

Why we need research capabilities in place in every healthcare setting if we are to prevent the next pandemic

John Amuasi (MBChB. MS. MPH. PhD. FWACP.)

- Head, Department of Global Health, School of Public Health, Kwame Nkrumah University of Science and Technology (KNUST)
- Leader, Global Health and Infectious Diseases Research Group, Kumasi Collaborative Center for Research in Tropical Medicine (KCCR at KNUST) and Bernhard Nocht Institute of Tropical Medicine, Hamburg, Germany
- Adjunct Assistant Professor, University of Minnesota School of Public Health, USA
- Honorary Visiting Research Fellow, Oxford University, Nuffield Department of Medicine, UK
- Executive Director, African Research Network for Neglected Tropical Diseases
- Co-Chair, The Lancet One Health Commission
- Board member, The Soulsby Foundation
- Board member, American Society of tropical Medicine and hygiene

PREVENTING THE NEXT PANDEMIC:

Research capabilities in healthcare settings



The Next Pandemic



INTRODUCTION:

+135m

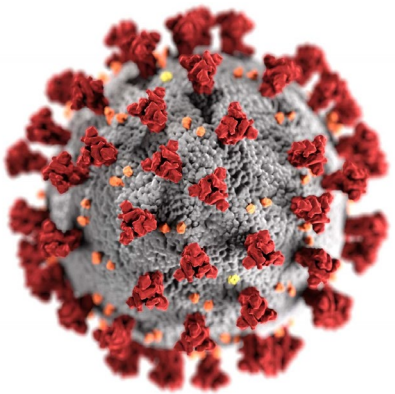
People pushed into
poverty by 2030

Increasing Health Care Need

NCD

Excess Mortality

NCDs



125 million cases with
Over 2,700,000
deaths globally

We face some of the biggest existential health threats ever!

- Pandemics of emerging and re-emerging infections
- Ecosystem loss & biodiversity collapse
- Antimicrobial resistance
- Rising food insecurity
- Climate change and its consequences

... and many others

The rationale for embedding a research culture is unshakeable







**There is not guarantee the
world (humans in
particular) will survive
every pandemic**



Marburg virus outbreak in Ghana: An impending crisis

Jack Wellington, Ayça Nur, Aderinto Nicholas, Olivier Uwishema  , Hassan Chaito
, Olutola Awosiku, Yusuf Jaafer Al Tarawneh, Jana Abdul Nasser Sharafeddine
, Chinyere Vivian Patrick Onyeaka, Helen Onyeaka

The high costs of leaving some behind

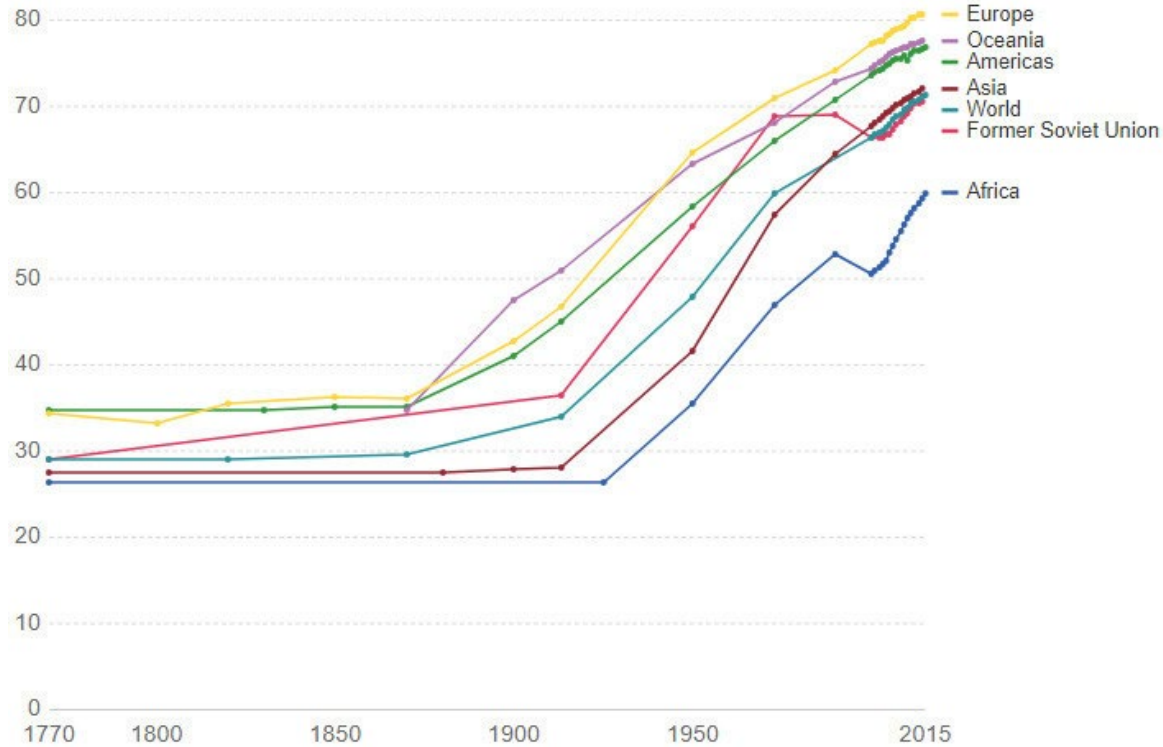
Due to globalization and other factors, a
health threat anywhere is a threat everywhere

Lessons from:

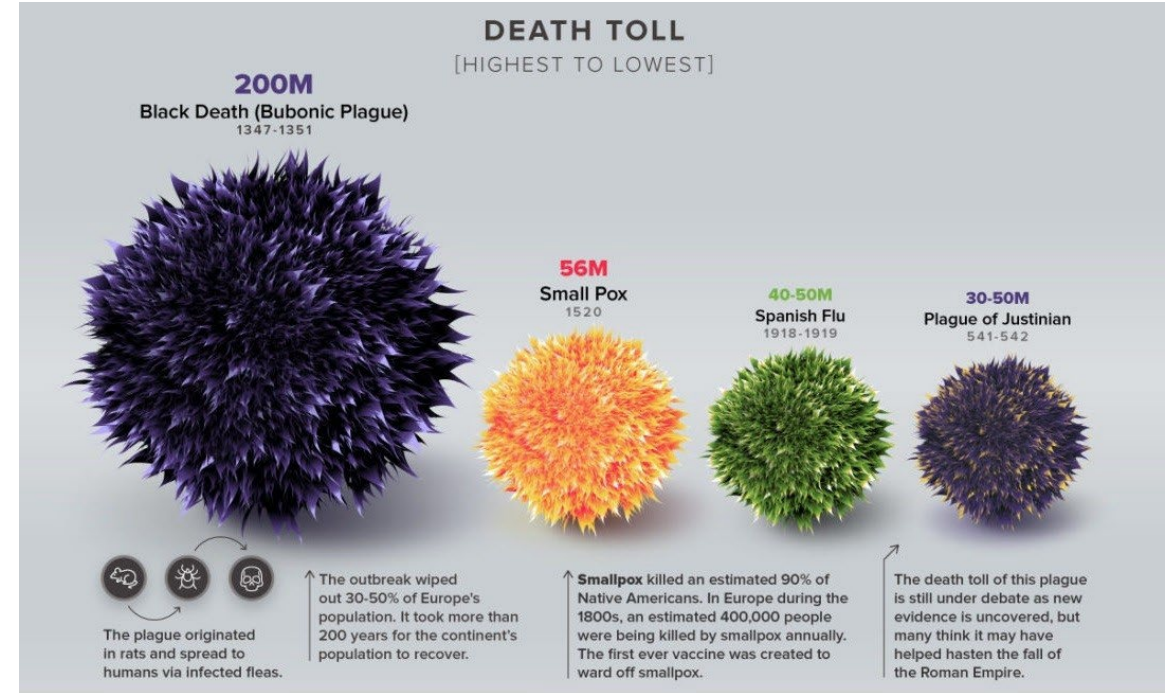
- The 2014 West African Ebola Epidemic
- COVID-19
- Ghana Marburg (scare?) 2022

Life expectancy globally and by world regions since 1770

Our World
in Data



Source: Life expectancy – James Riley for data 1990 and earlier; WHO and World Bank for later data (by Max Roser)



Research is key to our collective survival

For much of civilized history, life expectancy was 30 - 40 years

But what does it mean to
enable **research capacity**?

Let's try this definition:

**To develop sustainable
infrastructure, know-how,
and skills to enable
individuals and
organizations perform high
quality research**

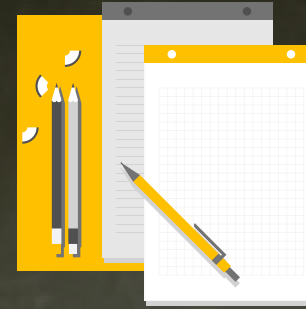




We see only what we know.

~ Johann Wolfgang von Goethe

Case identification and documentation is key and this happens in the health facilities. This is the beginning of any disease surveillance



Changing the mind-set and increasing the **alertness** level of healthcare workers for case identification



Marburg in Ghana

- Early Clinician Identification
- Early Public Health Action
- Limited Spread

Ebola in West Africa

- Late Clinician Identification
- Late Public Health Action
- Widespread infection

Emerging Microbes
& Infections



[Emerg Microbes Infect.](#) 2020; 9(1): 291–301.

Published online 2020 Feb 4. doi: [10.1080/22221751.2020.1722036](https://doi.org/10.1080/22221751.2020.1722036)

PMCID: PMC7034085

PMID: [32013784](https://pubmed.ncbi.nlm.nih.gov/32013784/)

Delayed recognition of Ebola virus disease is associated with longer and larger outbreaks



Diseases do not pick a location!

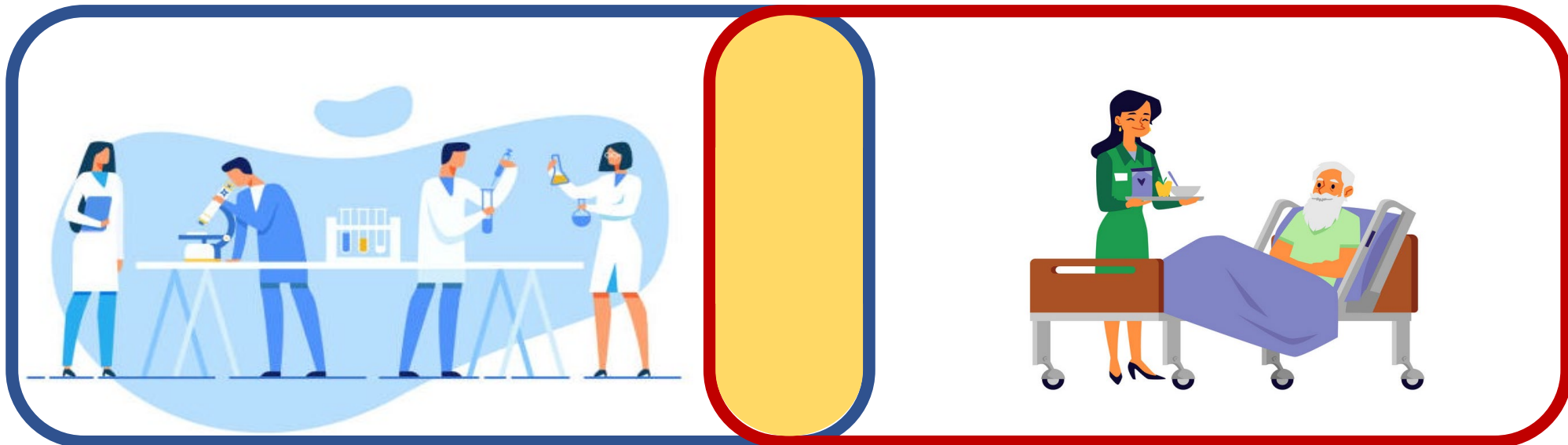
Capacity Development in urban health centers should be equal to rural health center.



Train all cadre of staff: Doctors, Nurse, PA, etc. to identify what is strange and report it

Research as a component of healthcare at all levels

- Creation of the **GOLDEN SPACE**: Embrace the culture of having research work embedded in routine disease prevention and control including treatment
- Funding allocated for registries and clinical data collection platforms
- Funding for capacity building to be research ready to run parallel to routine clinical care





LEVELS OF CARE AND RESPONSIBILITIES

(total ca. 4,000 healthcare facilities)*

LEVEL 5

Tertiary hospitals | Private: 17% | FB: 0%

6

LEVEL 4

Regional hospitals | Private: 0% | FB: 0%

9

LEVEL 3

District hospitals (364) | Private: 47% | FB: 16%

364

LEVEL 2

Health centres & clinics | Private: 43% | FB: 8%

2,346

LEVEL 1

Health posts or outreach sites, mobile health services
Private: 0% | FB: 0%

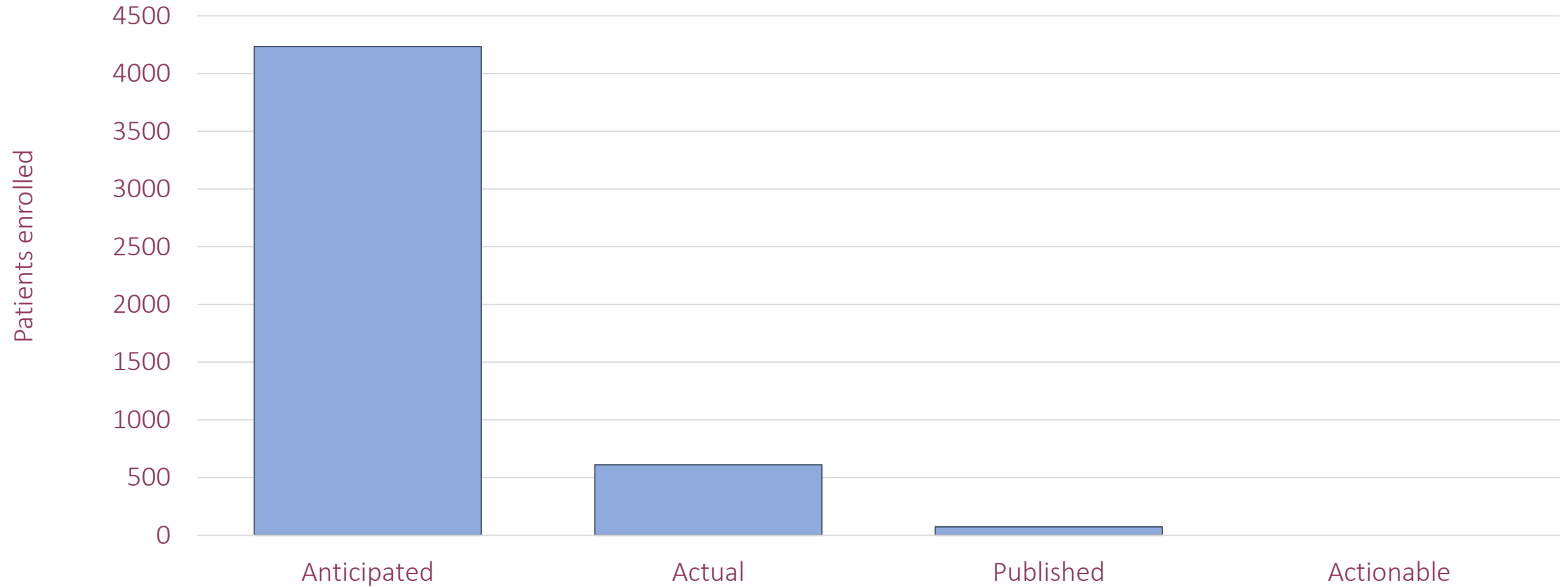
653

Responsibility of
MoH (national level)

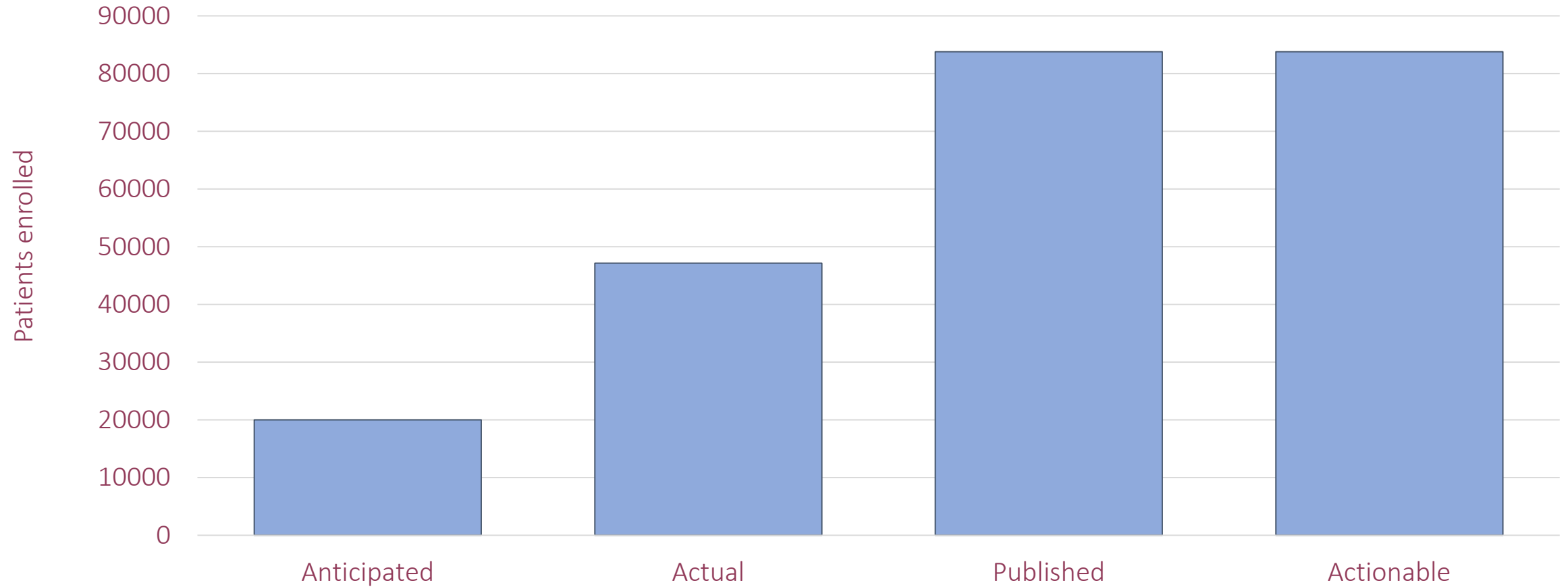
the '*epidemic research crisis*'

Shifting the curve:

2009 influenza pandemic



Shifting the curve..... the '*epidemic research crisis*'



How we accelerated the pace of coronavirus



The United Kingdom's RECOVERY trial is faster.

Nicole Mather

VERY trial
worldwide—but some say it is far from perfect.
that still surround a vital cog in the pandemic

from exceptions

SOLIDARITY timeline

- Jan WHO Working Group requests core international protocol for therapeutics against COVID-19
- 12 WHO Global Forum prioritizes therapeutic questions to be addressed initially
- WHO R&D Blueprint Scientific Advisory Group

One U.K. trial is transformed
haven't others delivered

Intensive Care Unit			
	DoA	Diagnosis	COVID TRIAL
	01/10	COVID	RECOVERY
	04/10	COVID	RECOVERY
	11/10	COVID	
	22/09	COVID	RECOVERY
	25/09	COVID	RECOVERY
	11/10	COVID	
	03/10	COVID	RECOVERY
	02/10	COVID	REMAP

Microbiology Results

CURRENT: CIPRO, REMDESIVIR
PREV: CO-AMOX, CLARI, TAZ

TAZOCIN
PREV: STAT AMIKAC

~~Co-Amox~~
~~CLARI~~
~~Dox Remdes~~

CURRENT: SEPTIN, TAZ, ZEBRAXA, TRI
PREV: MERO, LINEZOL, CASPOFUNGIN

CURRENT: MERO
PREV: Co-AMOX, CLARI, REMDESIVIR, TAZ

CURRENT: Co-AMOX, CLARI, REMDESIVIR, TAZ
PREV: TAZ

Co-AMOX, CLARI, REMDESIVIR, TAZ

Research Capabilities in Everyday Health Settings

- The case definition and identification of cases
- Sampling Skills
- Handling of samples
- Documentation
- Ethics of Research



Research Capacity: Educational Approaches

Online courses

Pre-course reading materials

Lectures, Case studies and Bedside teaching

Group work and Presentations

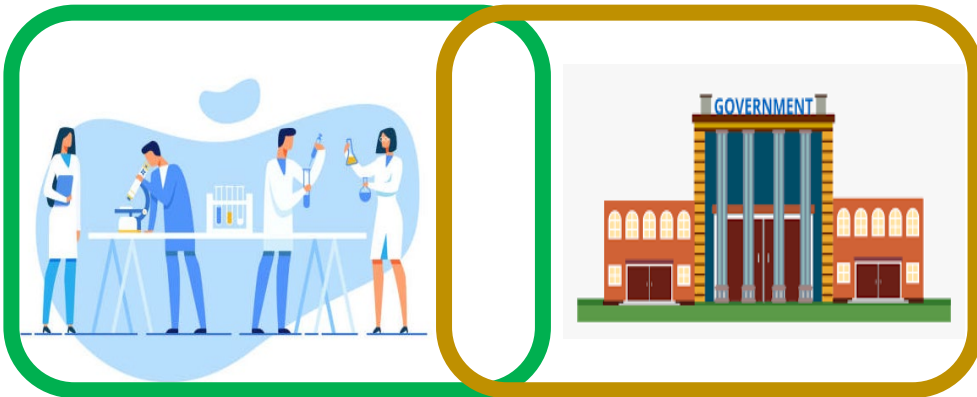
Practical sessions involving simulations and role playing



This
works!



Researchers and Government engagement



Promoting understanding of the role of research

Research independence

Uptake of research into policy and implementation of research

Challenges



Ethical clearance delays



Implementation and training



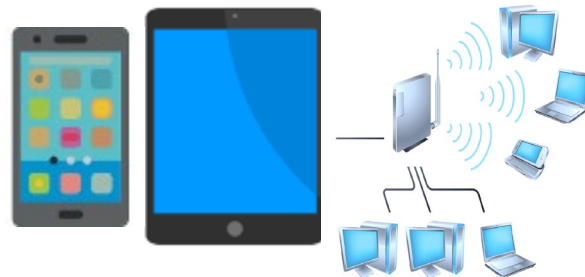
Politics



Monitoring



**Collaboration and
Resource mobilization**



Tools and technology

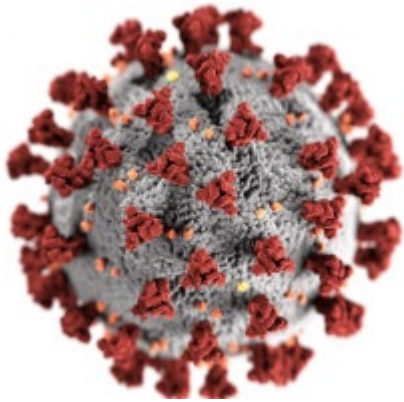


Quick and relevant output

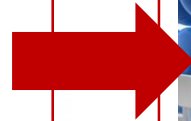


Race against time

Conclusion



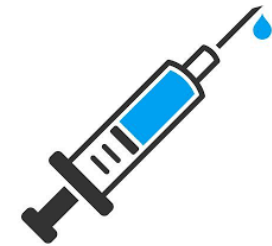
Global health emergency



Research and output

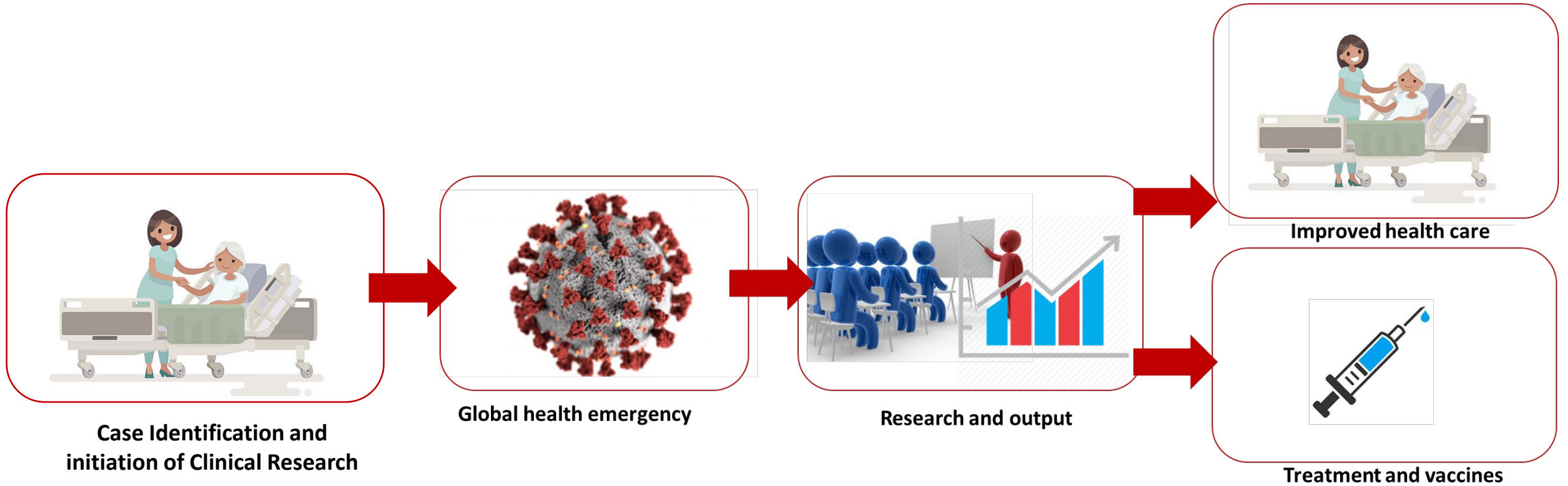


Improved health care



Treatment and vaccines

Conclusion



Behold, the TEAM! *Global Health and Infectious Diseases*

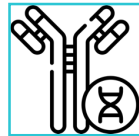
Multi-disciplinary



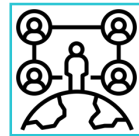
Pharmacy



Medicine



Immunology



Social Sciences



Molecular Biology



Environmental Sci.



Public Health



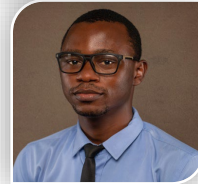
Microbiology



Biochemistry



Biostatistics & Modeling



Some GHID Staff

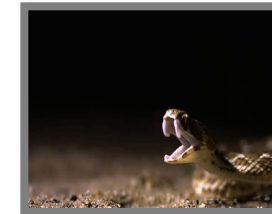


Clinical Trials

ANTICOV



RECOVERY
Randomised Evaluation of COVID-19 Therapy



Snakebite



HWS



Other Projects

ALERRT
African coalition for Epidemic Research, Response and Training

FISSA
CCP

