



UNIVERSITÀ
CATTOLICA
del Sacro Cuore

Reflections on research and the future from a Public Health perspective

Walter Ricciardi

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Agenda

- A change of epoch in a world in turmoil
- The role of science in addressing formidable challenges
- Value based and Mission oriented approach to innovation and research
- 3 examples

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we are not living in "an epoch of changes, but a change of epoch"

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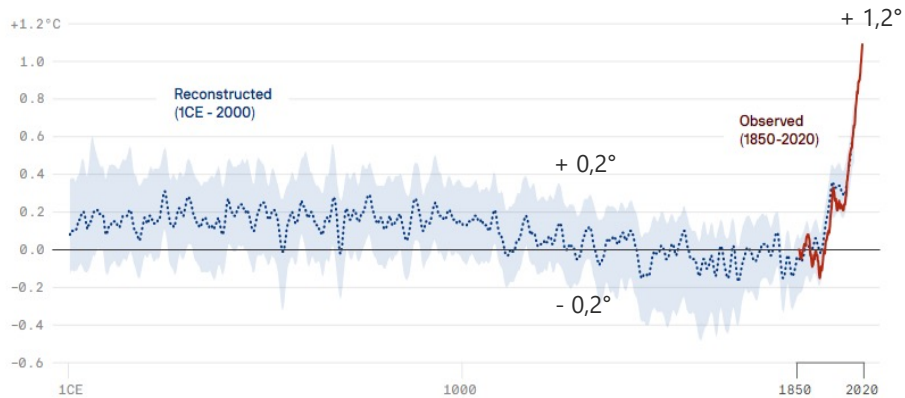
after 11,000 years we have entered a new geological age!!!!

from Olocene to Anthropocene

5

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Changes in global surface temperature relative to 1850-1900



Data: IPCC; Chart: Will Chase/Axios

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☰ **CNN** politics SCOTUS Congress Facts First 2024 Elections

US and UK carry out strikes against Iran-backed Houthis in Yemen

SAUDI ARABIA OMAN
Red Sea
Abs Sanaa
Hudaydah Taiz
YEMEN
100km
100 miles
Houthi controlled area

Source: UK MoD, Houthi officials, Sanaa Center for Strategic Studies **BBC**

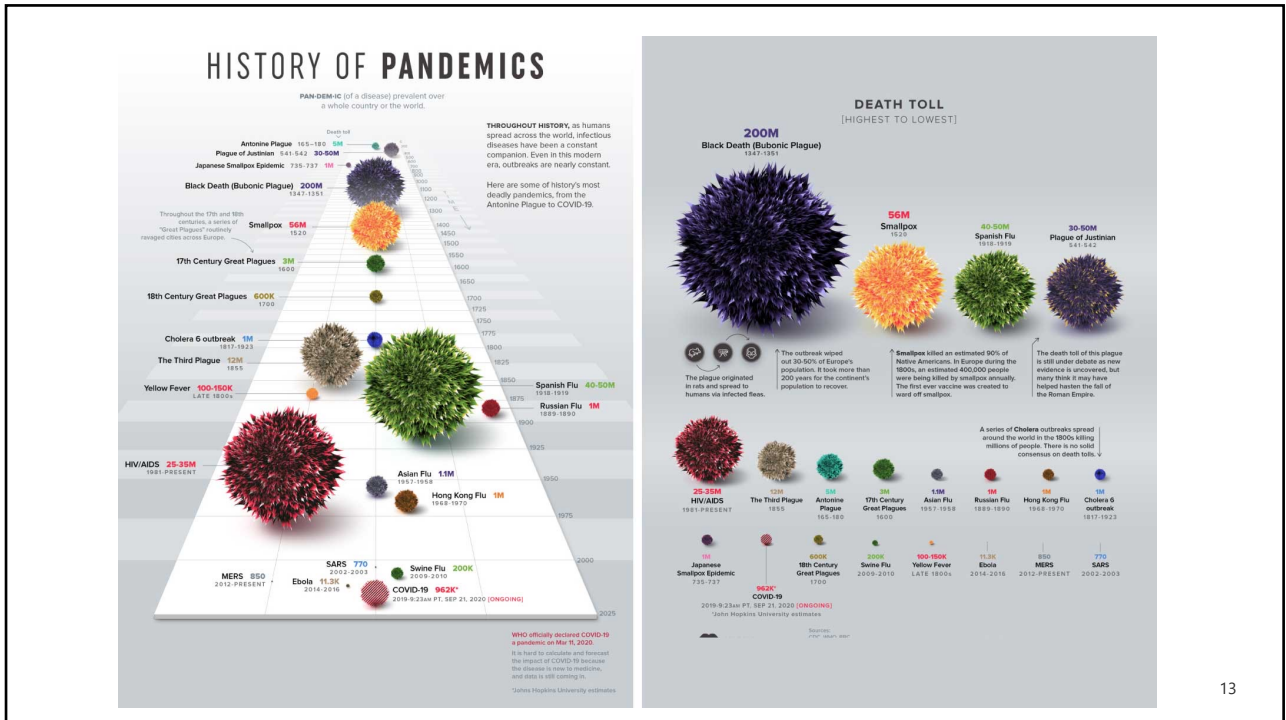
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2 billions people live in war zones

12

12



13

A different world

1348







50% mortality

2020

1% mortality

14

The 5 Pillars of Protection

Masking	Air Quality	Social Distancing	Surveillance/Testing
<p>Level 1: Well-fitted N95 respirator.</p> <p>Level 2: P100 Elastomeric full face respirator, face shield, goggles.</p> <p>Level 3: PAPR combination source protection, e.g., PAPR with N95 respirator.</p>	<p>Level 1: ACH of 6 using a combination of ventilation and HEPA purification.</p> <p>Level 2: Higher use of combination ventilation and HEPA purification. Using a goal oriented approach including CO2 measurement and adjustment to target CO2 levels.</p> <p>Level 3: Analyze air flows and implementing localized air filtering to prevent transmission accordingly using aerosol density reduction and source control.</p>	<p>Level 1: Maximize distance between people and de-densify spaces.</p> <p>Level 2: Hygiene, removal, and limited person-to-person contact, along with source control between people.</p> <p>Level 3: Fully separate spaces and separate people for all on-site.</p>	<p>Level 1: Symptomatic and twice weekly surveillance testing with NAAT or RAT test.</p> <p>Level 2: Daily testing with NAAT.</p> <p>Level 3: Twice weekly testing with NAAT.</p>
			
<p>Vaccination</p> <p>Up to date COVID vaccination and boosters</p>  			

WHN

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euronews.

News > World > Italy

Italian hospitals collapse: Over 1,100 patients waiting to be admitted in Rome



By Euronews with EFE
Published on 03/01/2024 - 14:28 • Updated 16:44

17

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18

ANTÓNIO GUTERRES United Nations Secretary-General

“We are on a highway to **climate hell** with our foot still on the accelerator.”

COP27 | 7 NOVEMBER 2022

António Guterres @antonioguterres
Heatwaves already kill thousands of people every year.
Without sustained investments in climate mitigation & adaptation, we are destined for a future of ever larger and deadlier heat disasters.
Traduci il Tweet

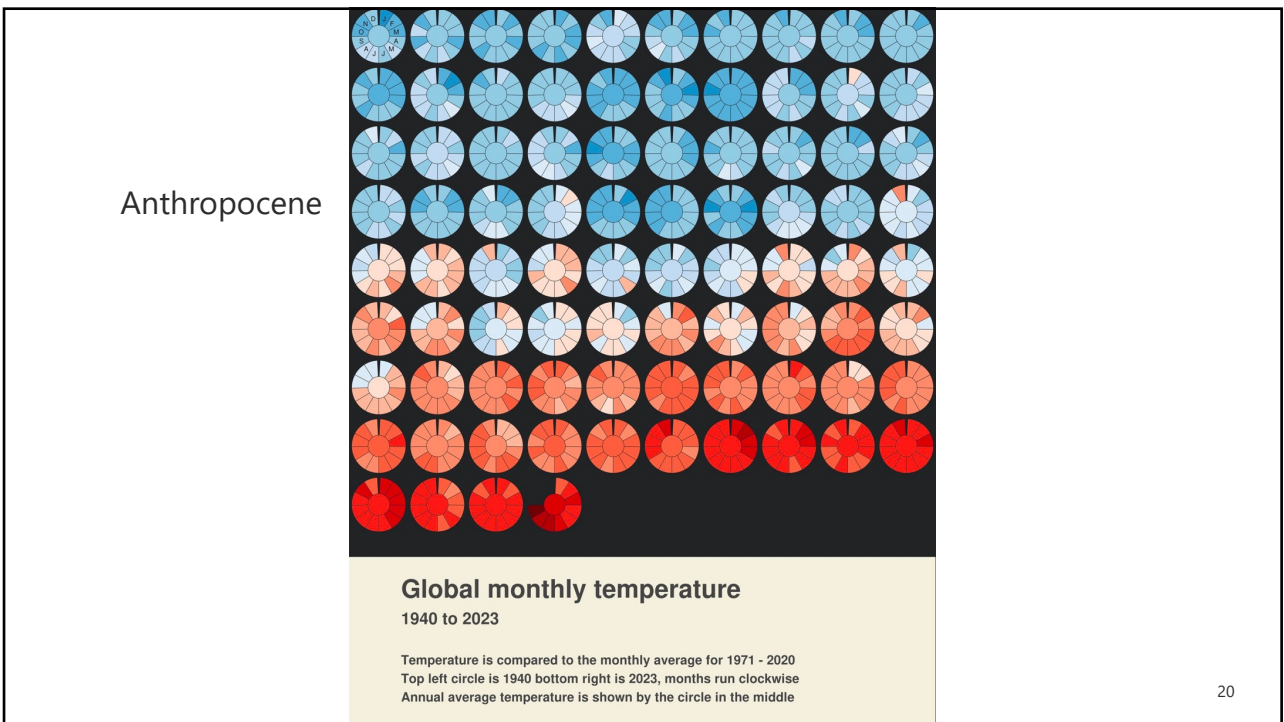
5 things you need to know about
EXTREME HEAT

OCHA IFRC

unocha.org
Extreme Heat: Preparing for the heatwaves of the future

19

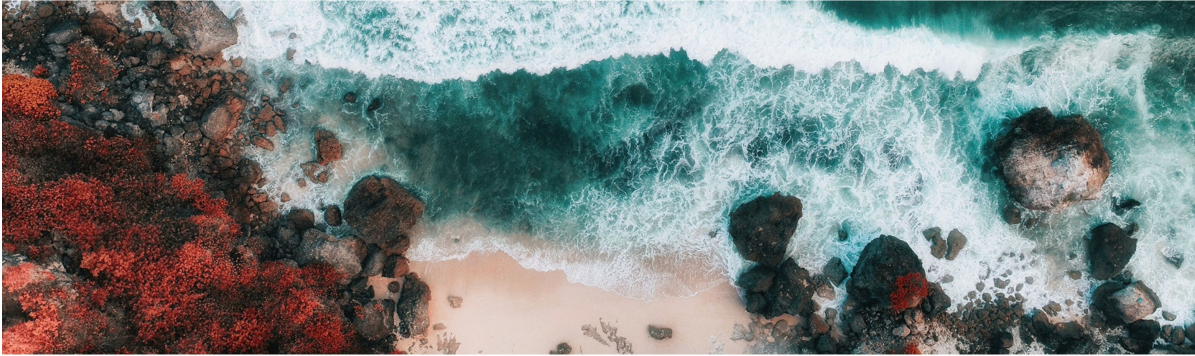
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PLANETARY HEALTH ALLIANCE

HOME ABOUT ▾ OUR NETWORK ▾ EDUCATION ▾ RESOURCES ▾ GET INVOLVED ▾ ANNUAL MEETINGS ▾ CONTACT US Q









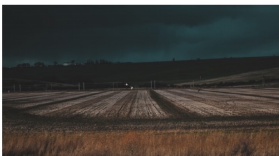
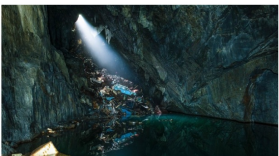
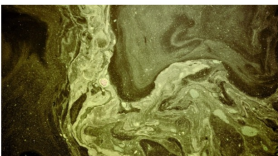
Planetary Health

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HOME ABOUT ▾ OUR NETWORK ▾ EDUCATION ▾ RESOURCES ▾ GET INVOLVED ▾ ANNUAL MEETINGS ▾ CONTACT US

Explore how our environment is changing

 <p>Water Scarcity</p>	 <p>Changing Food Systems</p>	 <p>Urbanization</p>
 <p>Biodiversity Shifts</p>	 <p>Natural Disasters</p>	 <p>Climate Change</p>
 <p>Changing Land Use and Land Cover</p>	 <p>Global Pollution</p>	 <p>Changing Biogeochemical Flows</p>

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World will look back at 2023 as year humanity exposed its inability to tackle climate crisis, scientists say

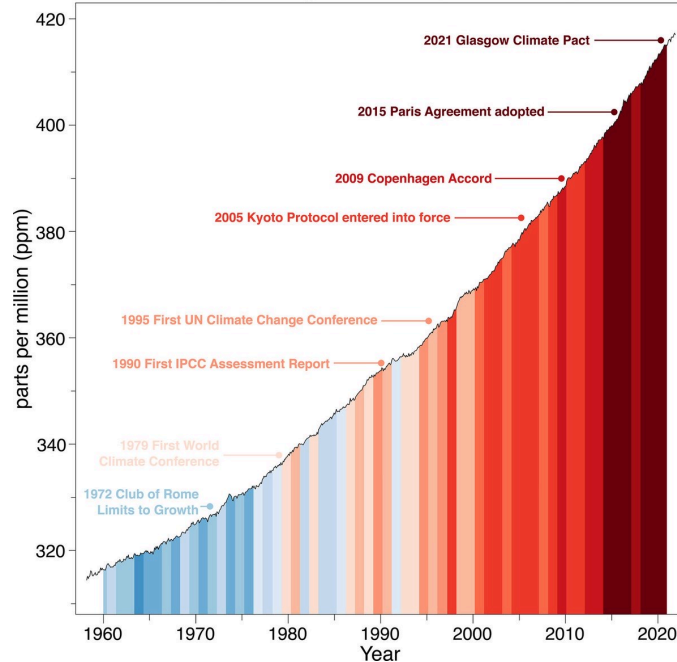
Disastrous events included flash flooding in Africa and wildfires in Europe and North America



23

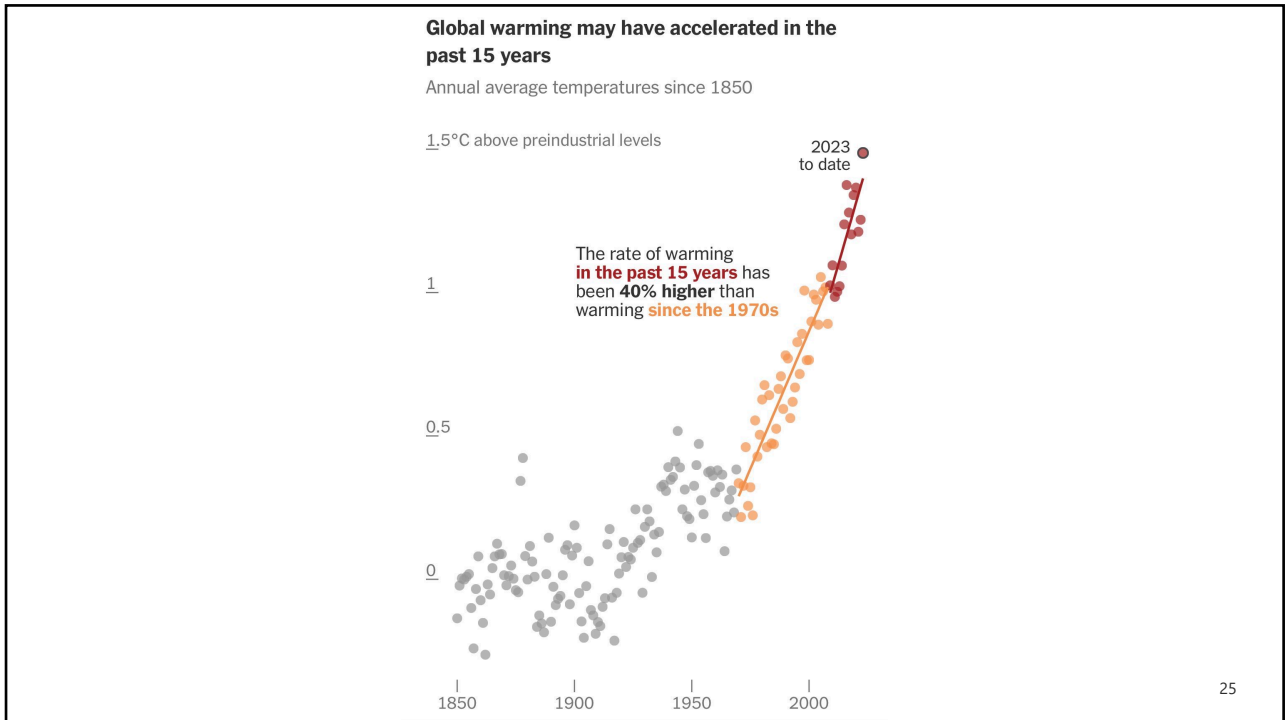
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Trends in Atmospheric CO₂ vs Global Temperature Change

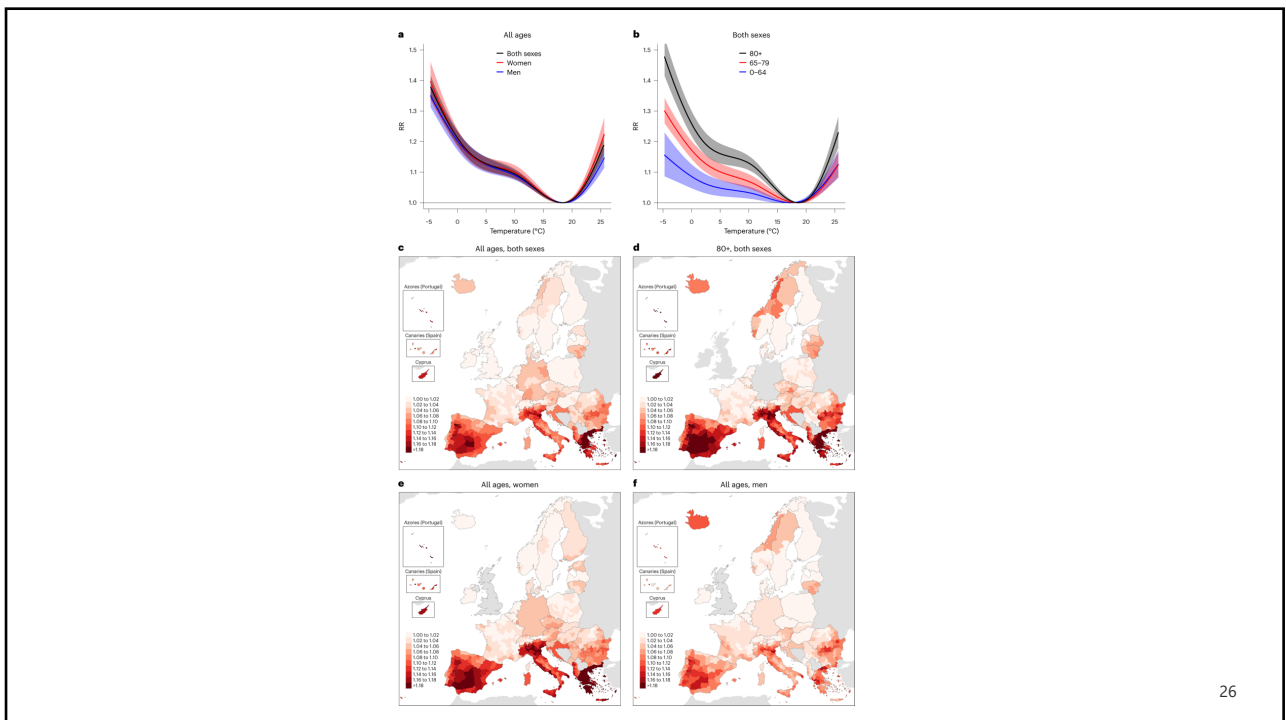


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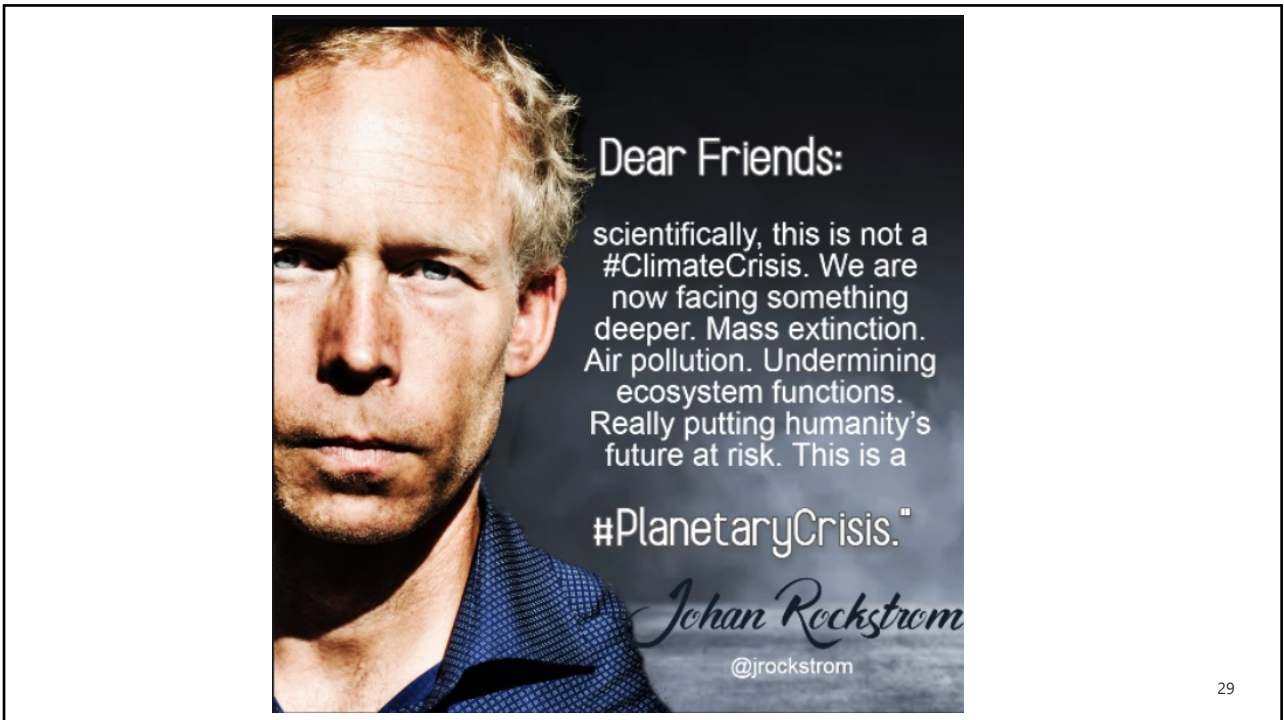
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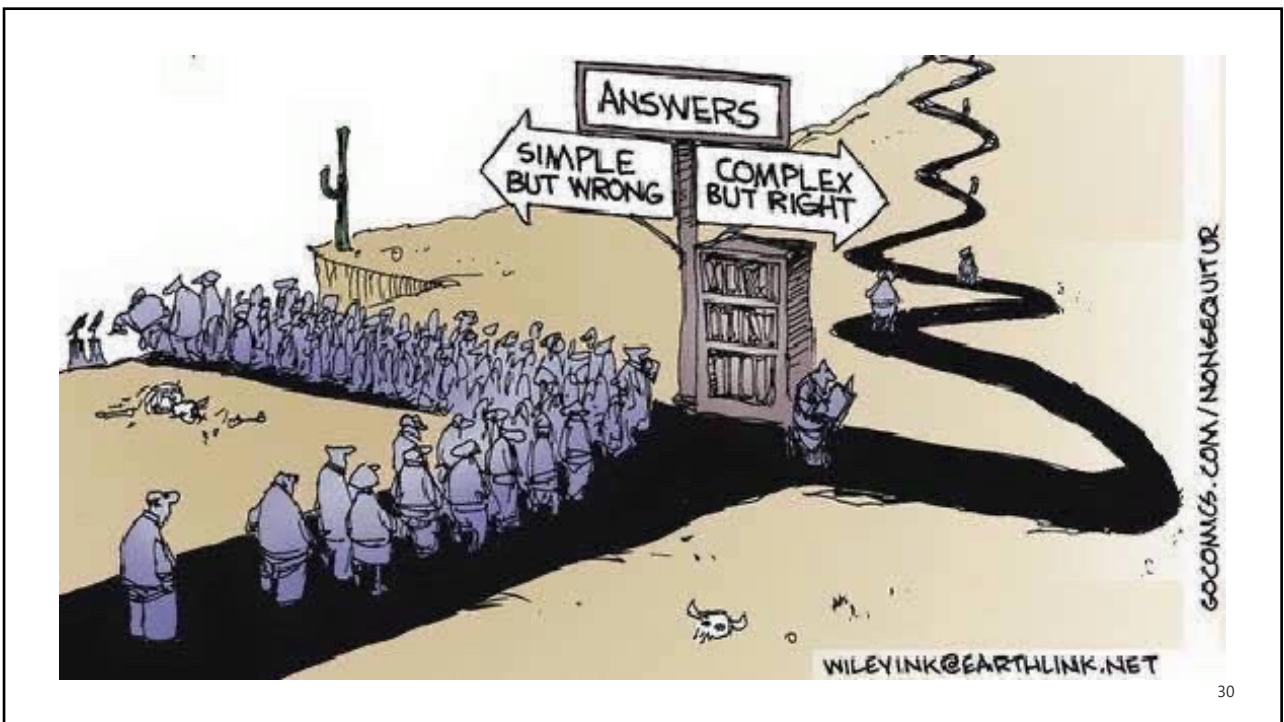


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3 examples

Vaccines

Cancer

Neonatology

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**Vaccines
are widely
considered one
of civilization's
greatest health
achievements.**

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Vaccines save lives

33

33

Vaccines are the most cost-effective health care interventions there are.

A dollar spent on a childhood vaccination not only helps save a life, but greatly reduces spending on future healthcare.

Ezekiel Emanuel, NIH

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Vaccines are not perceived as a value technology

35

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New data indicates declining confidence in childhood vaccines of up to 44 percentage points in some countries during the COVID-19 pandemic

New UNICEF report shows 67 million children missed out on one or more vaccinations over three years due to service disruption caused by strained health systems and diversion of scarce resources, conflict and fragility, and decreased confidence.

 **health** Life, But Better Fitness Food Sleep Mindfulness Relationships

Health misinformation and lack of confidence in vaccines continue to grow, years after the Covid-19 pandemic, survey shows

 By Carma Hassan, CNN
© 3 minute read · Published 8:08 PM EDT, Wed November 1, 2023

[Hum Vaccin Immunother](#). 2023; 19(1): 2213117.

PMCID: PMC10294724

Published online 2023 Jun 8. doi: [10.1080/21645515.2023.2213117](https://doi.org/10.1080/21645515.2023.2213117)

PMID: [37290478](https://pubmed.ncbi.nlm.nih.gov/37290478/)

Declining trends in vaccine confidence across sub-Saharan Africa: A large-scale cross-sectional modeling study

[A. de Figueiredo](#), ^a [E. Temfack](#), ^b [R. Tajudeen](#), ^b and [H. J. Larson](#) ^{a, c}

▶ [Author information](#) ▶ [Copyright and License information](#) [PMCID Disclaimer](#)

Hum Vaccin Immunother

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Invited Commentary | Public Health



September 17, 2021

HPV Vaccination Is Safe—You Don't Have to Whisper It

Nosayaba Osazuwa-Peters, BDS, PhD, MPH, CHES^{1,2}; Rebecca L Rohde, MD, MPH³; Eric Adjei Boakye, PhD^{4,5}

» Author Affiliations | Article Information

JAMA Netw Open. 2021;4(9):e2125124. doi:10.1001/jamanetworkopen.2021.25124

Related Articles

Downward trend in HPV vaccine coverage continued: HPV coverage down by >15% since 2019

HPV vaccines have been introduced in 116 countries that represent a third of the global population of girls.

HPV vaccine coverage is on downwards trend reflecting COVID-19 pandemic effects. Only 12% of girls are fully protected.

Currently a third of the world's population of girls 9-14 years of age live in countries that provide the HPV vaccine.

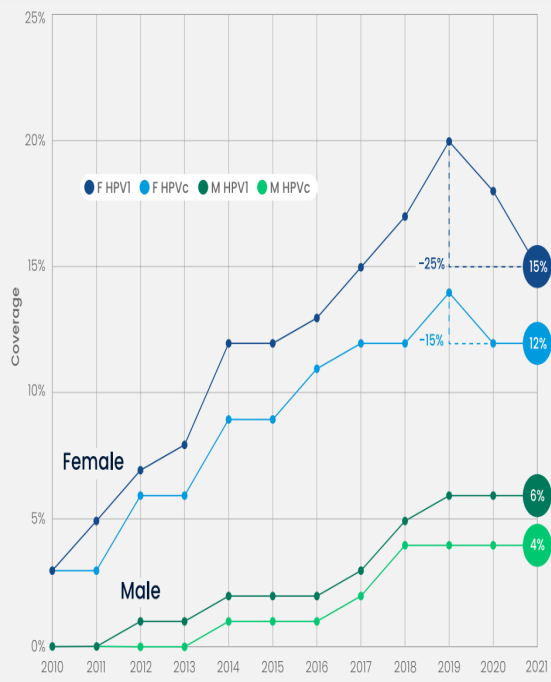
Globally, the mean coverage HPV programmes achieve is 55% for the first and 44% for the last dose of HPV.

This low coverage combined with the large population that lacks access to HPV vaccines results in a very low global coverage of 12%.

The number of countries providing male vaccination has increased to 42.



WUENIC 2021



Vaccines are not perceived as a value technology

Politicians

Managers

Professionals

Patients

Citizens

Industry

Media

39

39

because

Politicians: want to be elected, loved and stay in power

Managers: want to keep a proper budget

Professionals: want to do a good job

Patients: want to go back to health

Citizens: want to pay less taxes and enjoy life

Industry: want to return on investment and make profit

Media: want to increase their share and clicks

40

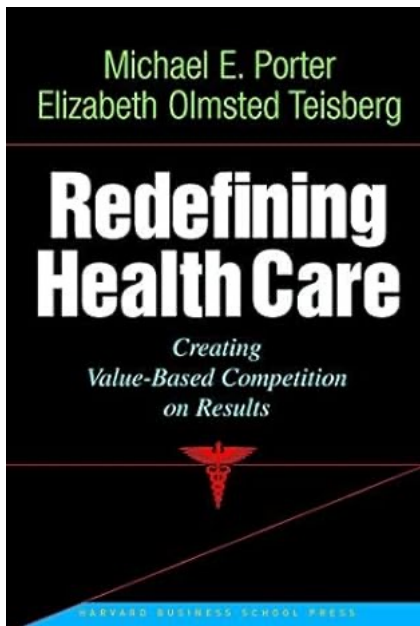
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The only way to reconcile

is a Value Based Approach

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$$\text{Patient Value} = \frac{\text{Health Outcome}}{\text{Costs}}$$

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VBHC: Operationalisation of & Guiding Principles for Solidarity in Healthcare

Chair: Lasse Lehtonen
 Rapporteur: Claudia Wild
Walter Ricciardi

Pedro Pita Barros
 Werner Brouwer
 Jan DeMaeseneer
 Dionne Kringos
 Martin McKee
 Liube Murauskiene
 Sabina Nuti
 Luigi Siciliani

Experts: Muir Gray,
 Bjørn Hofmann, Nicola Bedington

https://ec.europa.eu/health/expert_panel/sites/expertpanel/files/024_valuebasedhealthcare_en.pdf



DEFINING VALUE IN "VALUE-BASED HEALTHCARE"

Report of the Expert Panel on effective ways of investing in Health (EXPH)

- 1. ACCESS AND EQUITY** (SOCIAL JUSTICE, FAIRNESS)
- 2. QUALITY AND PERFORMANCE** (RESPONSIVE, APPROPRIATE & SAFE CARE)
- 3. EFFICIENCY AND PRODUCTIVITY** (OPTIMIZATION AND DISTRIBUTION OF RESOURCES)

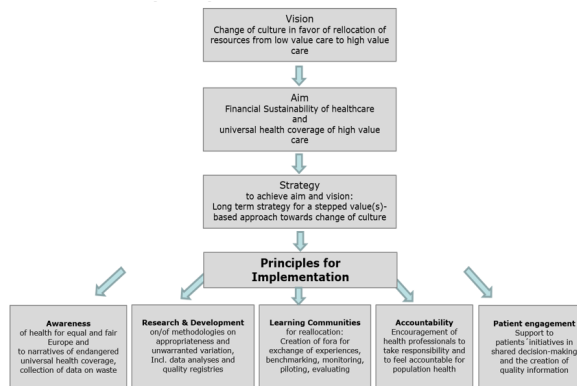
HEALTH IS CONSIDERED TO BE AN *INTRINSIC* VALUE: A **PRECONDITION** FOR PURSUING A "GOOD LIFE", FOR OBTAINING OTHER (VITAL) GOALS WHAT PEOPLE WISH TO PURSUE IN LIFE. SINCE **UNIVERSAL HEALTHCARE** INTENDS TO PROVIDE HEALTH TO THE POPULATION (PATIENT POPULATIONS AS MUCH AS THE WHOLE POPULATION) THE "**EQUITABLE**" **ACHIEVEMENT OF HEALTH FOR ALL** IS THE AIM AS **PRECONDITION FOR SOCIAL COHESIVE SOCIETIES.**

DEFINING VALUE IN "VALUE-BASED HEALTHCARE": RECOMMENDATIONS & PROPOSALS FOR ACTION



DEFINING VALUE IN "VALUE-BASED HEALTHCARE"

Report of the Expert Panel on effective ways of investing in Health (EXPH)





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« Mission » concept

2018



MISSIONS

Mission-Oriented
Research & Innovation
in the European Union

A problem-solving approach to fuel innovation-led growth
by Florence MAZZUCATO



46

The Mission-oriented research and innovation approach

« Missions provide a solution, an opportunity, and an approach to address the numerous **challenges that people face in their daily lives** ».

Professor Mariana Mazzucato



47

« Mission » concept



Commissioner Moedas and Professor Mazzucato



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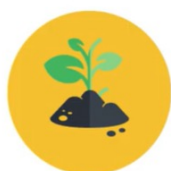
5 Mission Areas



Adaptation to climate change, including societal transformation



Cancer



Soil health & food



Climate-neutral & smart cities



Healthy oceans, seas, coastal & inland waters



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Goals of Missions

- to give direction to European research and innovation in solving society's pressing challenges and produce tangible results
- to involve citizens and stakeholders more closely in setting research priorities, but not only, which will lead to equal access for everyone in Europe to the best of European innovation & research, resources, and global know-how



50

Reports of the 5 Missions
Sept 2020



Proposed Mission
**CONQUERING CANCER:
MISSION POSSIBLE**
Report of the Mission Board for Cancer

Independent Report

<https://op.europa.eu/en/web/eu-law-and-publications/publication-detail/-/publication/d0235612-b68a-11ea-bb7a-01aa75ed71a1>



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Green light for the 5 Missions
September 2021

Launch of the 5 Missions
Implementation Plans
29 September 2021
€1.9 billion until 2023.



https://ec.europa.eu/info/publications/implementation-plans-eu-missions_en



52

5 intervention areas to reach The Cancer Mission target

**13 patient/citizen centered
recommendations for bold actions**

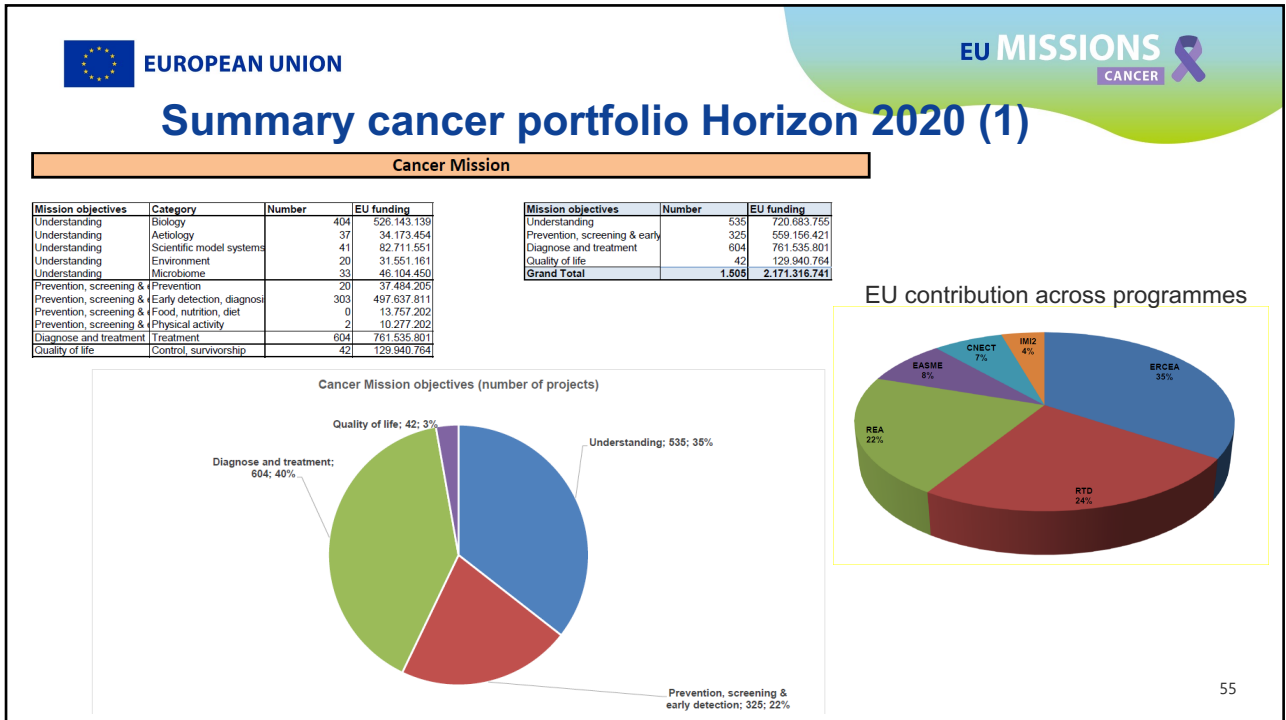
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13 Bold recommendations for bold actions

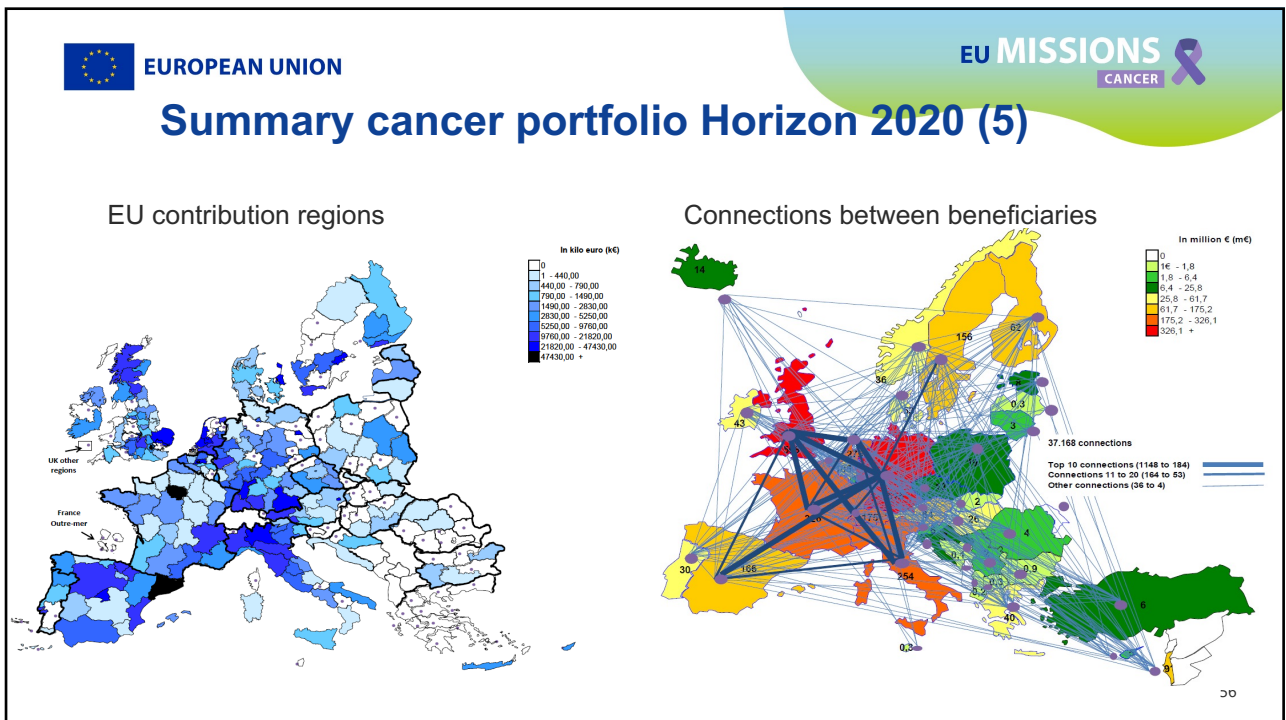
- 1 Launch **UNCAN.eu** – a European Initiative to Understand Cancer
- 2 Develop an EU-wide research programme to identify **(poly-) genic risk scores**
- 3 Support the development and implementation of **effective cancer prevention strategies and policies** within Member States at the EU
- 4 Optimise existing **screening programmes** and develop novel approaches for screening and early detection
- 5 Advance and implement **personalised medicine approaches** for all cancer patients in Europe
- 6 Develop an EU-wide research programme on **early diagnostic and minimally invasive treatment/ technologies**
- 7 Develop an EU-wide **research programme and policy support to improve the quality of life** of cancer patients and survivors, family members and carers, and all persons with an increased risk of cancer
- 8 Create a **European Cancer Patient Digital Centre** where cancer patients and survivors can deposit and share their data for personalised care
- 9 Achieve **Cancer Health Equity** in the EU across the continuum of the disease
- 10 Set up a **network of Comprehensive Cancer Infrastructures** within and across all EU Member States to increase quality of research and care
- 11 **Childhood cancers and cancers in adolescents and young adults: cure more and cure better**
- 12 Accelerate **innovation** and implementation of new technologies and **create Oncology-focused Living Labs** to conquer cancer
- 13 **Transform cancer culture, communication and capacity building**

- « **With ERNs** »
- « **Rare Cancers** »
- « **Model of ERNs** »
- « **Link with ERNs** »
- « **Cross border** »
- « **Network** »

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Work of the Mission Board
Advise on the Implementation of Mission Actions May 2021
In synergy with the Europe's Beating Cancer Plan

M Gabriel
DG RTD

S Kyriakides
DG Santé



Mission on Cancer:
By 2030, more than 3 million lives saved, living longer and better

Ensure equitable access

Prevent what is preventable

Optimise diagnostics and treatment

Support quality of life

Understand

Prevention

Early detection

Diagnosis & treatment

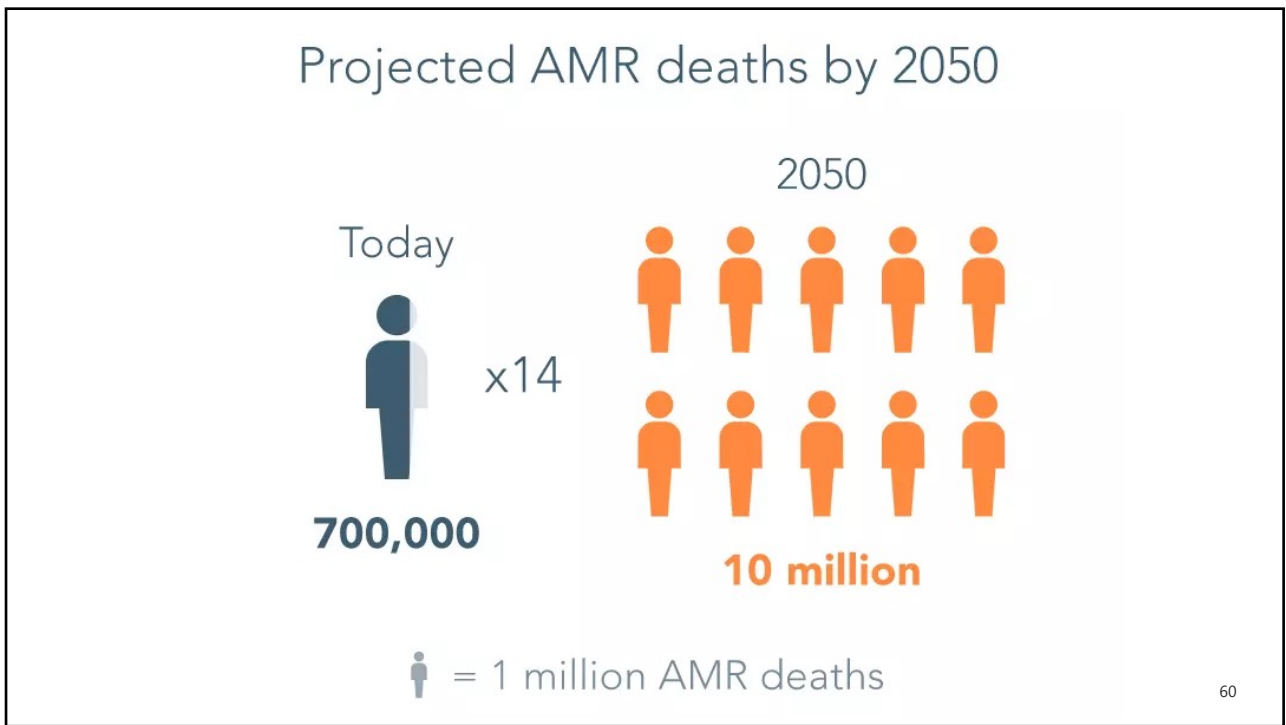
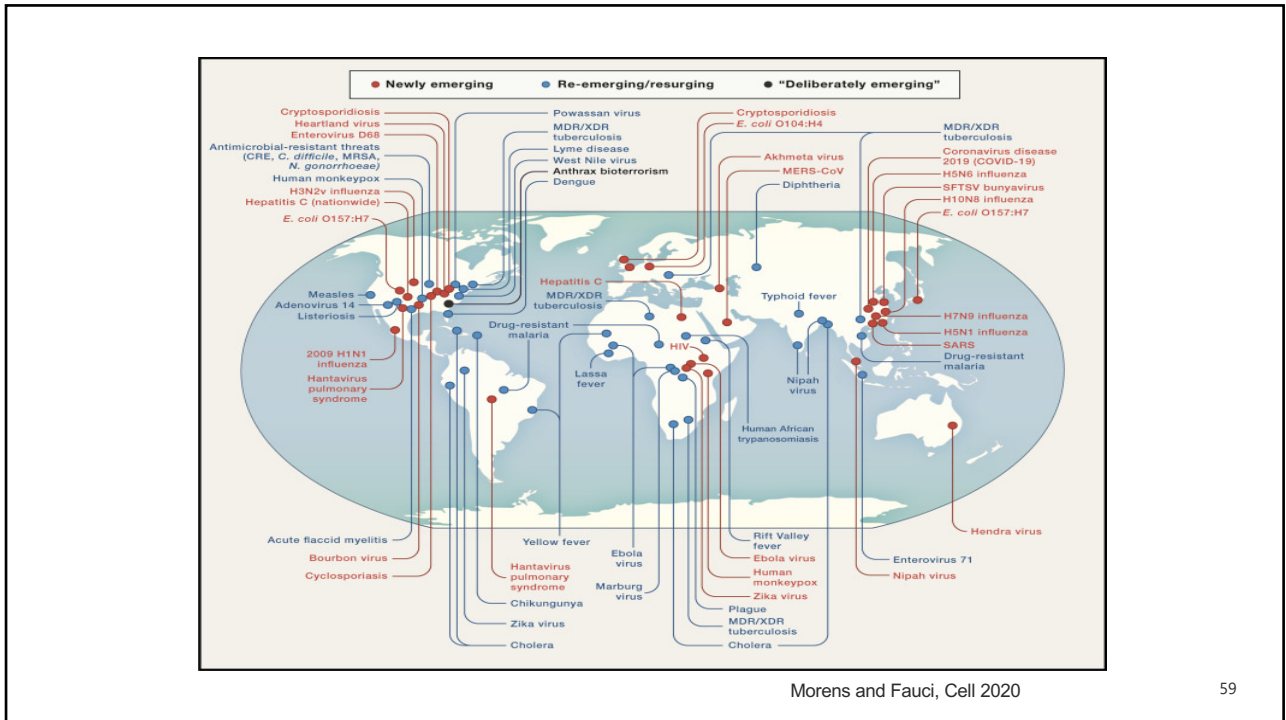
Quality of life for patients and survivors

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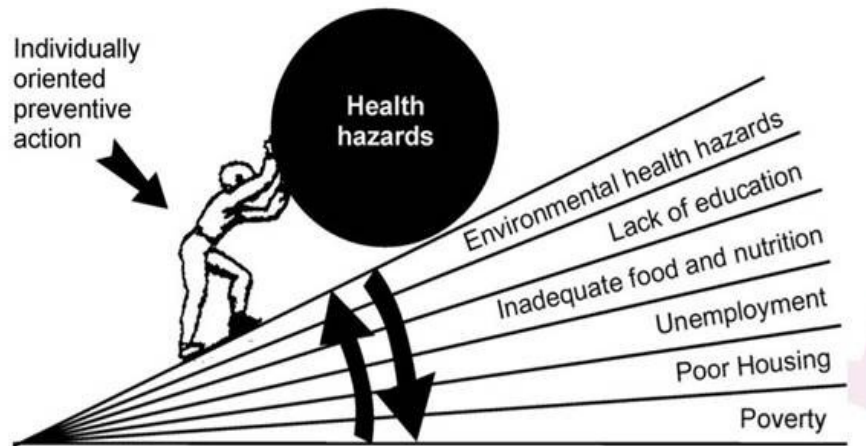
Can we try to do the same for vaccinations?

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The Health Gradient



Source: adapted from Making Partners: intersectoral action for health.

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The Mission Board on
Vaccination in Europe

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The Mission Board on Vaccination in Europe (MBVE)

MBVE goal: to identify, promote & support the implementation of ambitious targets to strengthen Europe's immunisation systems, with a particular focus on decision-making on vaccination policies and programmes.

Multi-disciplinary collaboration

Multi-disciplinary academic experts from 11 EU Member States (+ the UK), health care & public health professionals, civil society, patient representatives, and industry.

MBVE Consensus Paper

Containing recommendations for action at European & national level – *to be finalised by end of 2023*

Members of the Mission Board: National experts

<div style="background-color: #002060; color: white; padding: 5px; margin-bottom: 5px;"> Austria </div> <p>Eva Höttl, Austrian Society for Vaccinology</p>	<div style="background-color: #002060; color: white; padding: 5px; margin-bottom: 5px;"> Lithuania </div> <p>Vytenis Andriukaitis, European Institute for Health and Sustainable Development</p>
<div style="background-color: #002060; color: white; padding: 5px; margin-bottom: 5px;"> Belgium </div> <p>Greet Hendrickx, University of Antwerp Pierre Van Damme, University of Antwerp</p>	<div style="background-color: #002060; color: white; padding: 5px; margin-bottom: 5px;"> The Netherlands </div> <p>Maarten Postma, University Medical Centre Groningen, Chair of Global Health</p>
<div style="background-color: #002060; color: white; padding: 5px; margin-bottom: 5px;"> Germany </div> <p>Heidrun Thaiss, German Society for Social Paediatrics and Adolescent Medicine</p>	<div style="background-color: #002060; color: white; padding: 5px; margin-bottom: 5px;"> Poland </div> <p>Marcin Czech, Institute of Mother & Child, Head of Department of Pharmacoeconomics</p>
<div style="background-color: #002060; color: white; padding: 5px; margin-bottom: 5px;"> Hungary </div> <p>Zsófia Mézner, National Institute of Paediatrics Heim Pal, Budapest</p>	<div style="background-color: #002060; color: white; padding: 5px; margin-bottom: 5px;"> Portugal </div> <p>João Paulo Magalhães, Portuguese National Association of Public Health Doctors</p>
<div style="background-color: #002060; color: white; padding: 5px; margin-bottom: 5px;"> Italy </div> <p>Chiara de Waure, University of Perugia, Associate Professor at the Department of Medicine and Surgery</p>	<div style="background-color: #002060; color: white; padding: 5px; margin-bottom: 5px;"> Slovakia </div> <p>Miloš Jeseňák, Associate Professor of Pediatrics, Comenius University, Bratislava</p>
	<div style="background-color: #002060; color: white; padding: 5px; margin-bottom: 5px;"> Spain </div> <p>José Antonio Navarro Alonso, Former Head of Immunisation Programme, Region of Murcia Department of Health</p>

Members of the Mission Board: **EU stakeholders**

EU-level non-institutional stakeholders

- Active Citizenship Network | Mariano Votta
- Coalition for Life Course Immunisation | Daphne Holt
- European Cancer Organisation | Silvia Romeo
- European Public Health Alliance
- European Public Health Association | Chiara De Waure
- Federation of European Academies of Medicine
Professor George Griffin and Elisa Corritore
- European Regional & Local Health Authorities | Michele Calabro
- European Patients Forum, Anca Toma | Executive Director

Other academic experts

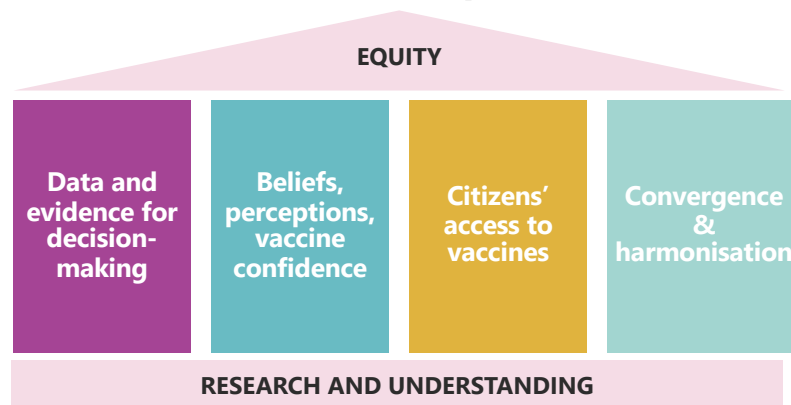
- Heidi Larson | The Vaccine Confidence Project
- Emilie Karafillakis | The Vaccine Confidence Project
- Peter Piot | London School of Hygiene and Tropical Medicine

Scientific Secretariat

- Università Cattolica del Sacro Cuore, Rome
Annalisa Calabro, Chiara Cadeddu and Floriana D'Ambrosio



Mission temple for vaccination in Europe



we did in less than a year what we did in the Mission Board in two years



Implementation Phase 2024-26

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MBVE 3-year implementation phase

I. MBVE Flagship programmes

Led by Members of the Mission Board, underpinned by KPIs
Each flagship to seek its own funding (public/private)

Year 1 2 flagships to be initiated	Year 2 2 flagships to be initiated	Year 3 2 flagships to be initiated
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The Lancet Child and Adolescent Health Commission on the Future of Neonatology

Daniele De Luca (PhD),^{1,2} Neena Modi³, Peter Davis,^{4,5} Satoshi Kusuda, Saskia De Wildt, Martin Keszler, Allyah Abbas-Hanif, Sandra Juul, Mark Turner, Jane Pillow, Nikki Robertson, Manuel Sanchez-Luna, David Tingay, Alexandra Benachi, Flavia Bustreo, Gianluca Ianiro, Mark Hanson, Jan Deprest, Paolo De Coppi, Agnes van den Hoogen, William Tarnow-Mordi, Anna Zanin, Ju-Lee Oei,[^] Huayan Zhang, Victor Javier Lara-Diaz, Lloyd Tooke, Heide Flori, Walter Ricciardi and Steven Abman *

1. Physiopathology and Therapeutic Innovation Unit-INSERM U999, Paris Saclay University (Paris, France)
 2. Division of Paediatrics and Neonatal Critical Care, “A.Beclere” Medical centre, APHP-Paris Saclay University (Paris, France)
 3. Section of Neonatal Medicine, School of Public Health, Chelsea and Westminster Hospital campus, Imperial College London, London, UK
 4. Department of Obstetrics, Gynaecology and Newborn Health, University of Melbourne, Victoria, Australia.
 5. Department of Neonatal Services, The Royal Women’s Hospital, Melbourne, Victoria, Australia.
- * Pediatric Heart Lung Center, Department of Pediatrics, University of Colorado Anschutz School of Medicine (Aurora CO, USA)
[^]School of Paediatrics, Faculty of Medicine and Health, University of New South Wales, Sydney, Australia
[^]Department of Newborn Care, the Royal Hospital for Women, Randwick, NSW, Australia
[^]Department of Addiction Medicine, Murrumbidgee Local Health District, NSW, Australia

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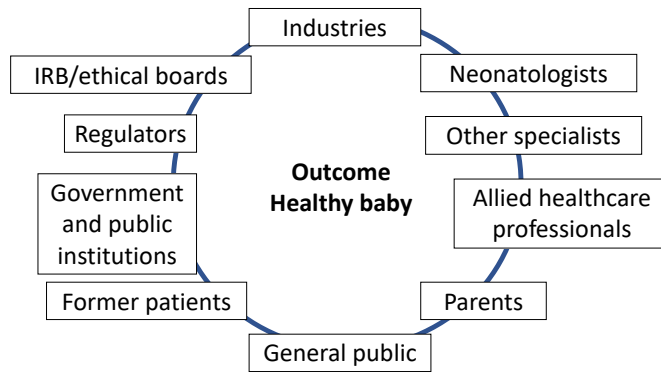
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Figure 5. Recommendations from the Lancet CAH Commission for the future of neonatology.



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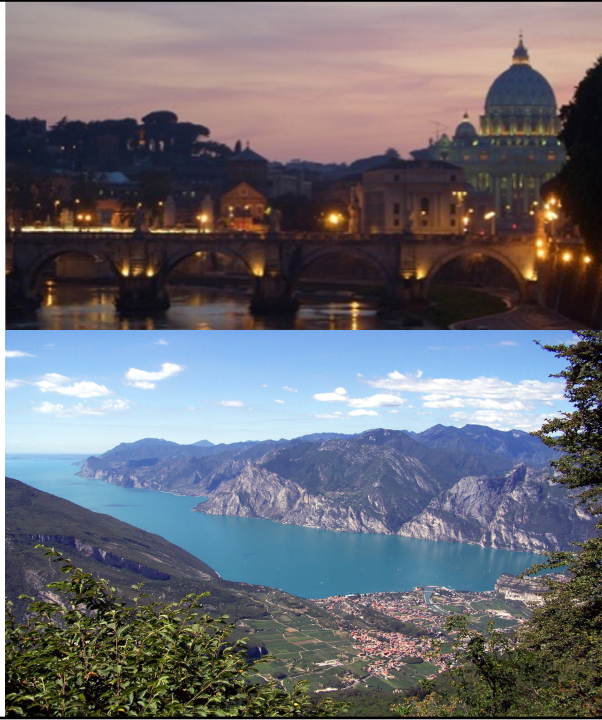
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The future is not a destination like Rome or the Garda Lake waiting for our arrival



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it is something like a bridge that we
have to imagine plan and build



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Thanks for your attention

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