



World Health  
Organization

# Research during outbreak response: from Ebola to the COVID-19 pandemic

**Ana Maria Henao Restrepo MD, MSc**

Unit Lead, R&D Blueprint

WHO Health Emergencies Preparedness & Response

World Health Organization

**February, 2021**



**R&D Blueprint**

Powering research  
to prevent epidemics

# A consolidated approach to combating epidemics

## Preparing for the inevitable

Improved regulatory pathways

Equitable data and sample sharing including of benefits

Sustainability of funding and research capacity during inter-epidemic periods

Established surveillance systems

Resources at critical stages of the early development process

A more productive, integrated approach to research

Improved regulatory pathways

Understanding of the funding landscape:  
Timely tracking for course correction

Ethics oversight to facilitate research

## Resilient health systems

Build true global partnerships

Develop research infrastructure

Conducting research during epidemics

More innovative approaches to funding essential work

Expand clinical trials infrastructure

Strengthening local research capacity

...



**R&D Blueprint**  
Powering research  
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# A central and historic responsibility for WHO has been the management of the global regime for the control of the international spread of disease

The Constitution of WHO confers upon the WHA the authority to adopt regulations “**designed to prevent the international spread of disease**” which, after adoption by the WHA, enter into force for all WHO Member States

**1951** - International Sanitary Regulations

**1969** - The International Health Regulations

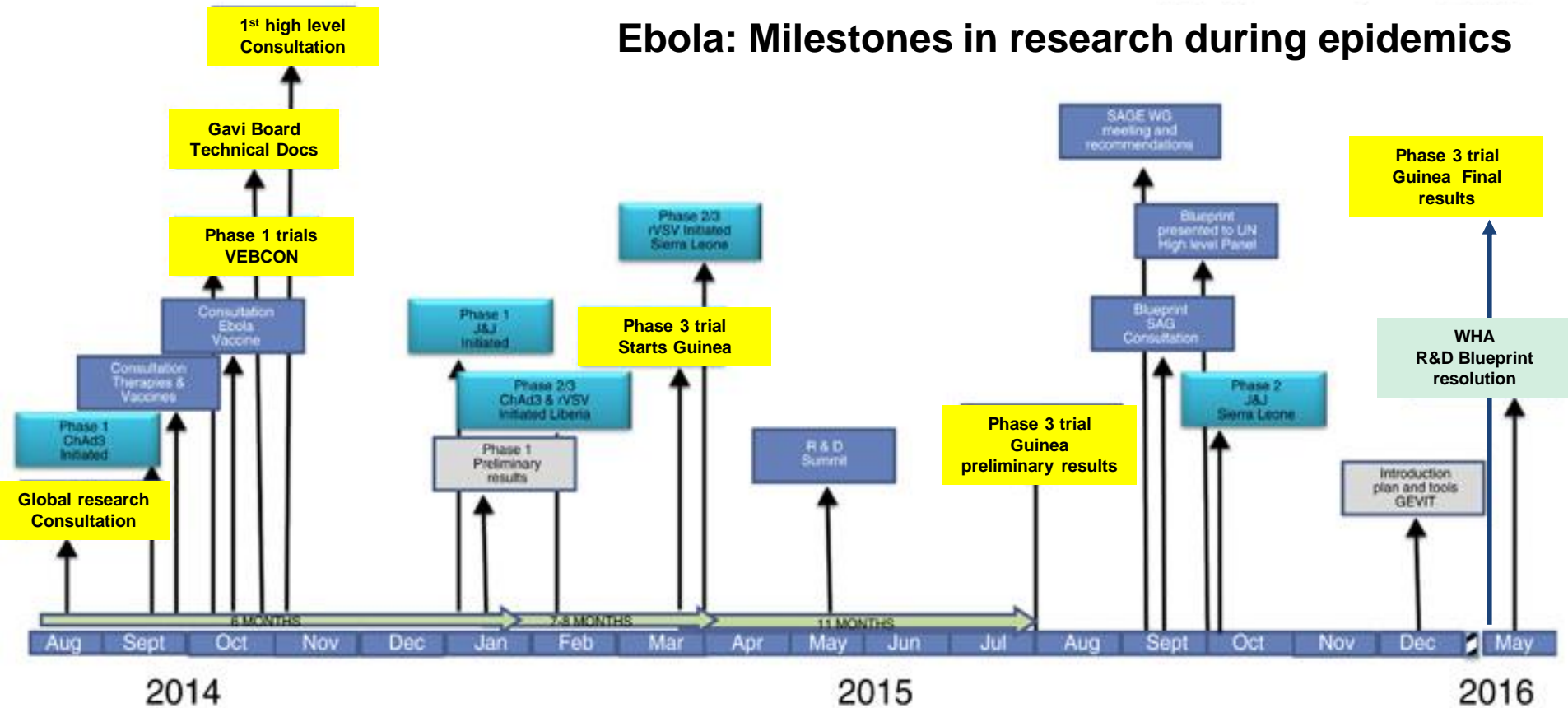
**2003** - WHA requested their revision following the emergence of severe acute respiratory syndrome (the first global public health emergency of the 21st century).

**2005** - revised IHR were adopted by the WHA

**2007** - revised IHR entered into force (15 June 2007)

**Adequate preparedness for pandemics is a national obligation under the International Health Regulations (2005)**

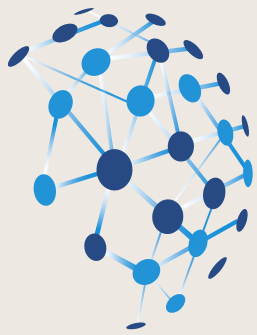
# Ebola: Milestones in research during epidemics



6 months

8 months

12 months



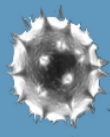
# R&D Blueprint

Powering research  
to prevent epidemics

**At the request of its 194 Member States in 2015,  
WHO has convened a broad network of experts to develop  
an R&D Blueprint for Action to Prevent Epidemics**

**In the event of an outbreak, R&D Blueprint activities shift  
from R&D preparedness to an emergency response plan**

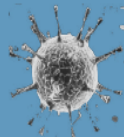
## DISEASES TO BE URGENTLY ADDRESSED UNDER THE R&D BLUEPRINT, AS OF MAY 2016



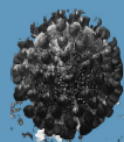
Crimean-congo  
Hemorrhagic fever  
virus



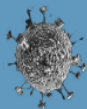
Filovirus diseases  
(i.e. EVD & Marburg)



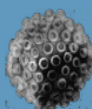
Highly pathogenic  
emerging  
coronaviruses  
relevant to humans  
(MERS Co-V & SARS)



Lassa fever virus



Nipah virus

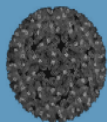


Rift Valley fever virus

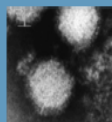
### Novel Agent

a new severe  
infectious disease

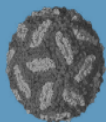
## SERIOUS DISEASES NECESSITATING FURTHER ACTION AS SOON AS POSSIBLE, AS OF MAY 2016



Chikungunya virus



Severe fever with  
thrombocytopenia  
syndrome



Congenital  
abnormalities and  
other neurological  
complications  
associated with Zika  
virus

# A consolidated approach to combating epidemics requires research preparedness and coordinated and sustained investments

Yet there remains a shortfall in funds even for the current pandemic

Health systems support and investments in research during interepidemic periods are also insufficient

# Research during epidemics

The R&D Blueprint systematic approach to accelerate research and address gaps

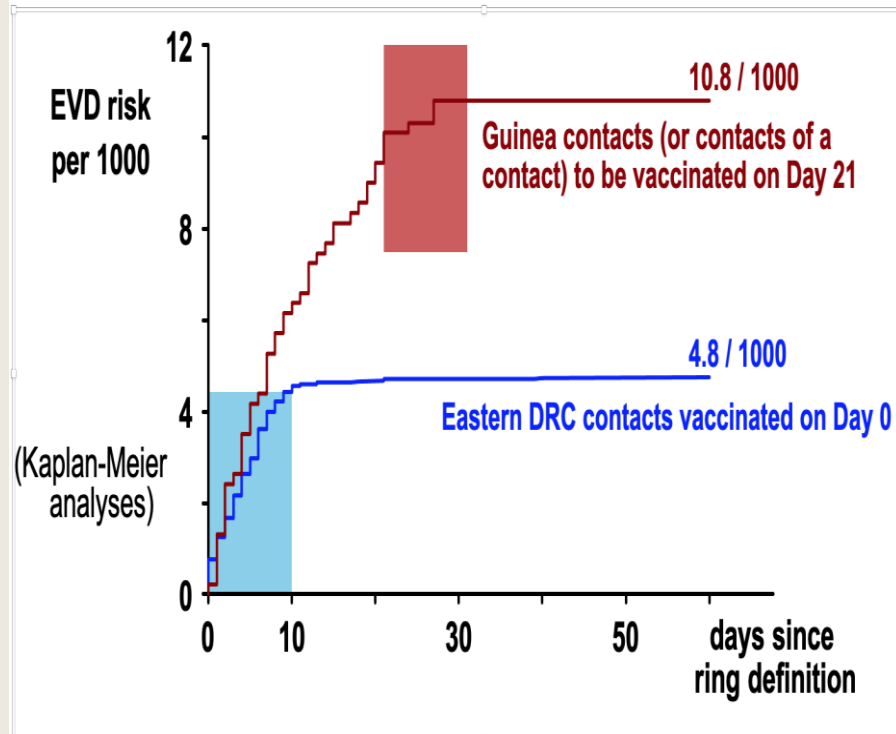
DISEASE	Generic/ methodol.	CCHF	Ebola & Marburg	Lassa fever	MERS-Cov & SARS	Nipah & henipaviruses	Rift valley fever	Zika virus	Pathogen X (COVID-19)	Plague	Chikungunya
R&D roadmap	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓
TPP Vx	✓		✓	✓	✓	✓	✓	✓	✓	✓	
TPP Tx	✓								✓		
TPP Dx	✓	✓	✓	✓		✓		✓	✓		
Regulatory standards	✓	✓	✓	✓		✓		✓	✓		
Vx trials design	✓	✓	✓	✓	✓	✓	✓	✓	CORE	✓	✓
Tx trials design	✓	✓	✓	✓	✓	✓	✓		CORE	✓	✓
Decision tree design	✓							✓			
Trial simulator	✓							✓			
Innovative analysis	✓	Accumulating evidence from randomized clinical trials across outbreaks									✓

# Since 2016, rVSV ZEBOV has been deployed using Expanded Access/Compassionate Use as part of the response in 6 outbreaks

Country/year	Days start after outbreak declaration	Number vaccinated
Guinea/Sierra Leone (2016)	7	1510
Equator, DRC (2018)	7	5000 +
Eastern Congo, DRC (2018-2020)	7	300,000+
Equator, DRC (2020)	7	40,000
Eastern Congo DRC (2021)	8	325 (ongoing)
Guinea (2021)	8	Starts tomorrow

## EVD onset in rings defined in Guinea (2015) and Eastern Congo (2018-19)

Shading indicates the first 10 days after vaccination, when little, if any, efficacy is expected. This non-randomised comparison suggests vaccine efficacy about 90-95% in Eastern Congo against late EVD onset (in days 10-84)





**A more productive, integrated approach to research during epidemics would encompass many disciplines and involve pursuit of innovative study designs and aligned and expedient regulatory pathways**

**“It will take enlightened, brave leadership and concerted action to promote multilateral, cooperative solutions. [...] Doing the right thing, doing the thing that is appealing from a humanitarian perspective, is also the efficient thing where ending the pandemic is concerned.”**

R. Hatchett, CEPI

ACT Accelerator  
ACCESS TO COVID-19 TOOLS

## ACT-A Prioritized Strategy & Budget for 2021

4<sup>th</sup> Facilitation Council  
9 FEBRUARY 2021

ACT now, ACT together to accelerate the end of the COVID-19 crisis



## A COORDINATED GLOBAL RESEARCH ROADMAP: 2019 NOVEL CORONAVIRUS

MARCH 2020

There is broad consensus on the need for research to focus on actions that can save lives now, facilitate actions so that those affected are promptly diagnosed and receive optimal care, and catalyse the full integration of all innovations within each research area.

Moreover, there is an imperative to support research priorities in a way that leads to the development of sustainable global research platforms prepared for the next disease X epidemic. This will play for accelerated research, innovative solutions and G&D of diagnostics, therapeutics and vaccines, as well as the timely and equitable access to these life-saving tools for those at highest risk.



The COVID-19 Research GloPID-R Synergies Meeting Working Group BMC Medicine  
(2020) 18:342  
<https://doi.org/10.1186/s12916-020-01807-5>

BMC Medicine

COMMENTARY

Open Access



## Ending COVID-19: progress and gaps in research—highlights of the July 2020 GloPID-R COVID-19 Research Synergies Meetings

The COVID-19 Research GloPID-R Synergies Meeting Working Group<sup>1,2,3,4,5,6,7</sup> and Meeting Co-Chairs<sup>8,9,10,11,12,13,14,15</sup>

**Keywords:** COVID-19, SARS-CoV-2, GloPID-R, COVID-19 vaccines, COVID-19 therapeutics, SARS-CoV-2 transmission, Social sciences

### Background

In mid-July, GloPID-R convened its members, scientists who had received COVID-19 funding, and world leaders in pandemic preparedness and response for a series of COVID-19 Research Synergies Meetings with the purpose of establishing collaboration and identifying knowledge gaps in order to build a collective path forward to end COVID-19. GloPID-R is an international consortium of 29 funding organisations invested in research related to new or re-emerging infectious diseases [1]. By offering a coordination platform, GloPID-R aims to maximise the use of available resources and streamline research efforts amongst national and global funders. The COVID-19 pandemic has caused unprecedented devastation to the health and economies of countries across the world and has highlighted basic inequalities

in society. Understanding the fundamentals of COVID-19 and building on a collaborative approach between researchers and institutions to achieve health equity, universal access and data sharing is critical to reduce the impact of the COVID-19 pandemic.

“Lockdowns, in my view, have been successful in helping to reduce transmission and new infections, but they haven’t changed the fundamentals of this infection. The virus biology, its transmission, how infectious it is, the clinical syndrome it causes, the inequalities it drives through the world, and of course the tertiary consequences in economics and in geopolitics. So, I think we are only very much at the start and we need to be humble about the challenge we face. We do not yet have a clear exit strategy and we need to define one.” J. Farrar, Wellcome

### Ending COVID-19: vaccines

Balancing speed, scale and access.

Presents highlighted the progress in COVID-19 vaccine development, regulatory considerations, as well as gaps in advancing the demonstration of clinical efficacy and effectiveness and challenges that must be overcome to meet the global demand for equitable access (Table 1).



## 7 FUNDER PRINCIPLES FOR RESEARCH IN EPIDEMICS & PANDEMICS

@GLOPID-R @UKCDR

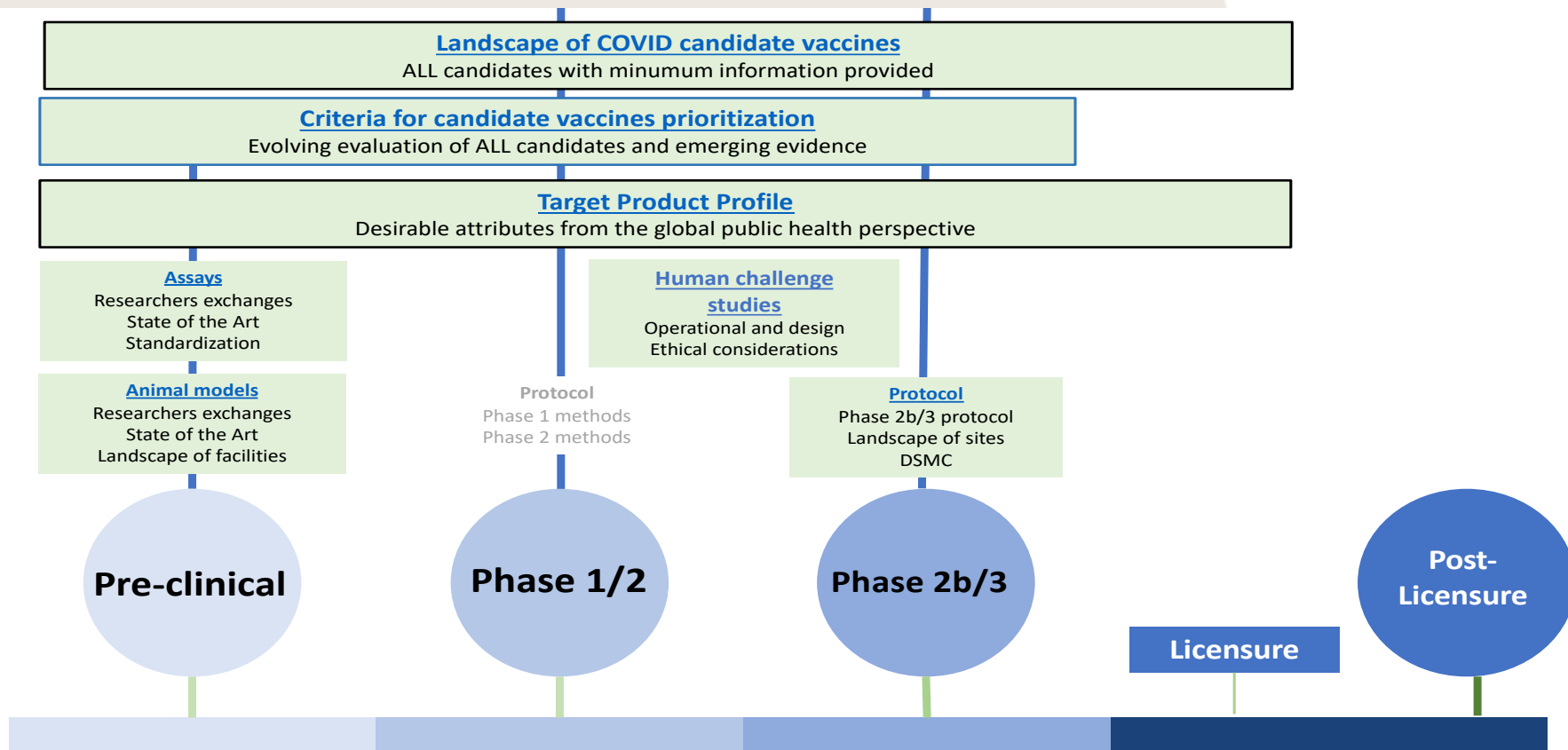
Research funders recognise that there is a need to coordinate COVID-19 research funding at all levels to prevent duplication and improve impact. This coordination should not be limited to the COVID-19 pandemic, but instead needs to facilitate ongoing improved coordination for future infectious disease epidemics and pandemics.

The [UK Collaborative on Development Research \(UKCDR\)](#) and the [Global Research Collaboration for Infectious Disease Preparedness \(GloPID-R\)](#) have agreed a set of principles to align research funders towards a coordinated effort for supporting high-quality research for the most pressing global needs in epidemics and pandemics.

**FUNDER PRINCIPLES FOR SUPPORTING HIGH-QUALITY RESEARCH FOR THE MOST PRESSING GLOBAL NEEDS IN EPIDEMICS & PANDEMICS**



# WHO's contribution to accelerate COVID-19 vaccines evaluation



# The world needs efficient, speedy, and reliable evaluation of more candidate vaccines against COVID-19.

**70** candidates in clinical phase

**181** candidates in pre- clinical phase

## Schedule and route of administration of candidates in clinical phase

Schedule	Candidate vaccines (no. and %)	
1 dose	13	19%
Day 0	13	
2 doses	42	60%
Day 0 + 14	6	
Day 0 + 21	16	
Day 0 + 28	20	
3 doses	1	1%
Day 0 + 28 + 56	1	
TBD / No Data (ND)	14	20%
	70	
Route of administration		
Oral	2	3%
Injectable	58	83%
SC	2	3%
ID	3	4%
IM	53	76%
TBD / No Data (ND)	10	14%

# **A coordinated global approach is critical WHO must continue to facilitate coordination**

**An effective response to new variants will depend on continued collaboration.**

- WHO is establishing a risk assessment framework for SARS-CoV-2 variants.

**If a range of vaccine products are required, this could exacerbate supply issues.**

- Therefore decisions on need for modified or new vaccines should be the outcome of global coordinated efforts.

**To address the threat of new variants, new vaccines may be needed, or existing platforms could be modified.**

- WHO and regulatory authorities are working to achieve regulatory alignment for vaccines targeting new variants and efforts to coordinate approaches globally.