems across national boundaries and improve health for all.” (Wernli et al., 2016)

- **Spatial reach** of health issues in the context of **globalization** (e.g., **environmental pollution** or **infectious**)
- **Intersectoral set of challenges**, not just our genes and choices but also natural and social environment
- **Moral imperatives of social justice** and human rights as citizens of the world
- **Global health is about global interdependence not only across borders but also across sectors and values.**



Adapted from: Didier Wernli, GSI, UniGenève

The challenge of “health in its globality”

Viewpoint

Towards a common definition of global health

Jeffrey P Koplan, T Christopher Bond, Michael H Merson, K Srinath Reddy, Mario Henry Rodriguez, Nelson K Sewankambo, Judith N Wasserheit, for the Consortium of Universities for Global Health Executive Board*

Global health is fashionable. It provokes a great deal of media, student, and faculty interest, has driven the establishment or restructuring of several academic programmes, is supported by governments as a crucial component of foreign policy,¹ and has become a major

communicable infections, the education of the individual in personal hygiene, the organization of medical and nursing services for the early diagnosis and preventive treatment of disease, and the development of social machinery which will ensure every individual in the community a standard of living adequate for the

Lancet 2009; 373: 1993-95
Published Online
June 2, 2008
DOI:10.1016/S0140-6736(09)60332-9

- **Global scope of problems**, and **not just geographic** location. It can focus on domestic disparities and inequities besides cross-border issues
- **Global aim**: any health issue concerning many countries and affected by transnational (i) determinants (e.g., climate change, urbanization..) or (ii) solutions (e.g., a vaccine)
- **Global view**: all major health problems, beyond infectious diseases and maternal and child health, embracing health threats in epidemiological transition, and prioritizing based on global burden of disease
- **Global in disciplines and sectors**: it implies inter- and multi-disciplinarity towards both prevention and curative care, beyond the health sector

Partly modified from Koplan et al. Lancet 2009; 373:1993-5

Some fundamental principles:

Primary health care, patient-centred care, precision PH

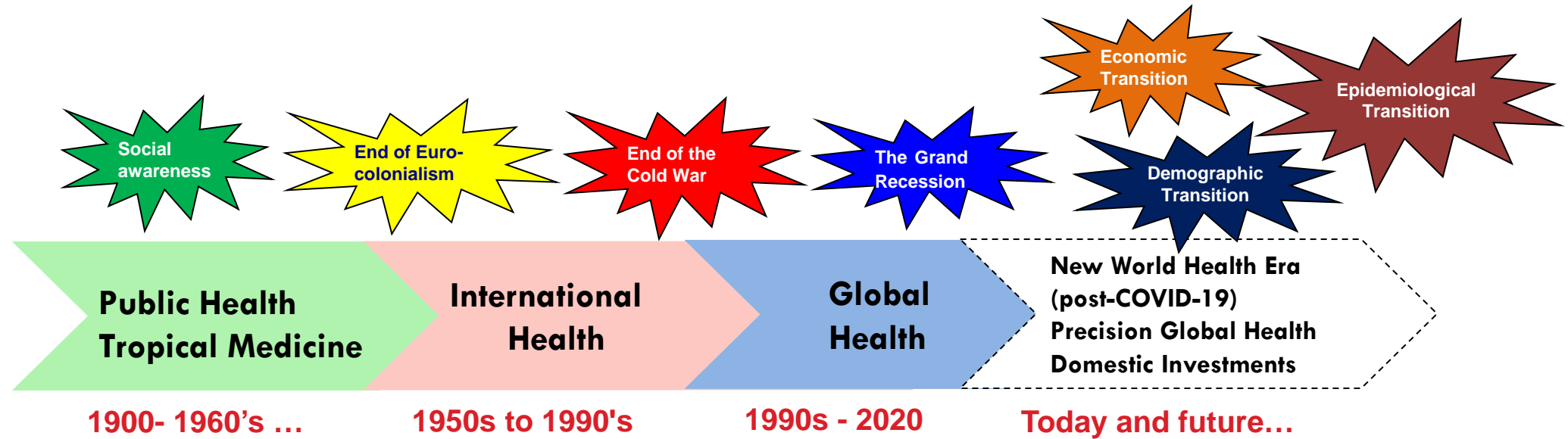
- Through bold health systems and policies, **primary health care and universal health coverage** are central to sustainable development of populations and nations
- A person's health needs, desired outcomes and expectations are the basis for care decisions - **Patients are partners with care providers** who guarantee clinical, emotional, mental, spiritual, social, and financial support
- **Precision medicine** is an approach for disease treatment and prevention that takes into account individual variability in genes, environment, and lifestyle for each person (NIH-USA). The challenge is to scale-up precision medicine and make «**precision public health**» a reality



talyst (catalyst.nejm.org) © Massachusetts Medical Society



Evolution of “global health”



GHSP GLOBAL HEALTH: SCIENCE AND PRACTICE
Dedicated to what works in global health programs
OPEN ACCESS

COMMENTARY

A New World Health Era

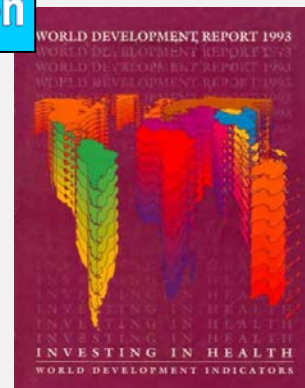
Ariel Pablos-Méndez,^a Mario C Raviglione^b

Unprecedented economic progress and demands for social protection have engendered an economic transition in health in many low- and middle-income countries, characterized by major increases in domestic health spending and growing national autonomy. At the global level, development assistance is refocusing on fragile states, the poorest communities, and cooperation on global public goods like health security, technical norms, and innovation. Intergovernmental organizations like WHO need the wherewithal and support to provide leadership and to properly advance this new world health era.



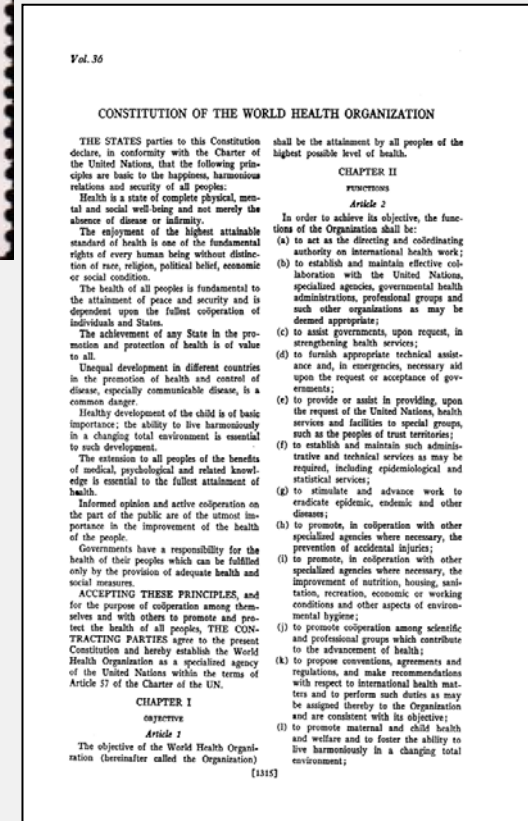
Evolution of global health in brief

- **Public health:** mid-1800s in UK, USA, Europe to address health based on evidence, focus on populations, social justice & equity, prevention
- **International health:** “The application of the principles of PH to problems and challenges that affect LICs and MICs and to the complex array of global and local forces that influence them” (Merson, Blanc & Mills (2006))
- **World Health Organization:** post-WW2, 1948, visionary constitution
- **World Bank:** WDR 1993: Evidence-based health expenditures as investment for economic prosperity, cost-effectiveness and focus on high burden diseases, private sector
- **Global health:** mid-1990s, emerging infections, globalisation, a new sense of solidarity and equity



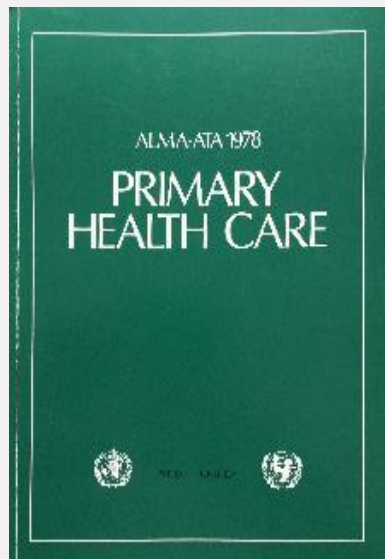
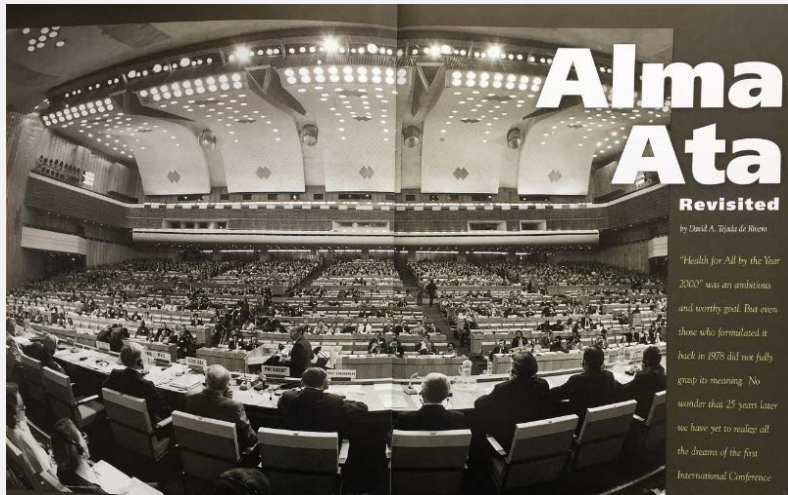
The WHO Constitution, 1946

- ✓ Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity;
- ✓ The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition;
- ✓ The health of all peoples is fundamental to the attainment of peace and security and is dependent upon the fullest co-operation of individuals and States;
- ✓ The achievement of any State in the promotion and protection of health is of value to all.



Primary Health Care Conference

Alma Ata, USSR, 6-12 September 1978



Primary health care is essential health care based on practical, scientifically sound and socially acceptable methods and technology made universally accessible to individuals and families in the community through their participation and at an affordable cost in the spirit of self-reliance and self-determination

World Bank's World Development Report, 1993 "Investing in Health"

Main messages:

1. **Evidence-based health expenditures** are an investment not only in health, but in economic prosperity
2. Additional resources should be spent on **cost-effective interventions (= (DALYs))** to address **high-burden diseases (GBD)**

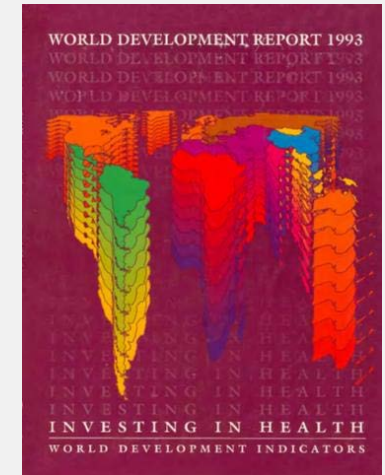
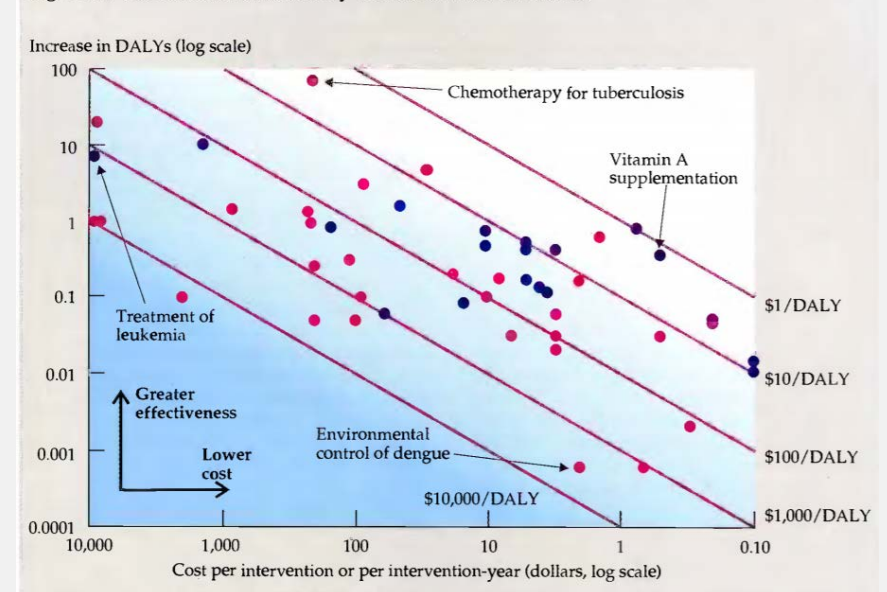
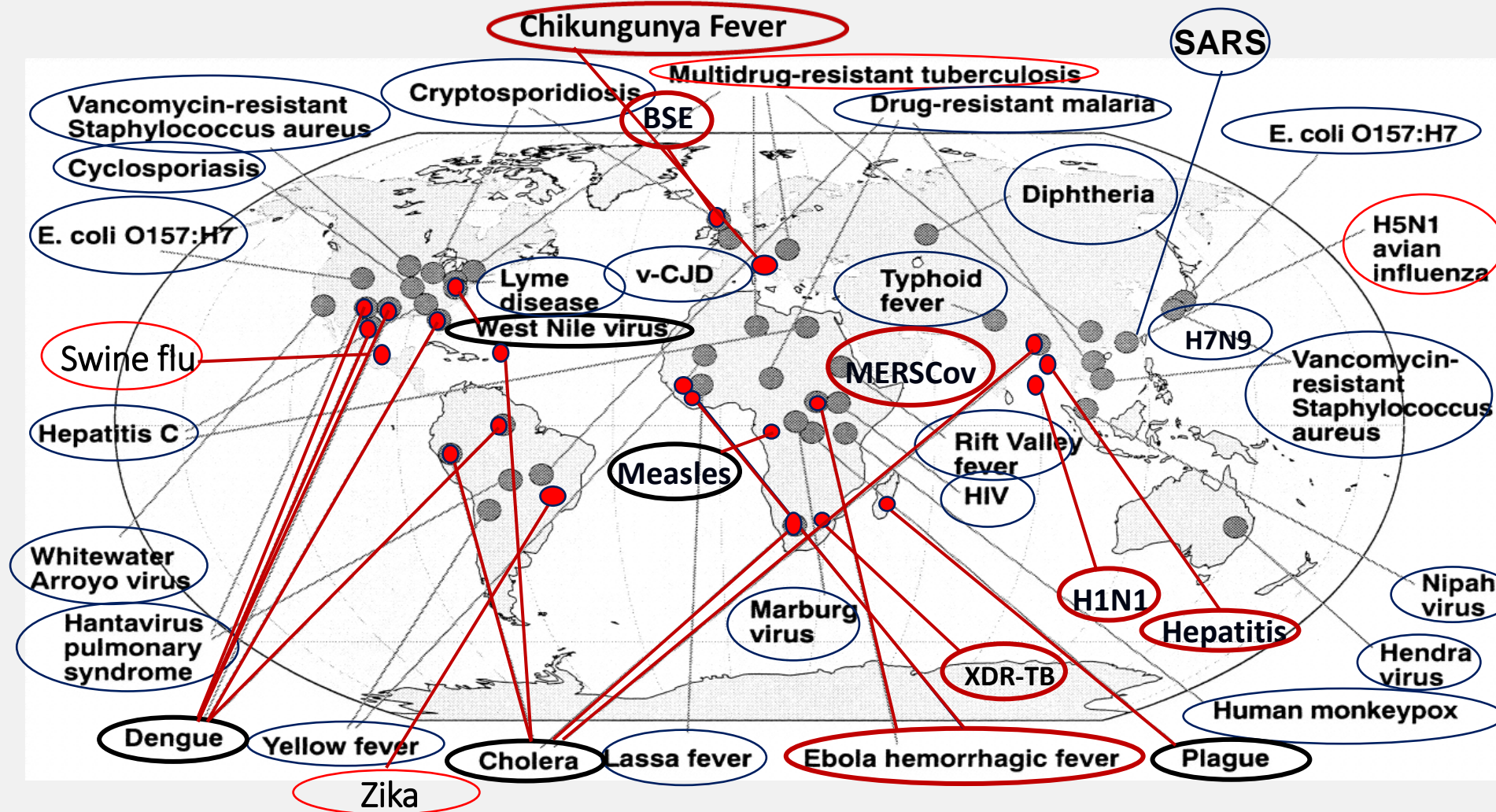


Figure 3.2 Benefits and costs of forty-seven health interventions



Emerging & re-emerging infections – last half a century



SINCE THE 1970s OVER 40 NEW INFECTIOUS DISEASES DISCOVERED, INCLUDING :

- [SARS](#)
- [MERS](#)
- [EBOLA](#)
- [CHIKUNGUNYA](#)
- [AVIAN FLU](#),
- [SWINE FLU](#)
- [ZIKA](#).

Millennium Development Goals 2000-2015

Advocacy for health reaches a turning point



And even “planetary health”!



“The achievement of the highest attainable standard of health, wellbeing, and equity worldwide through judicious attention to the human systems—political, economic, and social—that shape the future of humanity and the Earth’s natural systems that define the safe environmental limits within which humanity can flourish. Put simply, planetary health is the health of human civilisation and the state of the natural systems on which it depends”

The Rockefeller Foundation–Lancet Commission on Planetary Health, 2015

The beginning of the era of “Precision public health”



Editorial: Precision Public Health

Tarun Stephen Weeramanthri^{1}, Hugh J. S. Dawkins¹, Gareth Baynam², Matthew Bellgard³, Ori Gudes⁴ and James Bernard Semmens⁵*

¹Public and Aboriginal Health Division, Western Australian Department of Health, Government of Western Australia, Perth, WA, Australia, ²Genetic Services of Western Australia, Subiaco, WA, Australia, ³eResearch Directorate, Queensland University of Technology, Brisbane, QLD, Australia, ⁴University of New South Wales, Sydney, NSW, Australia, ⁵Curtin University, Perth, WA, Australia

Keywords: technology, data, GIS, equity, ethics, omics, prevention, policy

“The application and combination of new and existing technologies, which more precisely describe and analyse individuals and their environment over the life course, to tailor preventive interventions for at-risk groups and improve the overall health of the population.”

Perspective FREE PREVIEW

“Precision” Public Health — Between Novelty and Hype

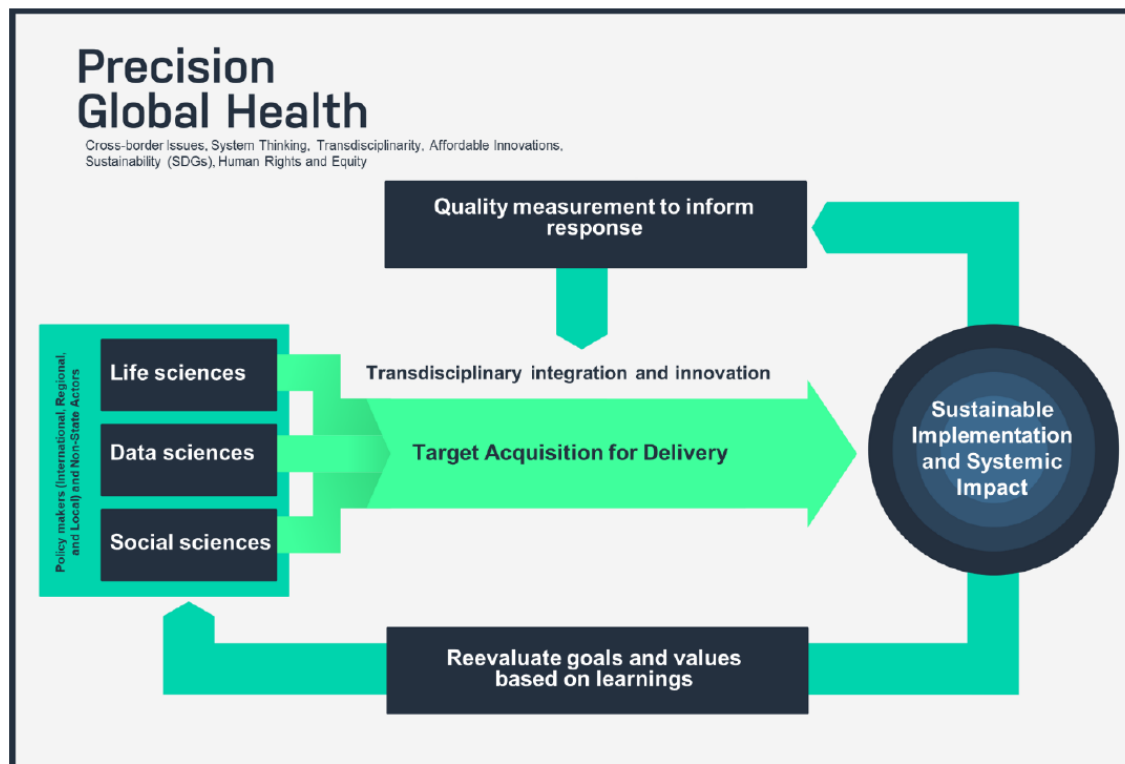
Merlin Chowkwanyun, M.P.H., Ph.D., Ronald Bayer, Ph.D., and Sandro Galea, M.D., Dr.P.H.

Comment



Offline: In defence of precision public health

And now: “Precision global health”



Review Article

Precision global health: a roadmap for augmented action

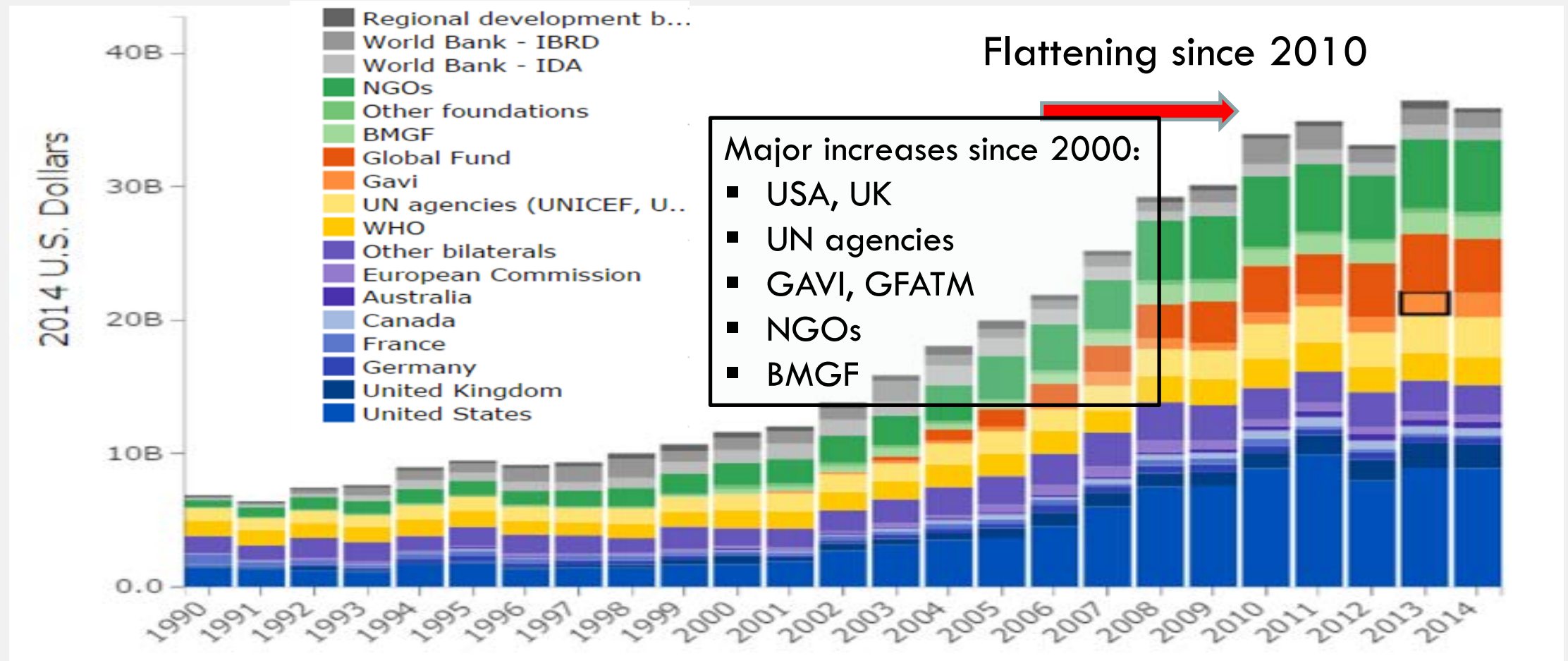
Danny J. Sheath^{1*}, Rafael Ruiz de Castañeda^{1*}, Nefti-Eboni Bempong¹, Mario Raviglione^{1,2}, Catherine Machalaba³, Michael S. Pepper⁴, Effy Vayena⁵, Nicolas Ray^{1,6}, Didier Wernli^{7,8}, Gérard Escher⁹, Francois Grey¹⁰, Bernice S. Elger^{11,12}, Dirk Helbing¹³, Kaj-Kolja Kleinberg¹³, David Beran¹⁴, J. Jaime Miranda¹⁵, Mark D. Huffman^{16,17}, Fred Hersch¹⁸, Fred Andayi¹⁹, Samuel M. Thumbi^{20,21}, Valérie D'Acremont^{22,23,24}, Mary-Anne Hartley²², Jakob Zinsstag^{23,24}, James Larus²⁵, María Rodríguez Martínez²⁶, Philippe J. Guerin^{27,28}, Laura Merson^{27,28}, Vinh-Kim Nguyen²⁹, Frank Rühli³⁰, Antoine Geissbühler³¹, Marcel Salathé³², Isabelle Bolon¹, Catharina Boehme³³, Seth Berkley³⁴, Alain-Jacques Valleron³⁵, Olivia Keiser¹, Laurent Kaiser³⁶, Isabella Eckerle³⁶, Jürg Utzinger^{23,24}, Antoine Flahault¹

J Public Health Emerg 2020 | <http://dx.doi.org/10.21037/jphe.2020.01.01>

PGH leverages life sciences, social sciences, and data sciences, augmented with artificial intelligence (AI), in order to identify transnational problems and deliver targeted and impactful interventions through integrated and participatory approaches.

Development Assistance for Health : The Golden Era of Global Health

Major increase in international funding and new initiatives

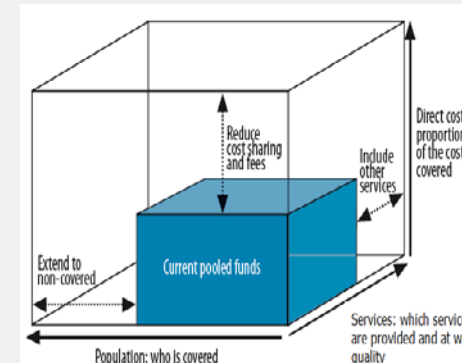
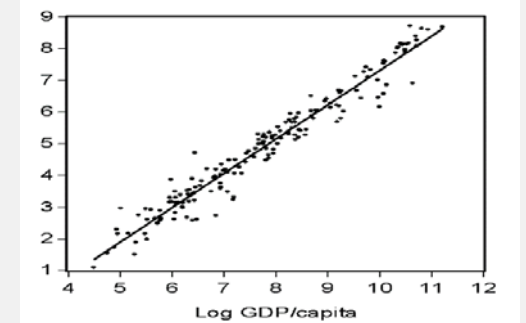
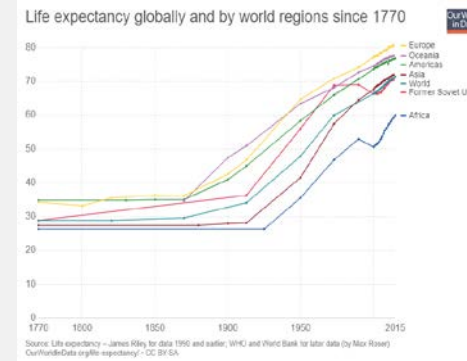


The golden era of global health, 1990s – today

What to expect in the next two decades?

Still opportunities for progress in global health (despite flat curve and COVID-19?)

- Increasing life expectancy, demographic transition, urbanization
- “Economic transition of health”
- Strong demand for universal health coverage and social protection
- New technological advances
- Health among priorities for leaders in SDG framework at UNGA and COVID-19 will result in opportunities



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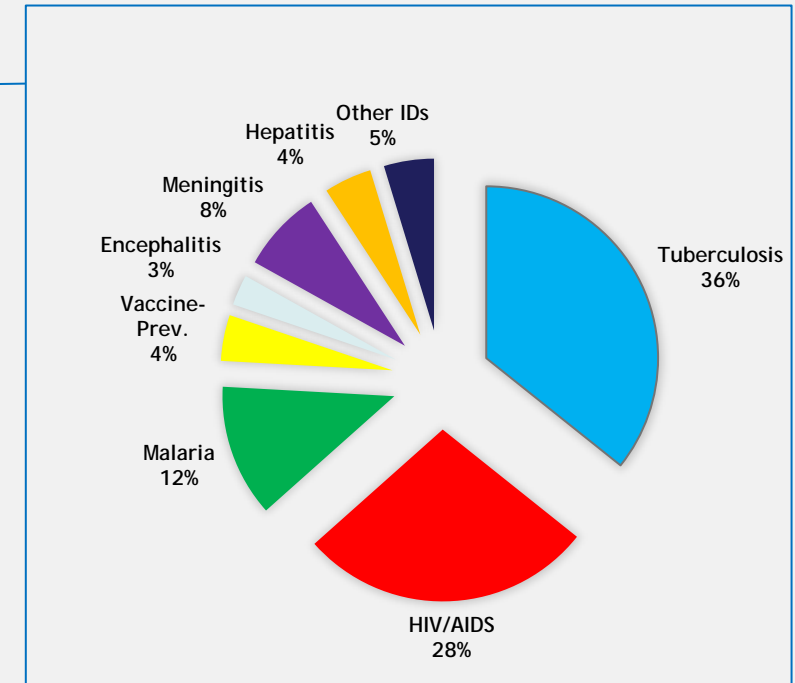
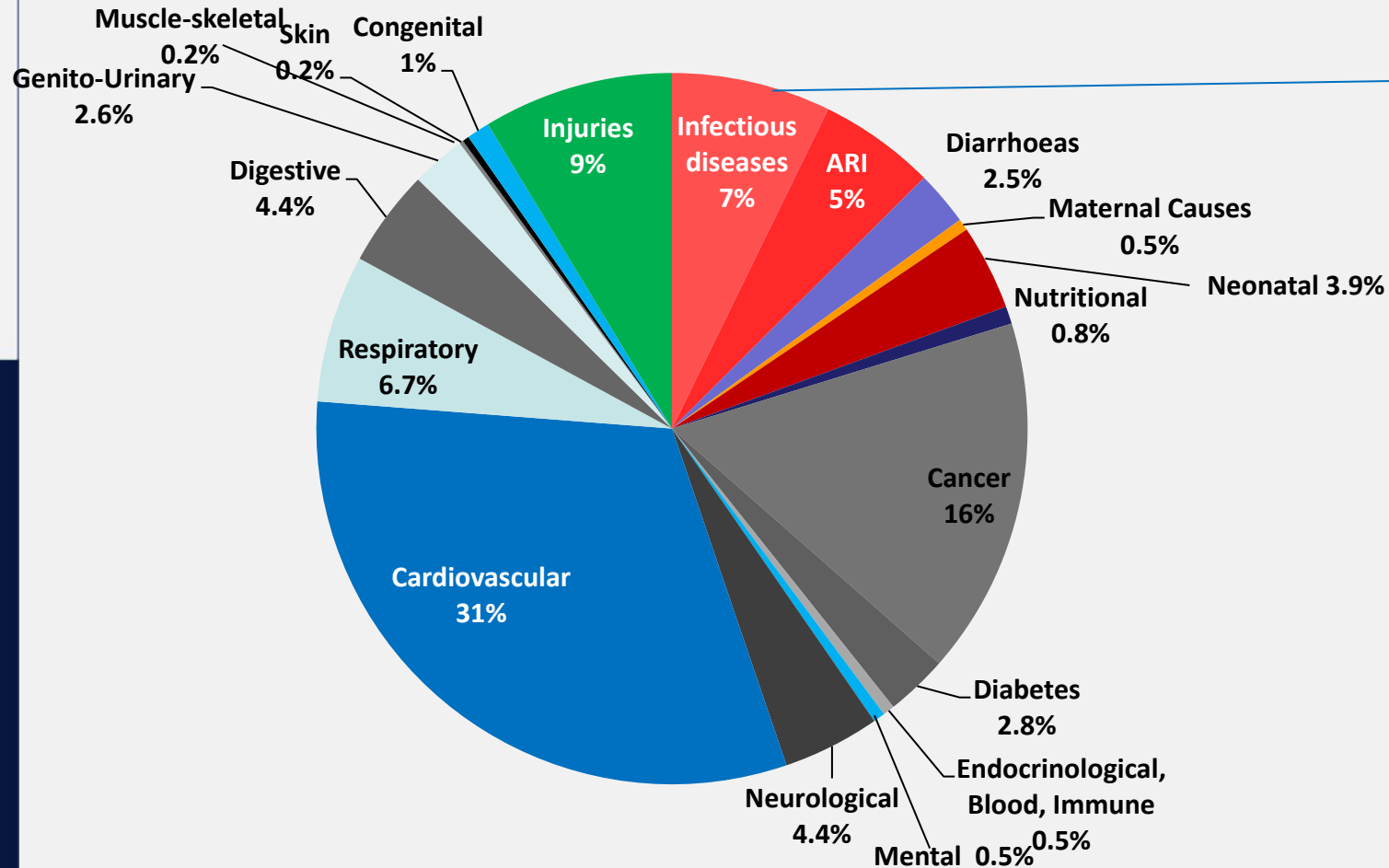
The Global Burden of Disease Study

- First commissioned by the World Bank in 1990 to quantify health effects of diseases estimating mortality and morbidity and introducing the DALY. Repeated in 2002, 2004, 2010, 2013, 2015
- Collaborative work by Institute for Health Metrics and Evaluation at University of Washington, WHO and others
- Aims: (i) assess health status and incorporate information on mortality and non-fatal outcomes; (ii) ensure estimates are derived from objective epidemiological and demographic methods; (iii) measure the burden of disease using the DALY metric usable also for cost-effectiveness of interventions.

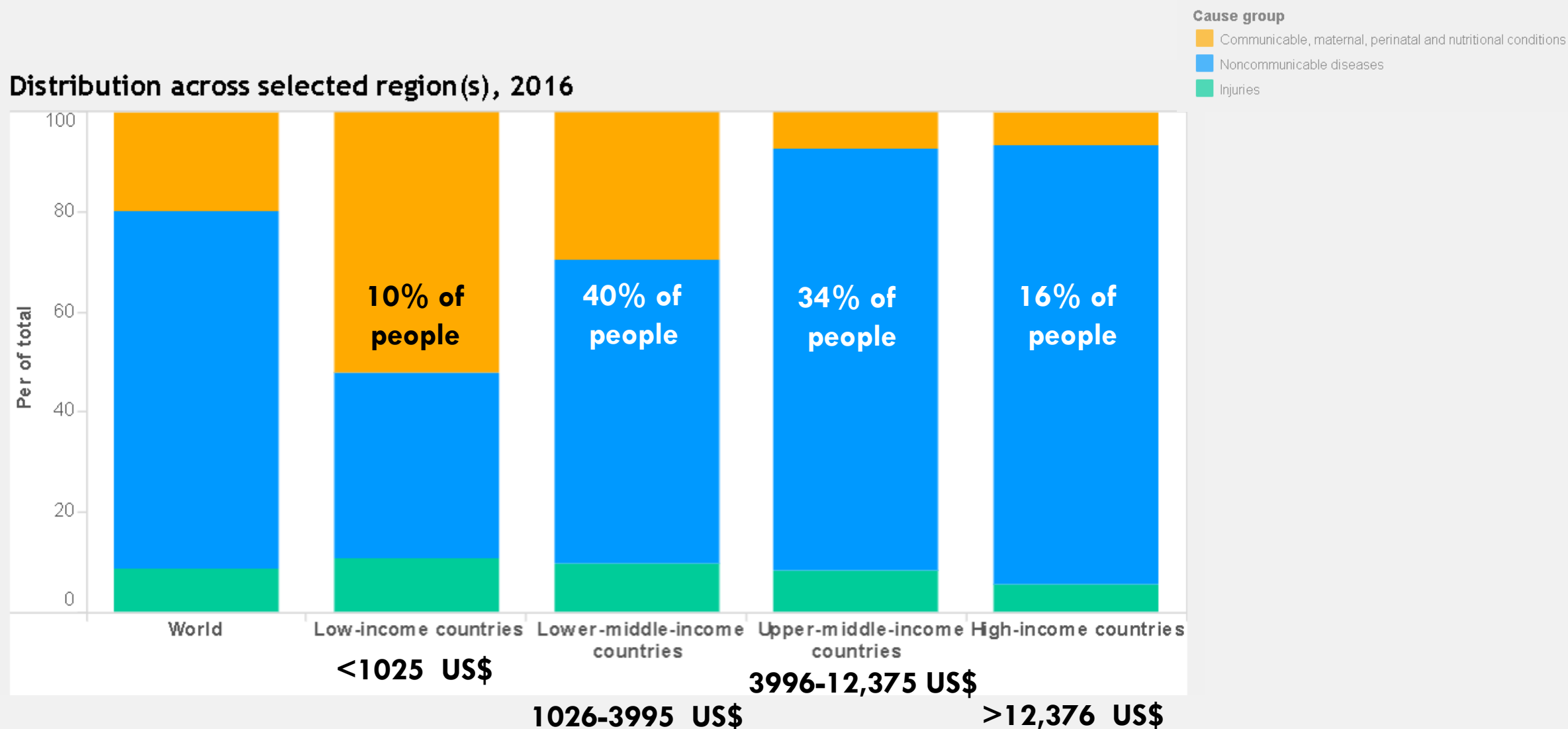


<https://www.thelancet.com/gbd/2016>

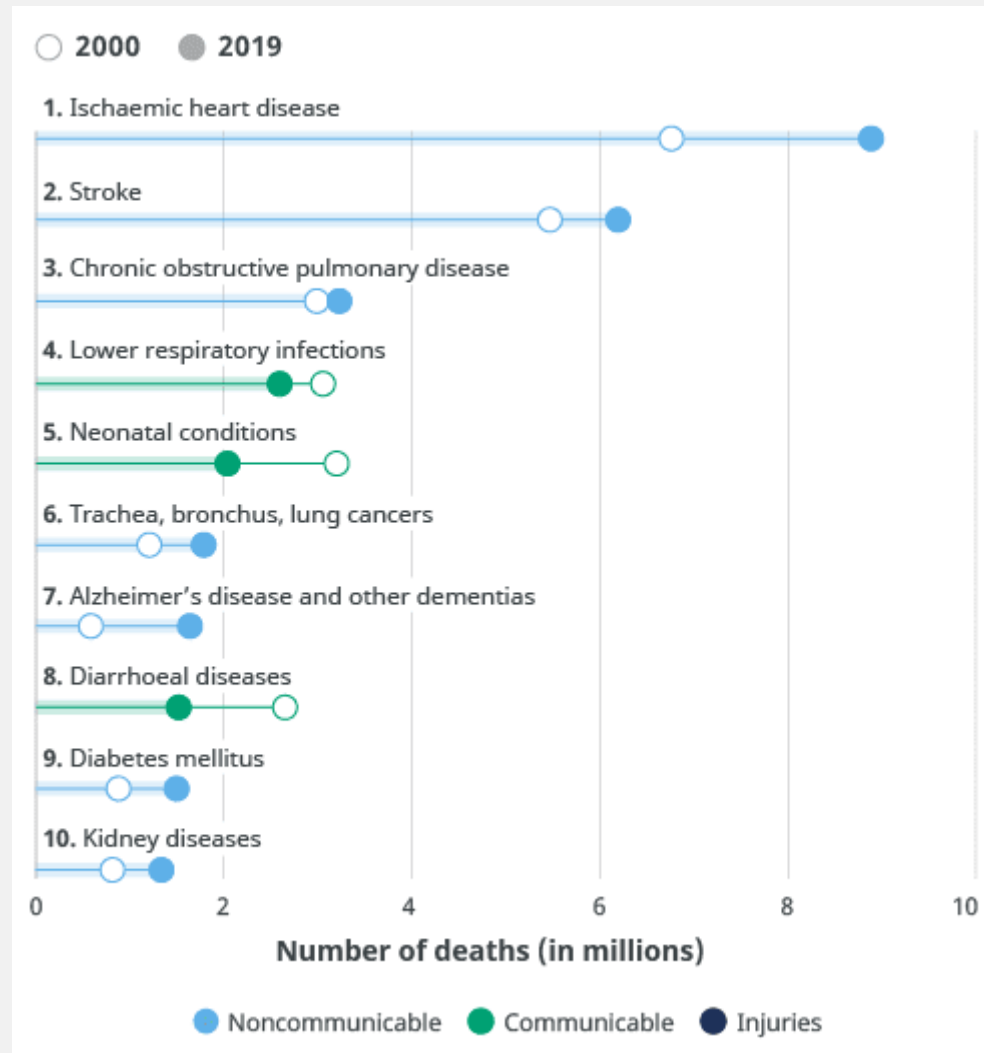
Global Health Estimates - Deaths 2016 (N=56M)



Global burden of deaths by causes and income (GNI/capita) groups, 2016

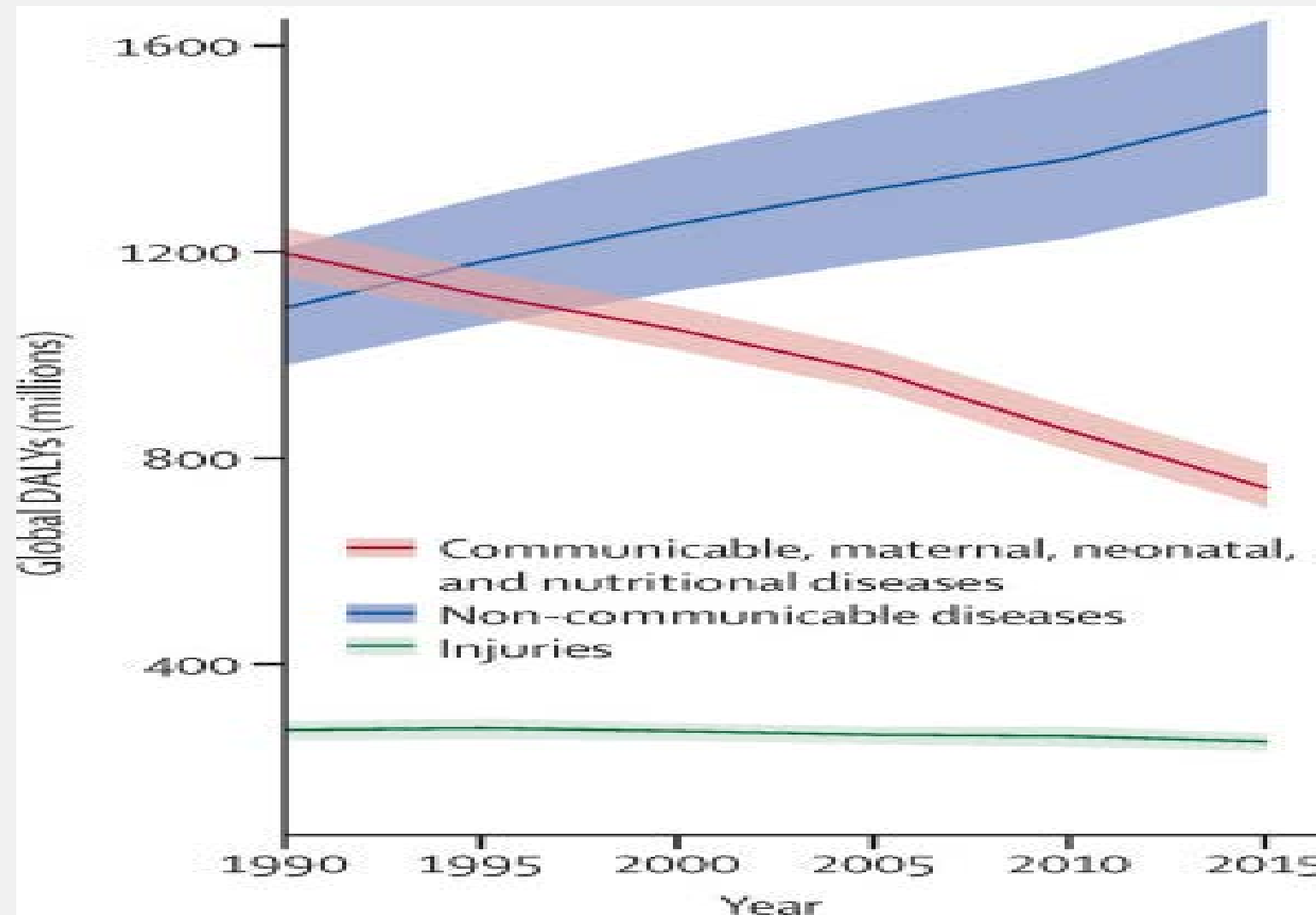


Global burden of disease – Top 10 Causes of Deaths 2019 (N= 55.4M)



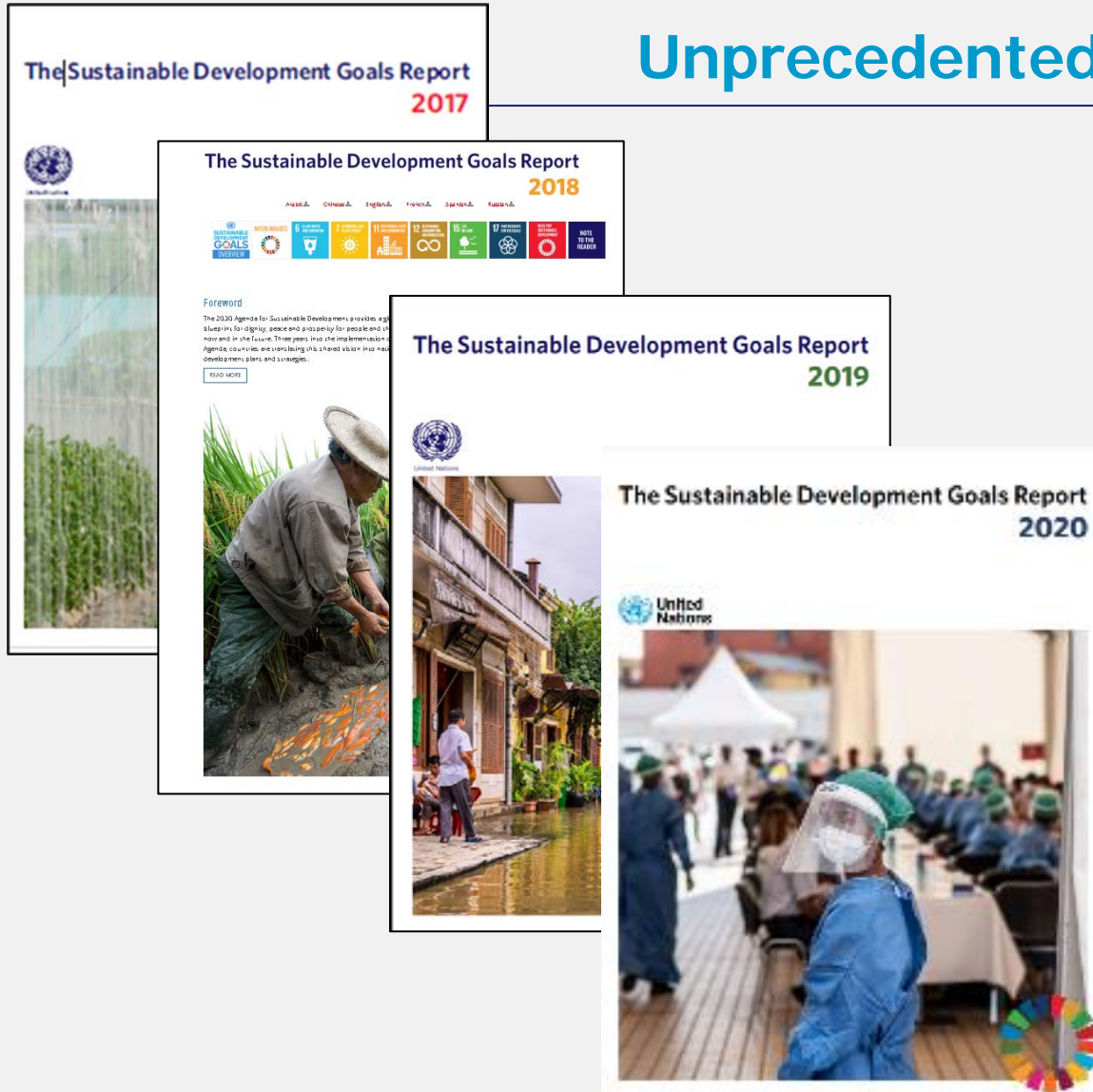
The changing global burden of disease

The “epidemiological transition”



Sustainable Development Goals Reports

Unprecedented progress, but a lot more to do



- Annual Report by the United Nations with contributions from all agencies, like WHO, engaged in different sectors and capable of measuring the key indicators
- Good progress in many health areas

Good progress

45%

INCREASE IN GLOBAL LIFE EXPECTANCY
FROM 1960 TO TODAY

47%

FEWER MATERNAL DEATHS IN 2017
THAN IN 2000

45%

FEWER UNDER-5 DEATHS IN 2019 THAN
IN 2000

53%

DECREASE IN MALARIA MORTALITY
RATES AMONG UNDER-5 CHILDREN
SINCE 2000

37%

REDUCTION IN HIV INCIDENCE IN ADULTS
IN AFRICA BETWEEN 2000 AND 2017

2.5
BILLION

CHILDREN HAVE BEEN IMMUNIZED
AGAINST POLIO SINCE 1988, WITH ONLY
22+95 TOTAL CASES IN 2017 (99%
REDUCTION SINCE 1988)

40%

REDUCTION IN TB DEATHS BETWEEN
2000 AND 2019

99.9%

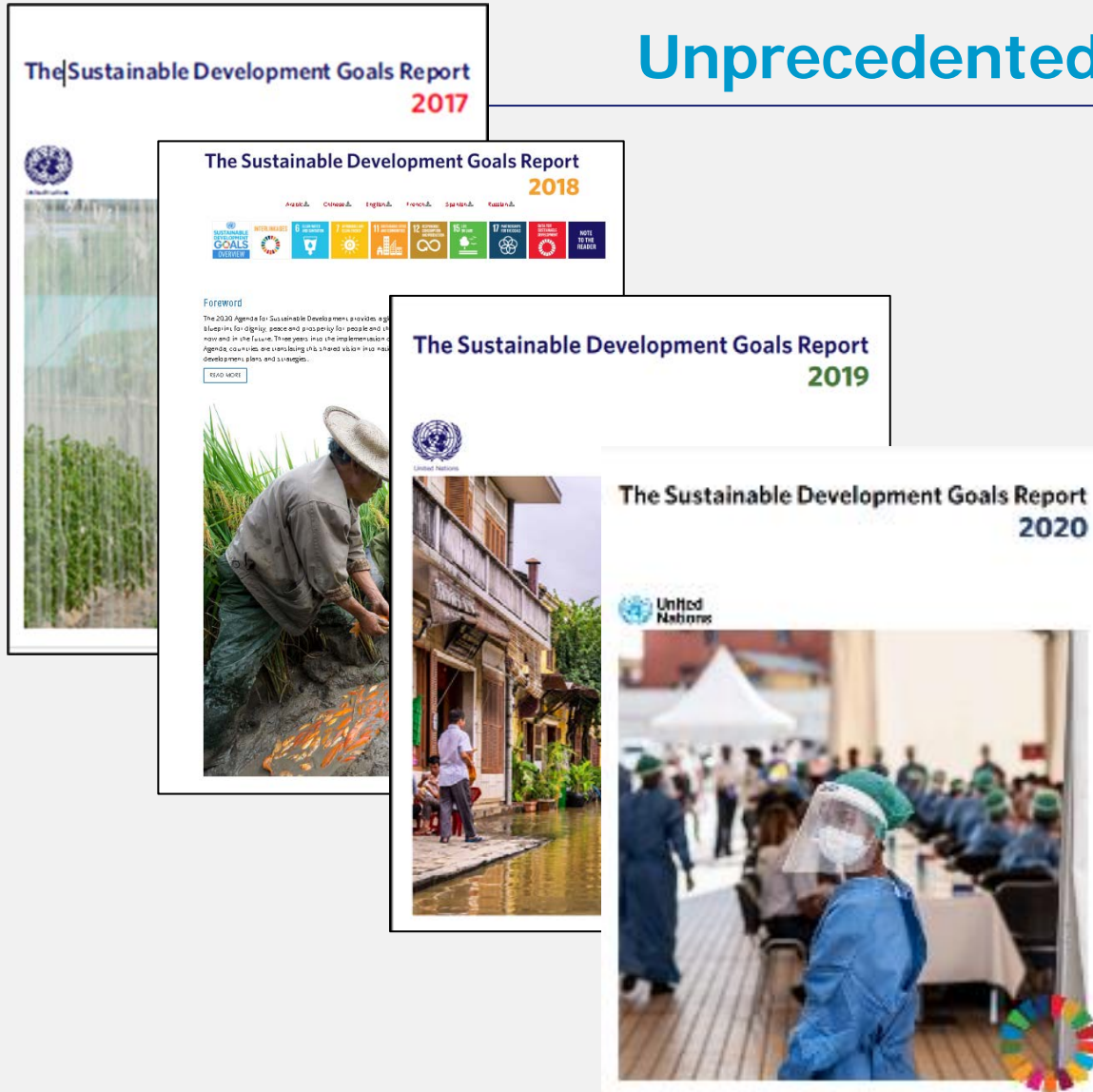
REDUCTION OF GUINEA WORM CASES
FROM 1986 TO 2015, NEAR
ERADICATION



Partly modified from Skolnik R. –Yale Course on GH, accessible through Coursera

Sustainable Development Goals Reports

Unprecedented progress, but a lot more to do



- Annual Report by the United Nations with contributions from all agencies, like WHO, engaged in different sectors and capable of measuring the key indicators
- Good progress in many health areas **but also recognition of the unfinished and new agendas in health**

<https://unstats.un.org/sdgs/report/2019/The-Sustainable-Development-Goals-Report-2019.pdf>

Small or no progress

Only
3%

REDUCTION OF PROBABILITY OF
DYING FROM NCD IN 30-70 Y.O.
BETWEEN 2000 AND 2015



Only
1%

REDUCTION OF MORTALITY
RATE DUE TO ROAD TRAFFIC
INCIDENTS IN 2000 - 2015

Risk of dying between ages of 30 and 70
from one of these four **NCDs**
fell from 2000 to 2015



WHO/T. Pietrasik

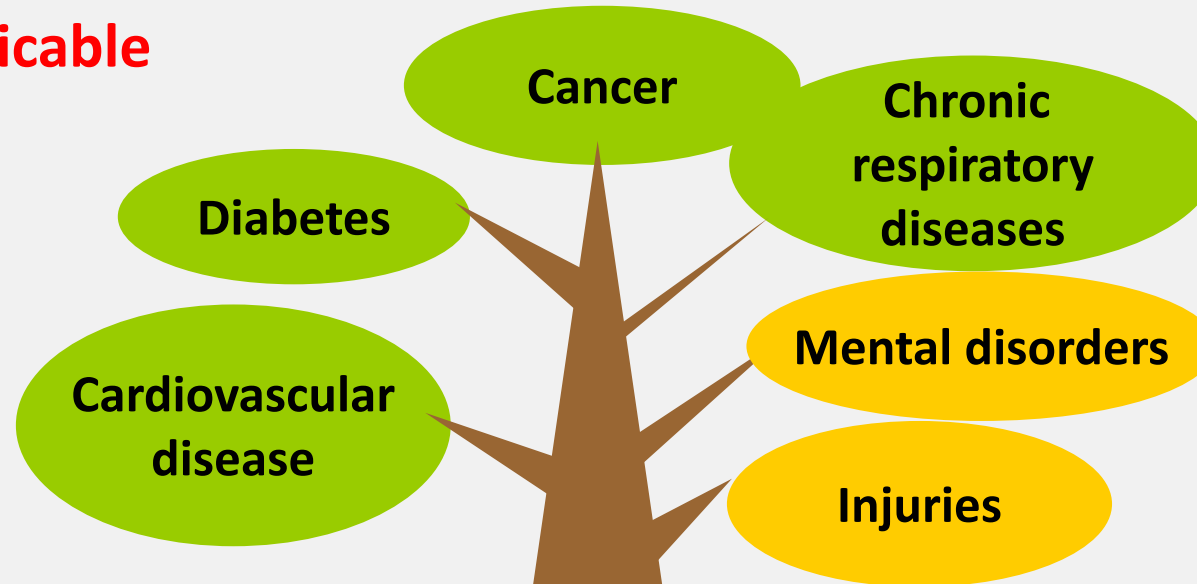
Fact 1: Road traffic injuries are a global public health problem

Every year, there are approximately 1.3 million road traffic deaths worldwide. 93% of these road traffic deaths occur in low- and middle-income countries which only have 54% of the world's registered vehicles.

Partly modified from Skolnik R. –Yale Course on GH, accessible through Coursera

Noncommunicable diseases (NCDs) and conditions

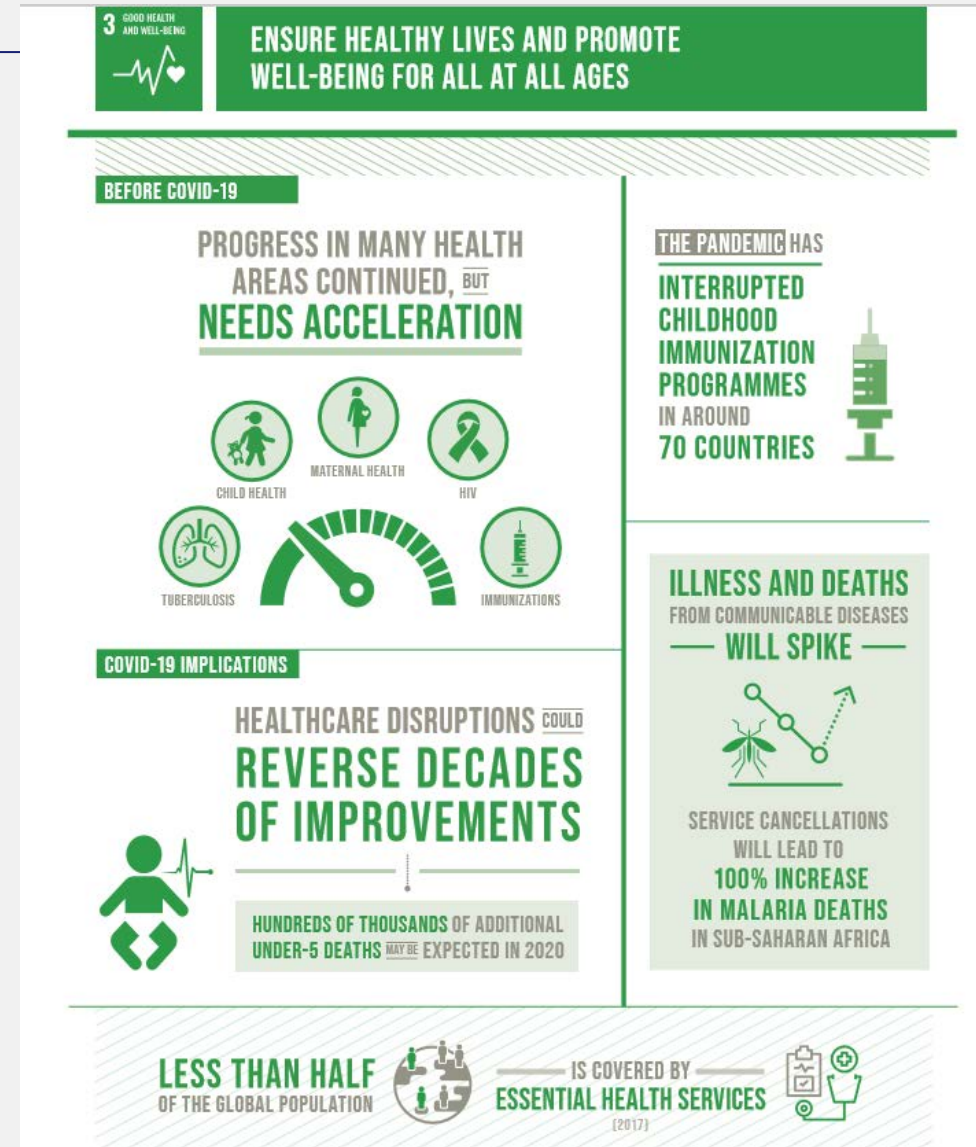
**Noncommunicable
diseases and
conditions**



Risk factors



..and now how to manage the impact of COVID-19?

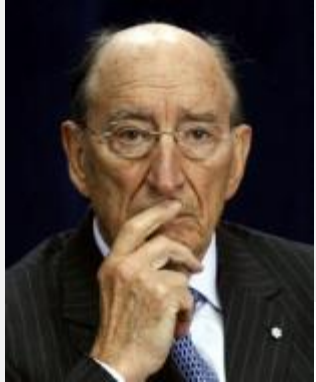


The big themes

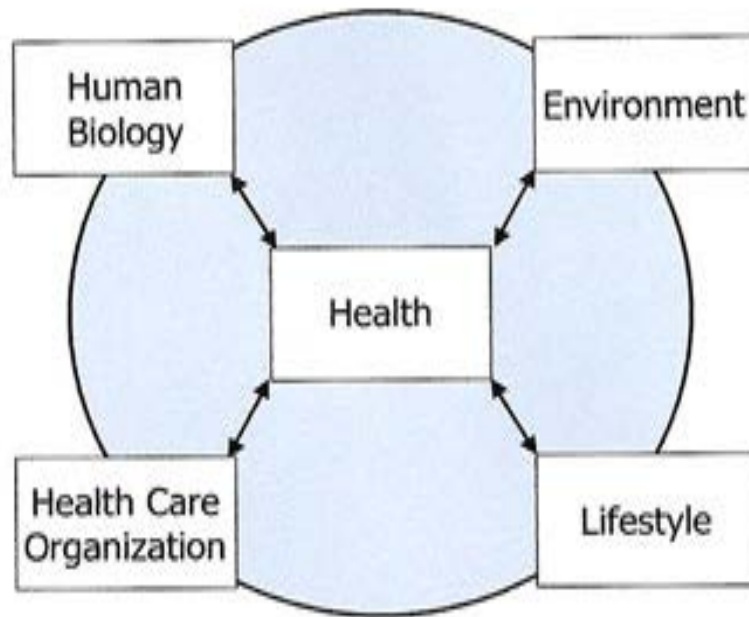
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Determinants of health



Lalonde Framework



The Lalonde Report, 1974

Marc Lalonde, Minister of Health of Canada

health field, result of four independent fields:

- Human Biology: all aspects of health, influenced by genes
 - Environmental: physical and social environment outside of one's control
 - Lifestyle: personal decisions contributing to illness or death
 - Health care organization
-
- “First modern government document in the Western world to acknowledge that our emphasis upon a biomedical health care system is wrong, and that we need to look beyond the traditional health care system if we wish to improve the health of the public”

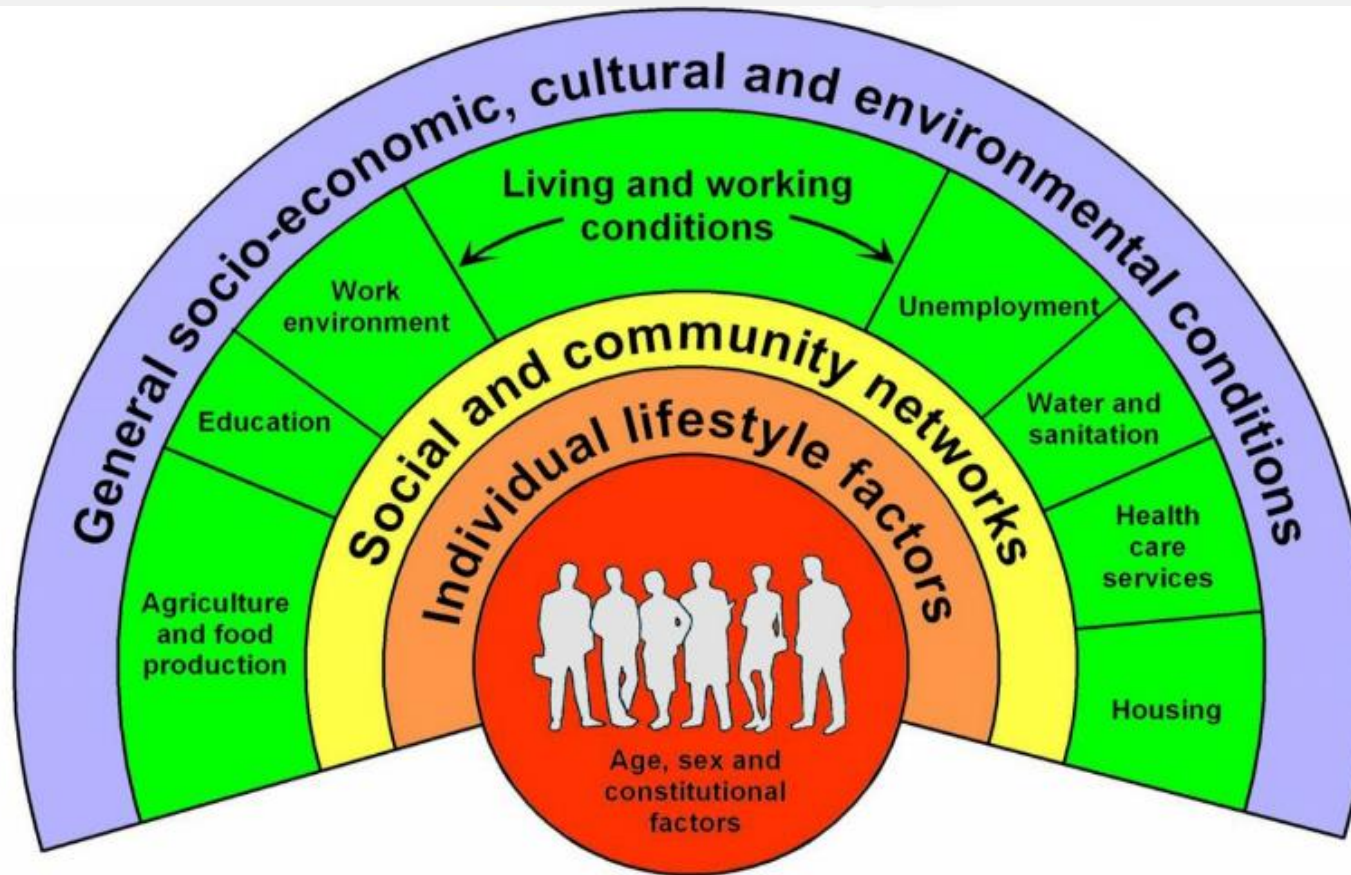
Adapted from: Didier Wernli, GSI, UniGenève

Determinants of health

**Layers of influence on health,
only some under our control**

At centre, people with their genes

1. Personal behaviour
2. Social and community influence
3. Structural factors: education, food, housing, job, access, etc
4. General socio-economic, cultural and environmental conditions



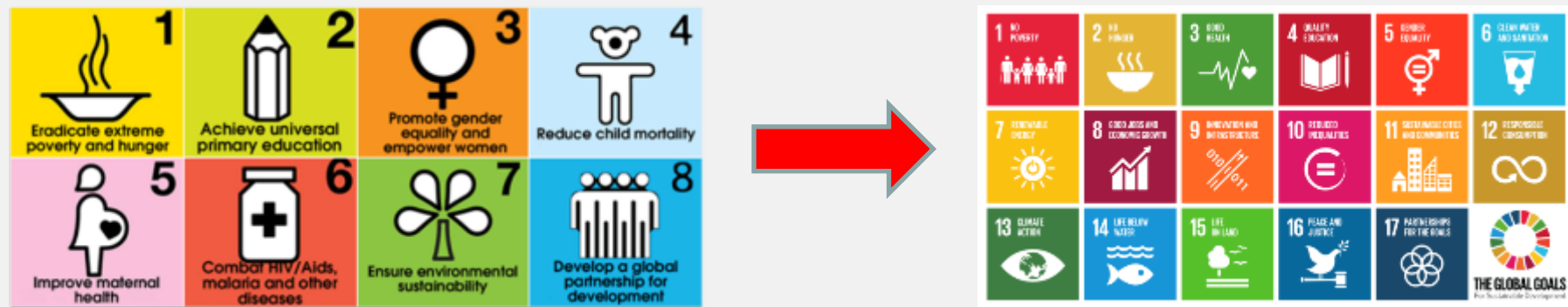
Source: Dahlgren and Whitehead, 1991

Adapted from: Didier Wernli, GSI, UniGenève

Our health depends on progress in most sectors of human development

From MDGs to SDGs

From 8 UN Millennium Development Goals, 2000-2015
to 17 UN Sustainable Development Goals, 2016-2030



Transitioning from MDGs to SDGs

MDG era



- Developing country focus: poverty reduction, education, health, economics
- 8 goals, 21 targets
- Aid-related financing
- Focused, categorical
- Current development expenditures: 200 billion US\$/year

SDG era



- Universal: economic, social and environmental pillars of sustainable development
- 17 goals, 169 targets
- Globally applicable, domestic and aid financing
- "Integrated, indivisible", multidisciplinary, equity as focus
- Expected future investments 2-3 trillion US\$/year

People, Planet, Prosperity, Peace, Partnership

The United Nations' SDGs

SUSTAINABLE DEVELOPMENT GOALS



A new era with new ambitions and a paradigm shift

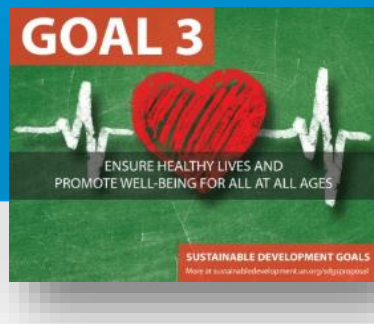


UN Sustainable Development Goals: 2016 – 2030
17 goals and 169 targets



“Assicurare la salute e il benessere per tutti e per tutte le età”

SDG 3 and its 13 targets by 2030



3.1 Reduce Maternal mortality



3.2 Reduce child and neonatal mortality



3.3 End the epidemics of AIDS, tuberculosis, malaria & neglected tropical diseases and combat hepatitis, water-borne and other communicable diseases



3.4 Reduce mortality due to NCD and improve mental health



3.5 Strengthen Prevention and treatment of substance abuse (narcotics, alcohol)



3.6 Reduce Mortality due to road traffic injuries



3.7 Universal access to sexual and reproductive health-care services



3.8 Achieve universal health coverage



3.9 Reduce deaths and illness due to pollution and contamination

3.a Strengthen implementation FCTC (tobacco)

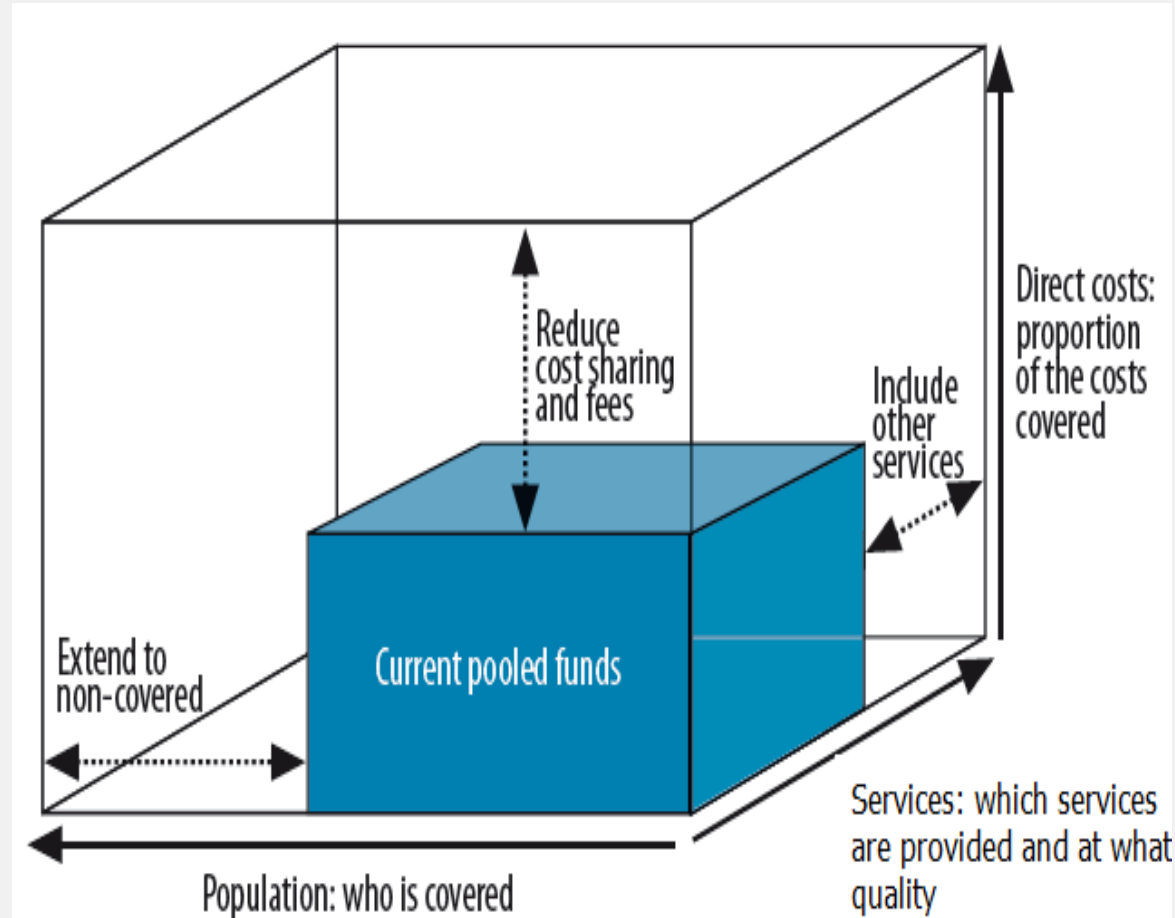
3.b Access to affordable essential medicines and technologies

3.c Increased health financing and health workforce in developing countries

3.d Enhance capacity for early warning, risk reduction and management of national and global health risks

Universal Health Coverage “cube”

Providing more services, reaching more people, and offering more financial protection



Financial Protection:

What do people have to pay out of pocket?

Adding a "social protection floor"

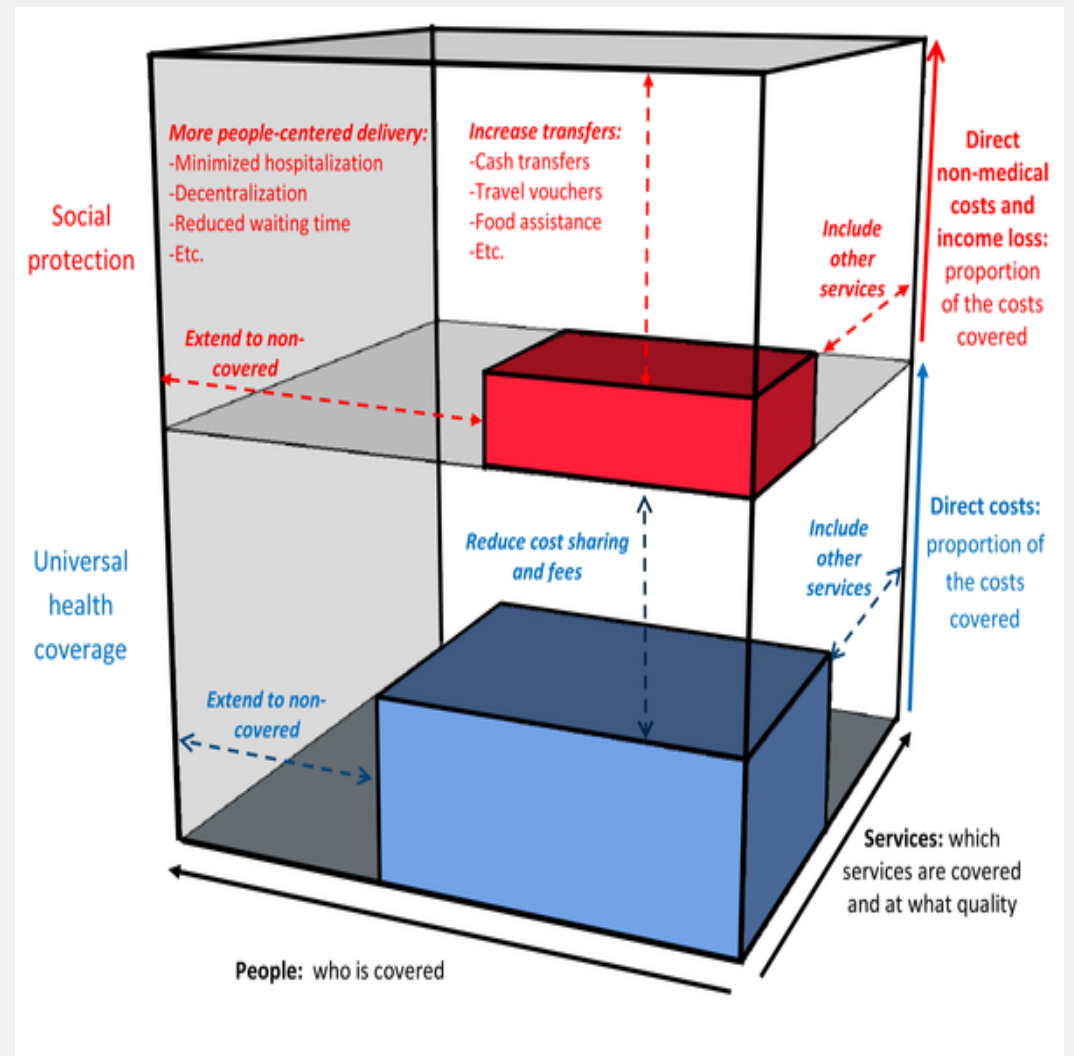
Beyond UHC: Monitoring Health and Social Protection Coverage in the Context of Tuberculosis Care and Prevention

Knut Lönnroth*, Philippe Glaziou, Diana Weil, Katherine Floyd, Mukund Uplekar, Mario Raviglione

Global TB Programme, World Health Organization, Geneva, Switzerland



September 2014 | Volume 11 | Issue 9 | e1001693



Courtesy of Prof. K. Lönnroth, KI

Health can benefit from SDGs and contributes to SDGs



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What environment today in global health?

Not just UN and NGOs, but public-private partnerships



The big themes

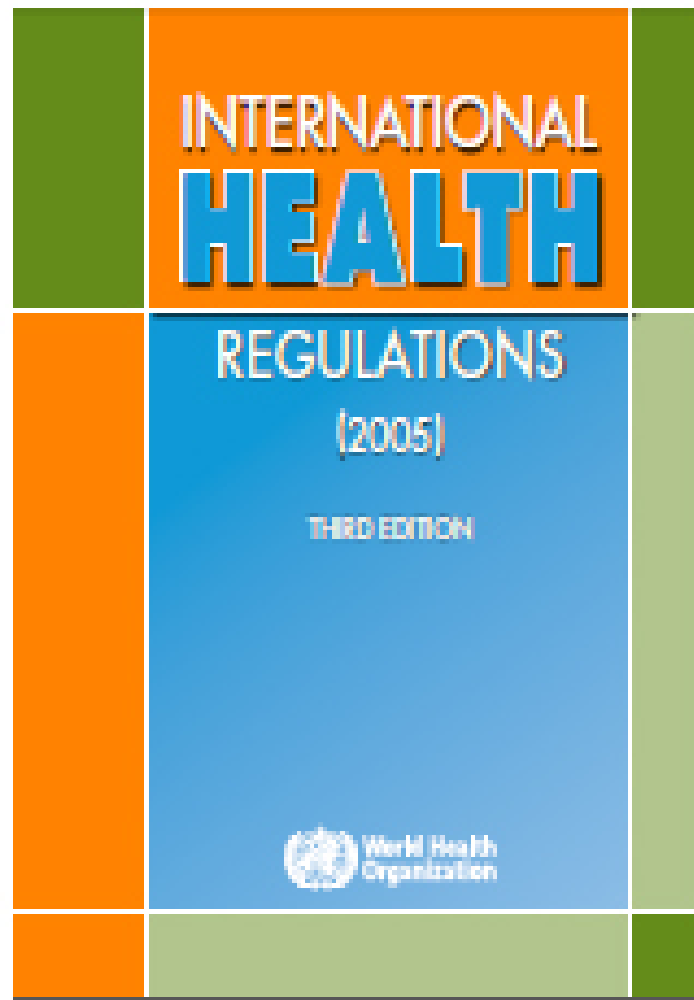
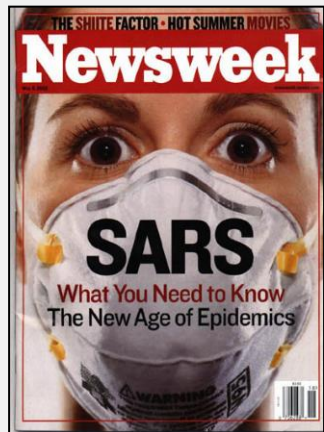
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World Health
Organization

International Health Regulations 2005



International Health Regulations (IHR) Protecting people every day

What are the IHR?

The International Health Regulations (IHR) represent an agreement between 196 countries, including all WHO Member States, to work together for global health security. Under the IHR, all countries must report events of international public health importance.

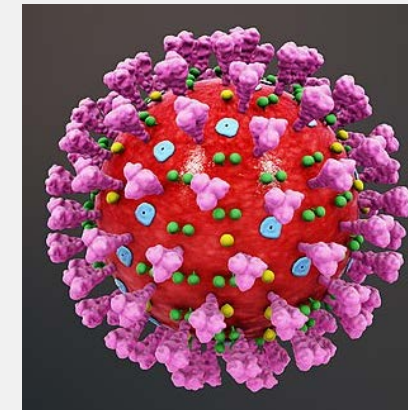


We share a responsibility to protect our world from outbreaks of infectious diseases and other health threats. The goal of the IHR is to stop events in their tracks before they become international emergencies.

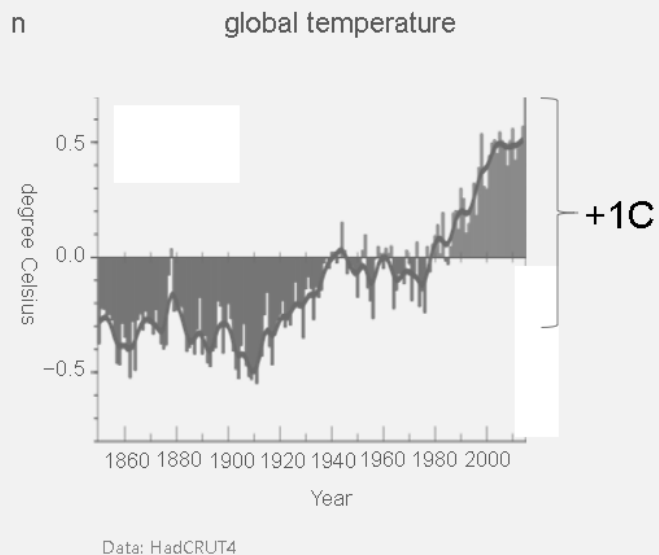
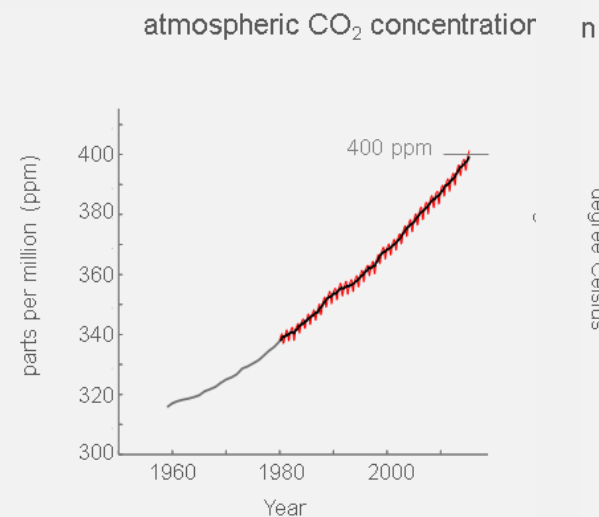
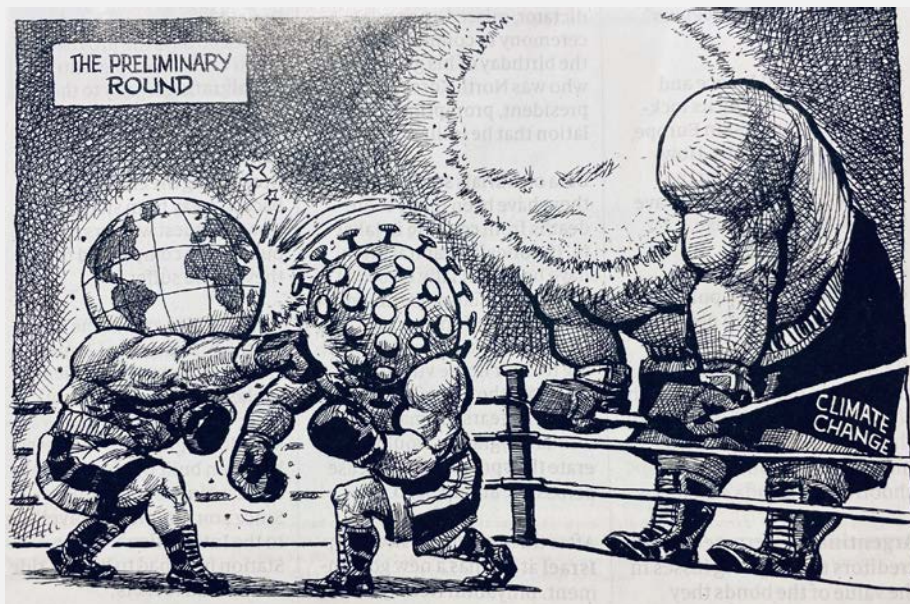
Source: Report to the Director-General of the Review Committee on Second Extensions for Establishing National Public Health Capacities and on IHR Implementation, November 2014



C120993-0



COVID-19? Well, how about climate change?

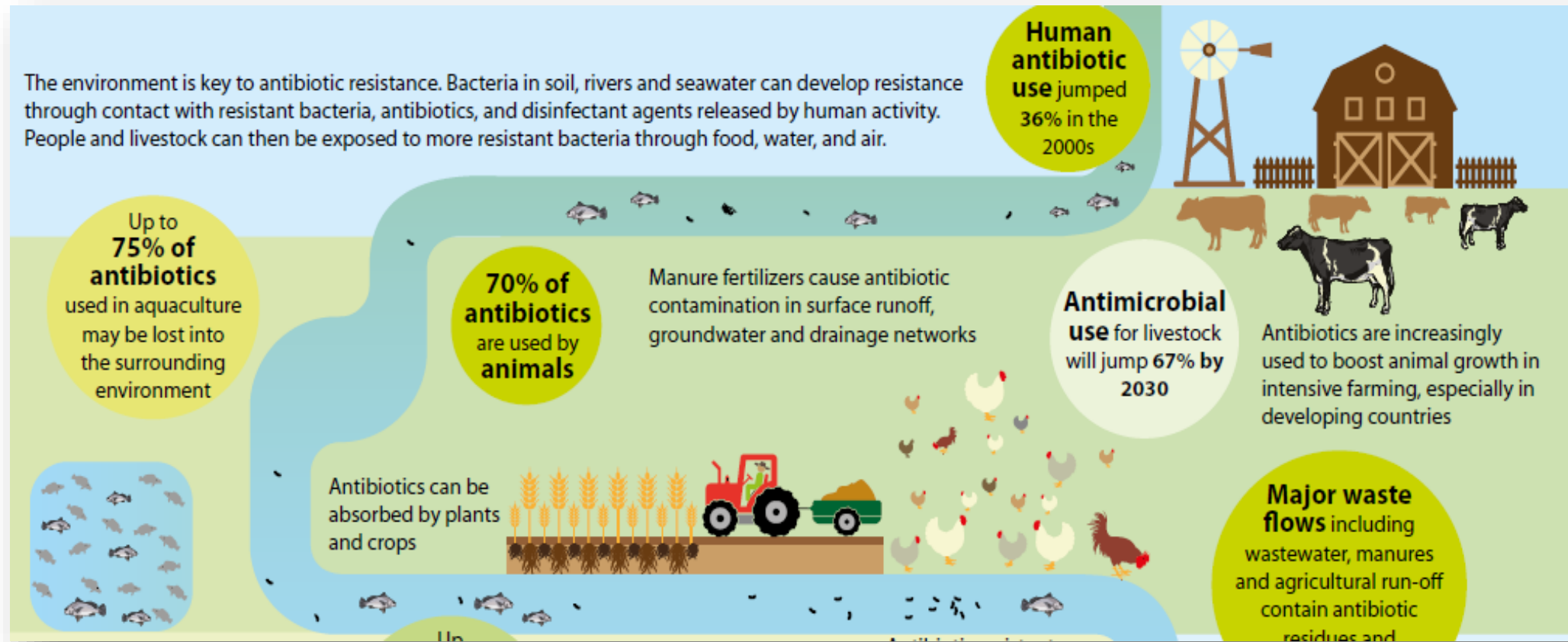


HEALTH IMPACTS



Solutions to **antibiotic resistance** are multi-sectorial

A model of global health interventions



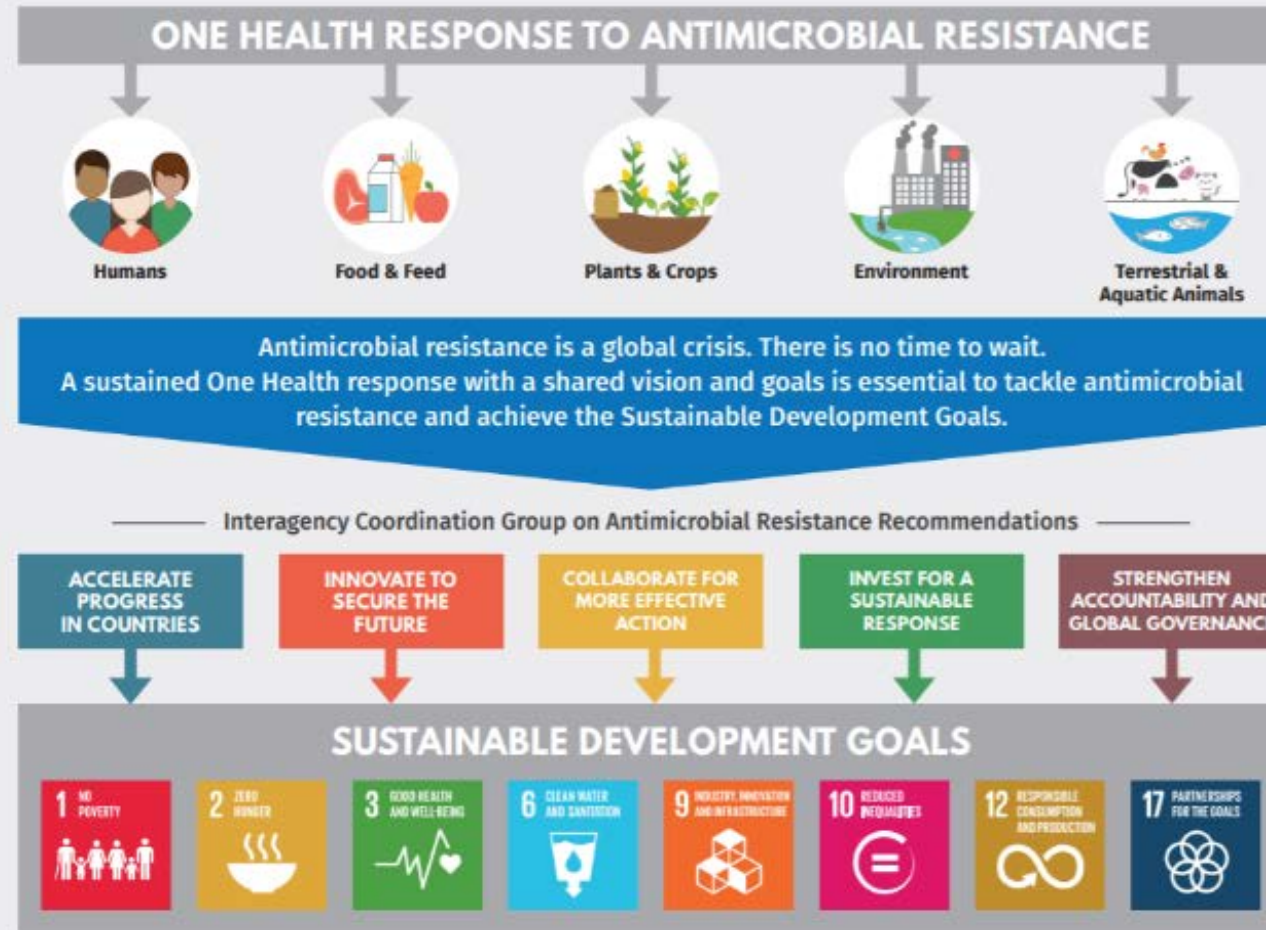
One **Health** Approach =



One Health Response to AMR and the SDGs



Fig. 2: One Health, IACG recommendations and the Sustainable Development Goals



No Time to Wait: Securing the future from drug-resistant infections - 9



SCUOLA DI SPECIALIZZAZIONE IN MALATTIE INFETTIVE E TROPICALI

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TIME TO WEBINAR IN INFECTIOUS DISEASES

PROGETTO DI FORMAZIONE

FOCUS ON GLOBAL HEALTH

17 MARZO 2021 – Ore 17.00-19.00

Molte grazie a tutti