

“Strategies for the deployment of COVID-19 vaccines”

Perspectives on policy development and country readiness

ADVAC webinar, 13 October 2020

Acknowledgements



All members of the SAGE working group of COVID-19 vaccination:

https://www.who.int/immunization/sage/sage_wg_covid-19/en/



And particular thanks to:

Ruth Faden, Saad B. Omer, Sonali Kochhar, Hanna Nohynek, Annelies Wilder-Smith.

Ann Lindstrand (on delivery)

Presentation outline



- **Some basic considerations on disease epidemiology and risk groups**
- Towards the development of vaccination policy
- Country readiness and delivery strategy considerations
- Discussion



From the WHO Coronavirus disease dashboard

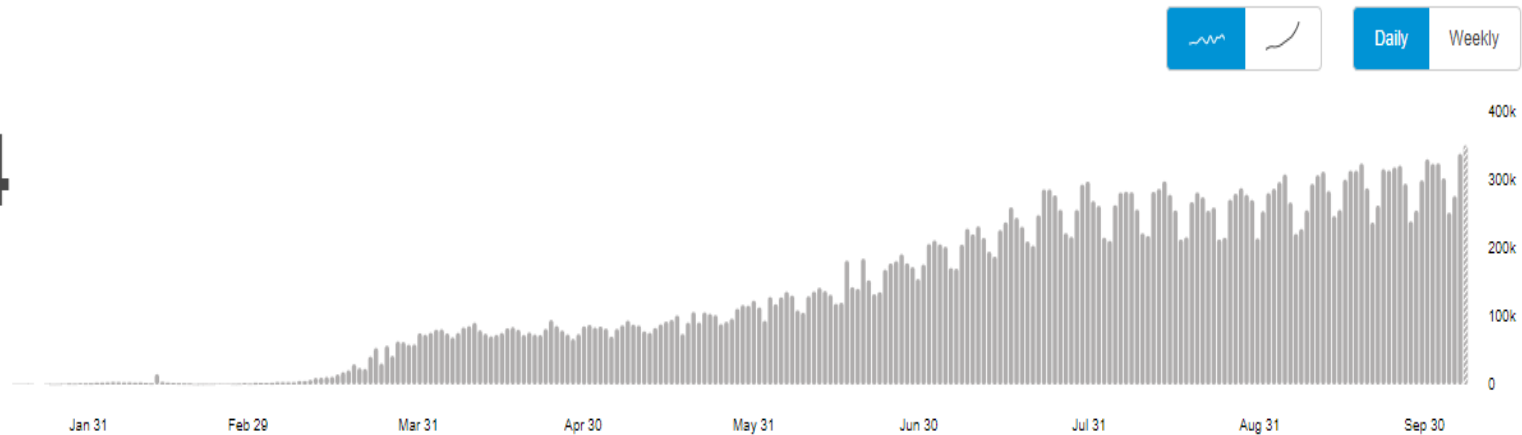


Globally, as of 3:36pm CEST, 9 October 2020, there have been **36,361,054 confirmed cases** of COVID-19, including **1,056,186 deaths**, reported to WHO.

Global Situation

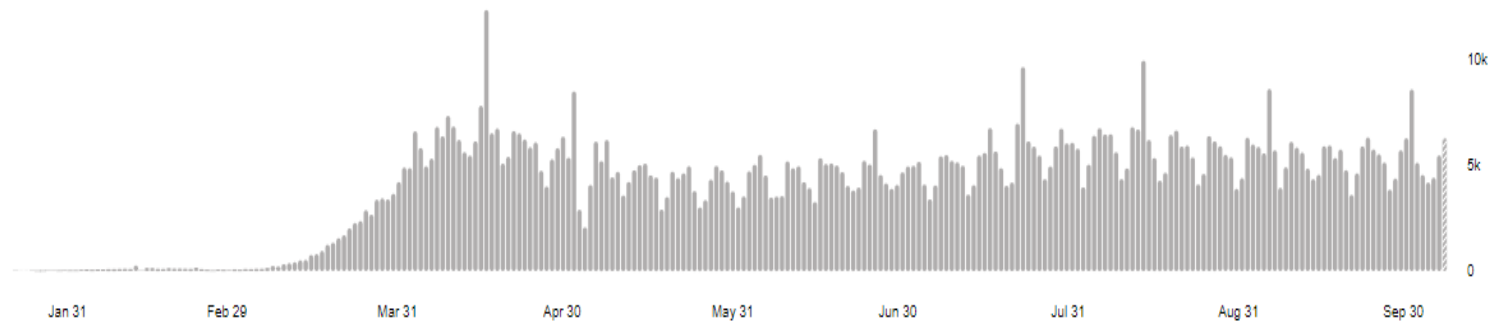
36,361,054

confirmed cases



1,056,186

deaths

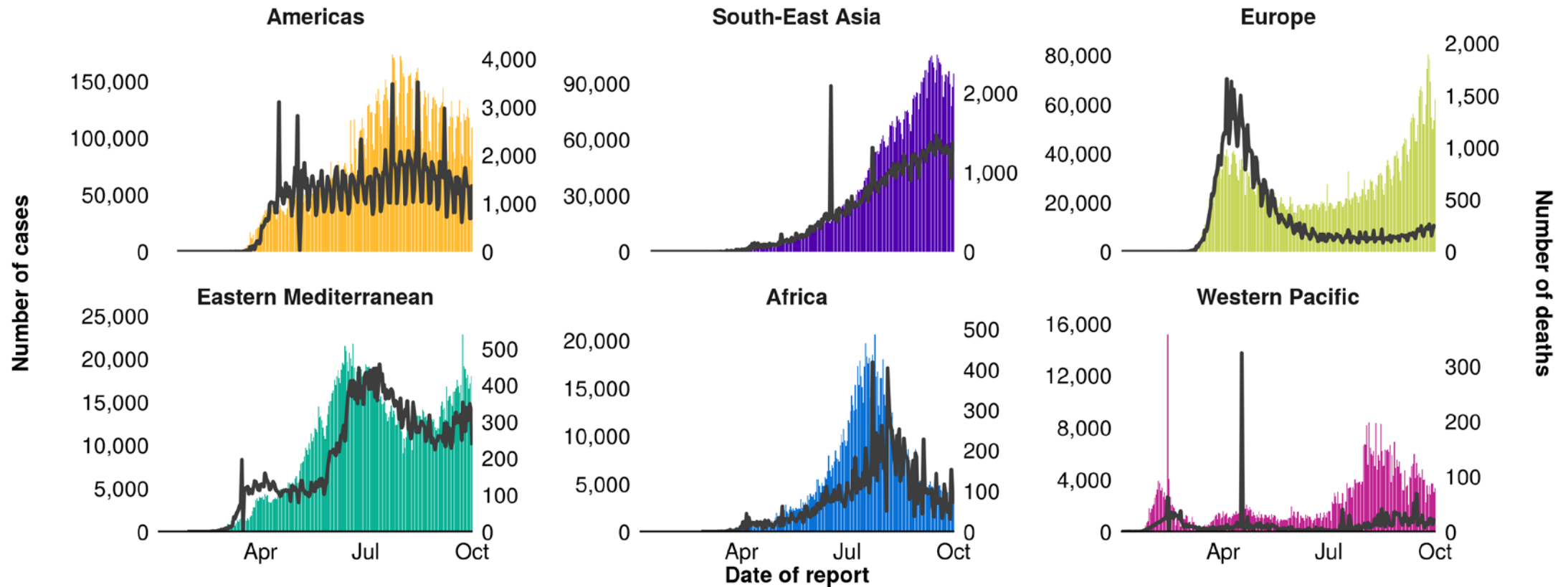


Source: World Health Organization

Data may be incomplete for the current day or week.

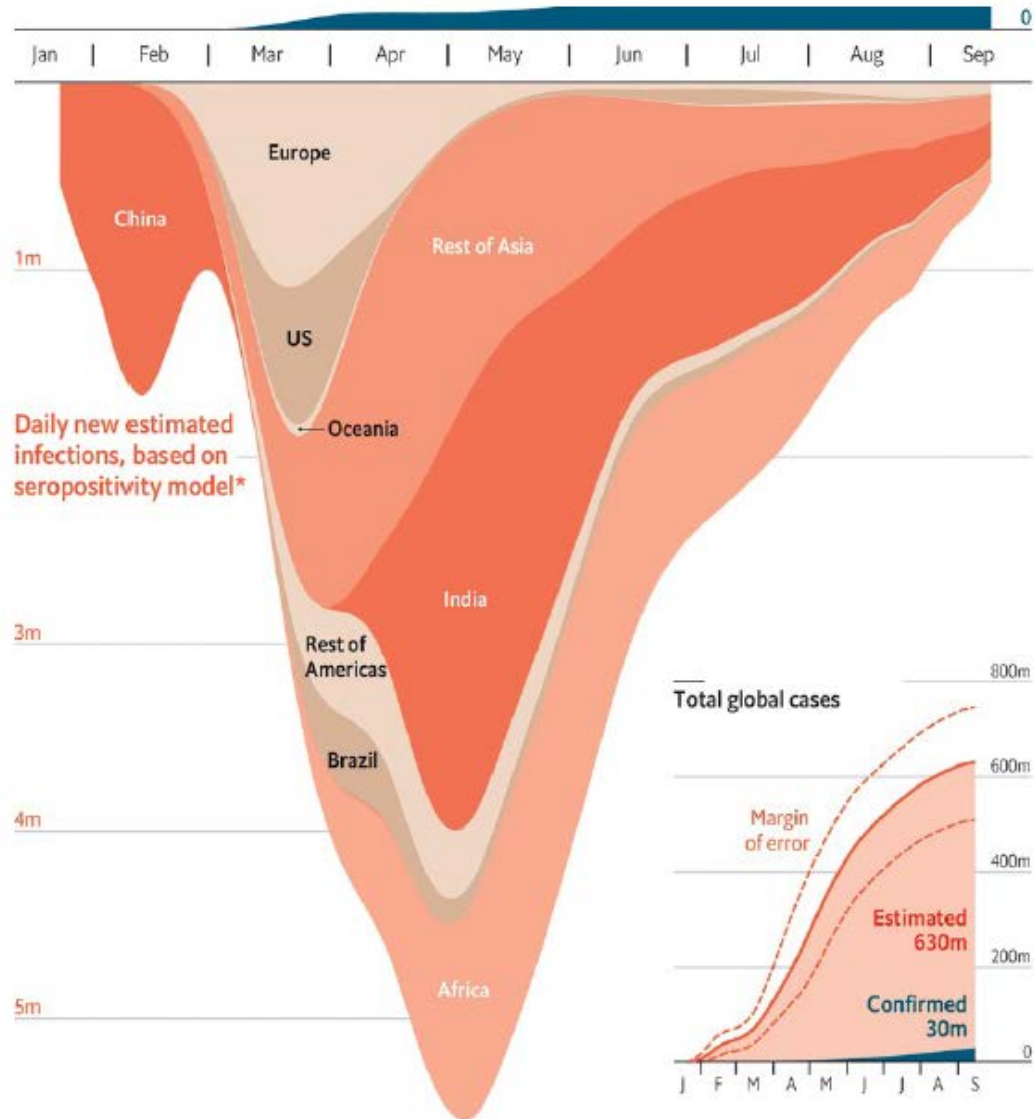
Epidemic curve by region

(as of 1 October 10H CEST)



Cases depicted by bars; deaths depicted by line. Note different scales for y-axes.

Seroprevalence studies – estimated infections



*Extrapolation from linear model of seroprevalence based on reported cases and confirmed deaths, letting strength of relationships vary by average country income. Sources: Johns Hopkins CSSE; UN; WHO; 279 random-sample serosurveys in general populations; The Economist

The Economist, 26 September 2020

Approach and assumptions:

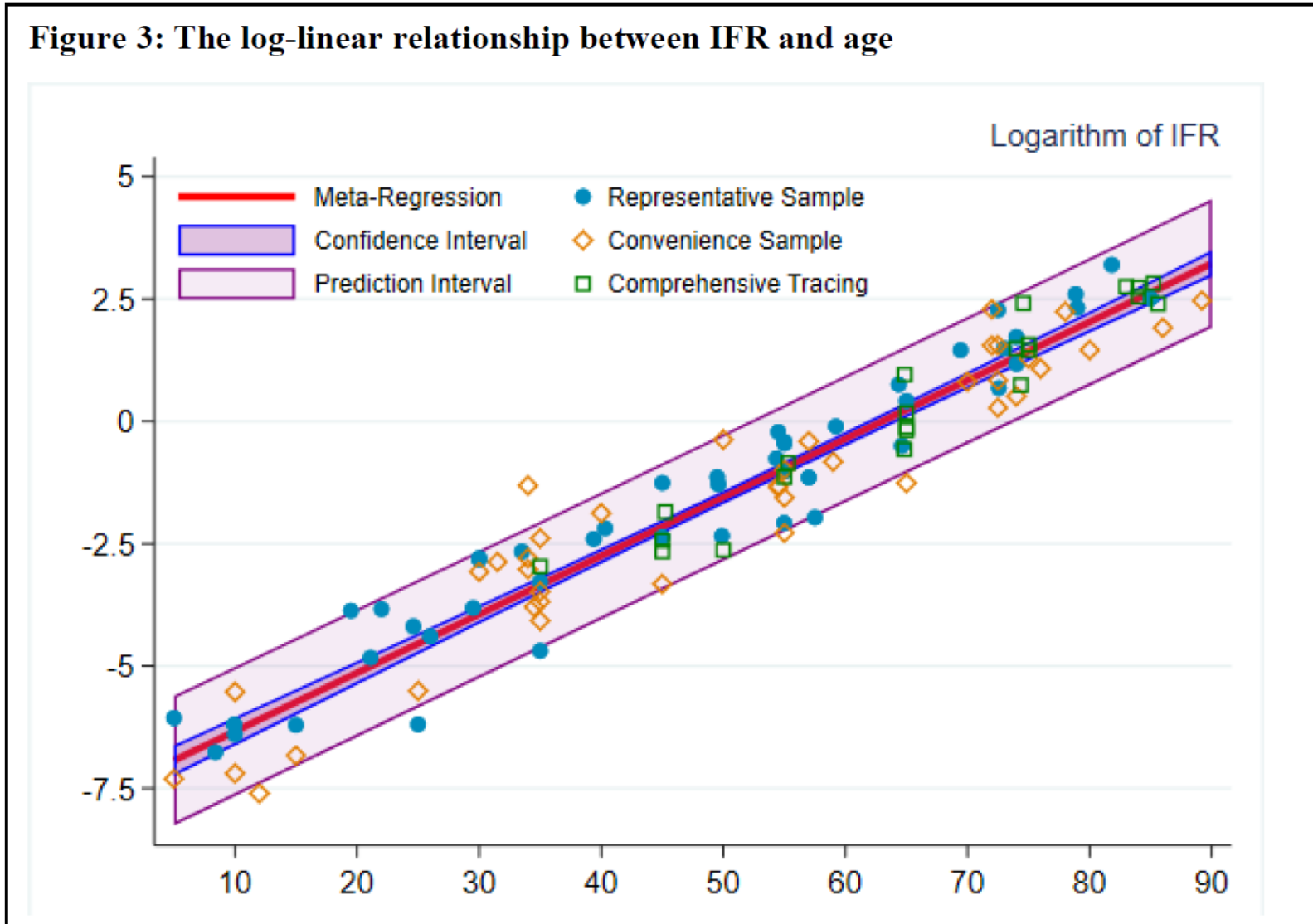
- Analysed 279 serosurveys from 19 countries
- Compared serosurvey data to reported COVID - 19 cases in a number of countries and calculated “multipliers”:

- Germany 4.5
- USA 7
- Spain 10
- England 14
- Sweden 17
- India 44
- Global estimated multiplier: 20

➤ *500-730 million infected, or 6.4-9.3% of world population*

Infection Fatality Ratio (IFR)

Figure 3: The log-linear relationship between IFR and age



Age group (y)	COVID-19 IFR
0-34	0.004
35-44	0.06
45-54	0.2
55-64	0.7
65-74	2.3
75-84	7.6
85+	22.3

Reference: Levin et al., medRxiv Sept2020 <https://www.medrxiv.org/content/10.1101/2020.07.23.20160895v5.full.pdf>

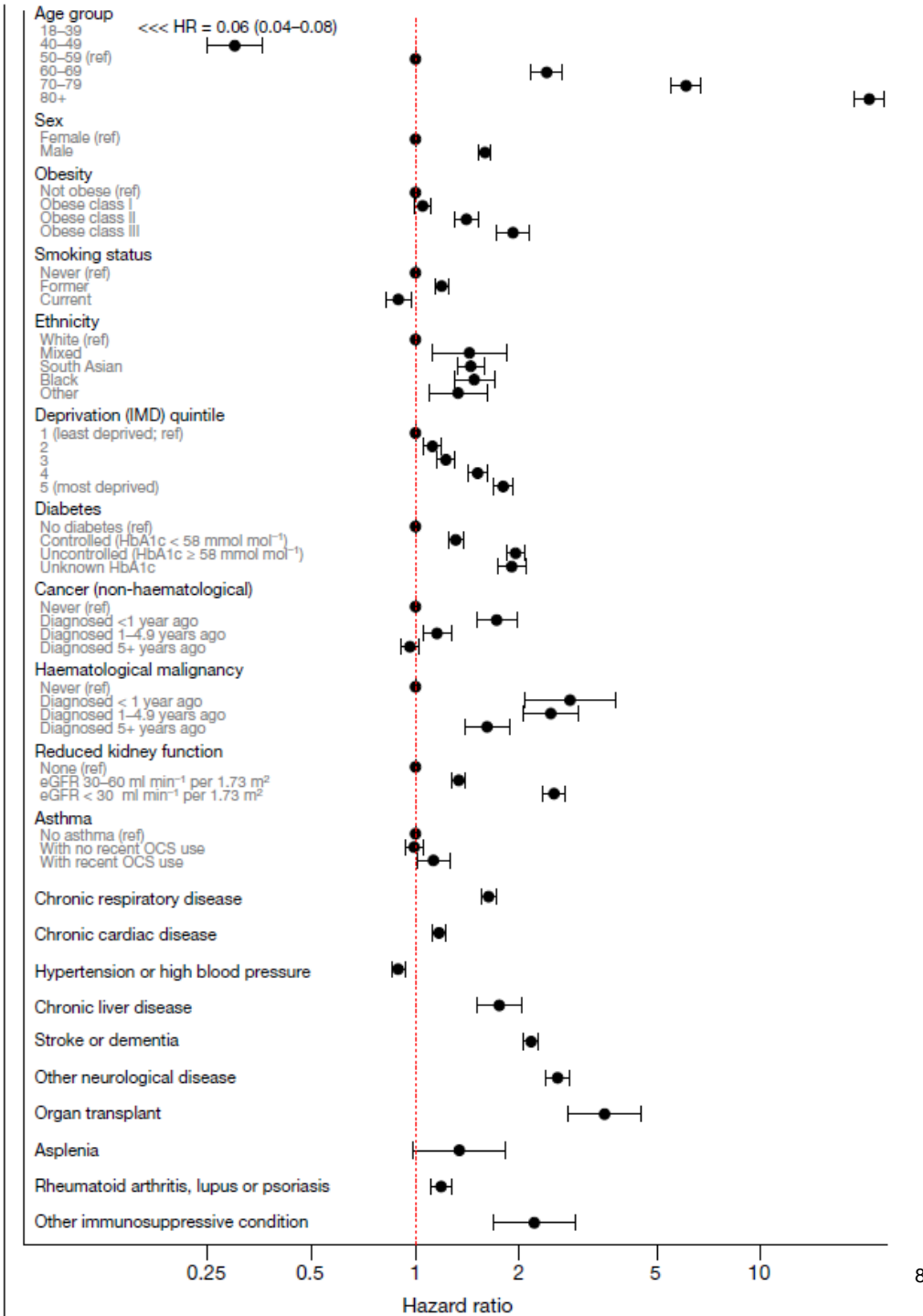
Risk factor analysis

EJ Williamson et al., Nature, 20 August 2020

Estimated hazard ratios for COVID 19 – related death (multivariable Cox model), England

Characteristic	Fully adjusted HR (95% CI)
Age 60-69 (50-59 ref)	2.40 (2.16–2.66)
Age 70-79	6.07 (5.51–6.69)
Age 80+	20.60 (18.70–22.68)
Male (female ref)	1.59 (1.53–1.65)
BMI >40 (not obese ref)	1.92 (1.72–2.13)
Black ethnicity (white ref)	1.48 (1.29–1.69)
Chronic heart disease (none)	1.17 (1.12–1.22)
Deprivation (5 over 1 quintile)	1.79 (1.68–1.91)
Diabetes (none ref) _{HbA1c ≥ 58 mmol}	1.95 (1.83–2.08)

Similar findings Western Cape Province, South Africa;
A Boulle et al., CID August 2020



Observations on disease epidemiology



- Countries are at different stages of the epidemic (including some countries with no or limited transmission), but picture is very dynamic;
- Risk factor analysis points to an overwhelming risk related to age;
- Increasing number of seroprevalence studies show highly variable seroprevalence by geography and setting;
- Poor understanding of lower IFR in Africa and India. Age structure? Underreporting? Fewer co-morbidities? Exposure to other coronaviruses?
- More data needed on risk for severe disease outcomes in HIC vs. LMIC and LIC;
- Further information on duration of immunity is needed.






Presentation outline



- Some basic considerations on disease epidemiology and risk groups
- **Towards the development of vaccination policy**
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WHO SAGE Policy development: steps and processes

- | | | |
|--|---|---|
| <p>1. Values Framework for the allocation and prioritization of COVID-19 vaccination: Principles, objectives and target groups of a COVID-19 vaccination programme</p> |  | <p>Status update
Endorsed by SAGE and published Sept 14 2020*</p> |
| <p>2. Guidance on prioritization of target populations under supply constrained situations: development of use case scenarios of limited vaccine under different epidemiological settings</p> |  | <p>Endorsed by SAGE at plenary meeting October 5-7°</p> |
| <p>3. Policy recommendations on the use of COVID-19 vaccines once authorized; under consideration of product-specific data and attributes, and with consideration of the regulatory status (emergency use or full registration)</p> |  | <p>Timelines depends on registration by countries or Emergency Use Listing/ prequalification by WHO; process iterative as products come along</p> |

(*available on: <https://www.who.int/immunization/policy/sage/en/>)

(° Approved by DG WHO, publication imminent)

Main elements of the values framework



Overarching goal: *“COVID-19 vaccines must be a global public good. The overarching goal is for COVID-19 vaccines to contribute significantly to the equitable protection and promotion of human well-being among all people of the world.”*



Core principles: *Human well-being; equal respect; global equity; national equity, reciprocity, legitimacy*



Objectives: *Eleven objectives for vaccination that correspond to the six core principles*



From values to priority groups: *Listing of (unranked) about 20 different priority groups in accordance with vaccination objectives and their relevance to core principles*

Principles	Objectives
Well-Being	<p>Reduce deaths and disease burden from the COVID-19 pandemic</p> <p>Reduce societal and economic disruption including strategies for containing transmission, reducing severe disease and death, or some combination</p> <p>Protect the continuing functioning of essential services, including health services</p>
Equal Respect	<p>Treat the interests of all individuals and groups with equal consideration as allocation and priority-setting decisions are being taken and implemented</p> <p>Offer a meaningful opportunity to access vaccine to all individuals and groups who qualify for vaccine under prioritization criteria.</p>
Global Equity	<p>Ensure that vaccine allocation takes into account the special epidemic risks and needs of low-and middle-income countries</p>
National Equity	<p>Ensure that vaccine prioritization within countries takes into account the vulnerabilities, risks and needs of groups who, because of underlying societal and/or biomedical factors, are at risk of experiencing greater burdens from the COVID-19 pandemic</p> <p>Develop the immunization delivery systems and infrastructure required to ensure COVID-19 vaccines access to priority populations and to take proactive action to ensure equal access to everyone who qualifies under a priority group, particularly socially disadvantaged populations</p>
Reciprocity	<p>Protect those who bear significant additional risks and burdens of COVID-19 to safeguard the welfare of others, including healthcare and other essential workers</p>
Legitimacy	<p>Engage all countries in a transparent consultation process for determining what scientific, public health, and values criteria should be used to make decisions about vaccine allocation between countries</p> <p>Employ best available scientific evidence, expertise, and significant engagement with relevant stakeholders for vaccine prioritization between various groups within each country, using transparent, accountable, unbiased processes, to engender deserved trust in prioritization decisions</p>

WHO SAGE values framework for the allocation and prioritization of COVID-19 vaccination

14 September 2020



Executive Summary

This Values Framework offers guidance globally on the allocation of COVID-19 vaccines between countries, and to offer guidance nationally on the prioritization of groups for vaccination within countries while supply is limited. The Framework is intended to be helpful to policy makers and expert advisors at the global, regional and national level as they make allocation and prioritization decisions about COVID-19 vaccines. This document has been endorsed by the [Strategic Advisory Group of Experts on Immunization](#) (SAGE).

The Framework articulates the overall goal of COVID-19 vaccine deployment, provides six core principles that should guide distribution and twelve objectives that further specify the six principles (Table 1). To provide recommendations for allocating vaccines between countries and prioritizing groups for vaccination within each country, the Values Framework needs to be complemented with information about specific characteristics of available vaccine or vaccines, the benefit-risk assessment for different population groups, the amount and pace of vaccine supply, and the current state of the epidemiology, clinical management, and economic and social impact of the pandemic. Hence, the final vaccination strategy will be defined by the characteristics of vaccine products as they become available.

https://apps.who.int/iris/bitstream/handle/10665/334299/WHO-2019-nCoV-SAGE_Framework-Allocation_and_prioritization-2020.1-eng.pdf

Roadmap towards prioritization of target populations:

To support country planning, the Roadmap suggests public health strategies and target priority groups for different levels of vaccine availability in different epidemiologic settings

Key assumptions:

- Vaccines are licensed and meet all minimum criteria of WHO TPP;
- Vaccines have at least minimal level efficacy in older age groups; idem for other subpopulations;
- NPI continue to be used;
- Vaccine effect on transmission less relevant for early scenarios, but information becomes available at some point;
- No account has been taken of seroprevalence and the possible degree of population protection already established.

	Community transmission	Cluster of cases/ sporadic transmission	No cases, risk of importation
Very limited supply (1-10%)			
Limited supply (11-20%)			
Moderate supply (21-50%)			

Contextualized and targeted public health strategies

Optimal vaccination strategy for health outcomes



Preliminary findings from mathematical modelling*

- Most studies look at optimal strategy based on age-groups
- Some studies include groups with comorbidities and health or social care workers
- General consensus among models to prioritize older adults if seeking to minimize deaths (or years of life lost) in scenario of limited supply (HICs and LMICs)
- Prioritization of health and social care workers supported because of high exposure and onward transmission risks
- Prioritizing younger persons with underlying health conditions that put them at risk of severe COVID-19 also favoured, although exact ordering may depend on vaccine characteristics and country setting
- No modelling seen for other more highly exposed or high transmission groups (e.g. low-income persons in dense urban neighbourhoods, prisoners) or other occupations (e.g. teachers)



** Results from Request for Information conducted by SAGE working group and systematic literature review, as presented to SAGE October 5-7, 2020, by Nick Grassly and Sarah Pallas*

Other considerations



- Vaccine supply expressed in stages I (a/b), II, III which should be followed sequentially;
- Stages are linked to the phases defined in the *Access & Allocation Framework* of the COVAX facility, with stages I & II fitting the “proportional phase”
- Groups within stages are not rank-ordered, with the exception of phases Ia and Ib
- Significant *contextualization* has to be done by countries, such as precise definition of the population group (e.g. age cut-offs), and within stage prioritization may need to be designed by countries
- *Initial focus is on reduction of mortality and maintenance of most critical essential functions*
- **Message: Targeting for impact along ethical criteria, not rationing.**

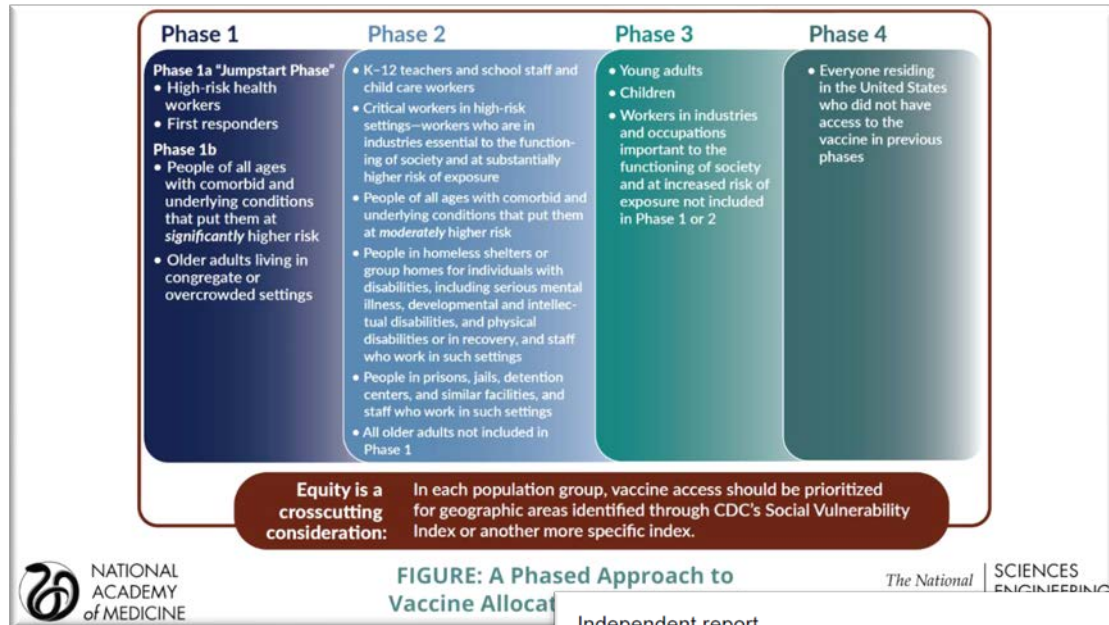


Epidemiologic Setting Scenario: Community Transmission

Overall public health strategy for epidemiologic setting: Initial focus on direct reduction of morbidity and mortality and maintenance of most critical essential services; also, reciprocity. Expand to reduction in transmission to further reduce disruption of social and economic functions.

Vaccine supply scenario	Priority populations
Stage I (very limited vaccine availability, ranging from 1-10%)	Stage Ia (Initial Launch) <ul style="list-style-type: none"> - Health workers at <u>high to very high risk</u> of acquiring and transmitting infection Stage Ib <ul style="list-style-type: none"> - Older adults defined by age-based risk specific to country/region, specific age cut-off to be decided at the country level
Stage II (limited vaccine availability, ranging from 11-20%)	<ul style="list-style-type: none"> - Older adults not covered in Stage I - Individuals with comorbidities or health states determined to be at significantly higher risk of severe disease or death. - Sociodemographic groups at significantly higher risk of severe disease or death - Health workers engaged in immunization delivery (routine programme-specific and COVID-19) - High priority teachers and school staff
Stage III (moderate vaccine availability, ranging from 21-50%)	<ul style="list-style-type: none"> - Remaining teachers and school staff - Other essential workers outside health and education sectors - Pregnant women (see accompanying text on pregnant women) - Health workers at <u>low to moderate risk</u> of acquiring and transmitting infection - Personnel needed for vaccine production and other high-risk lab staff - Social/employment groups at <u>elevated risk</u> of acquiring and transmitting infection because they are unable to effectively physically distance

National efforts to define priority populations




NEWS 04/10/2020 2:03 PM IST | Updated 05/10/2020 8:51 PM IST

Coronavirus Vaccine Update: Govt Aims To Have List Of Priority Population Groups By Oct End

"Our rough estimate and the target would be to receive and utilise 400 to 500 million doses covering approximately 25 crore people by July 2021," Harsh Vardhan said.

By Meryl Sebastian



VIA GETTY IMAGES
Minister Dr. Harsh Vardhan

Independent report

JCVI: updated interim advice on priority groups for COVID-19 vaccination

Published 25 September 2020

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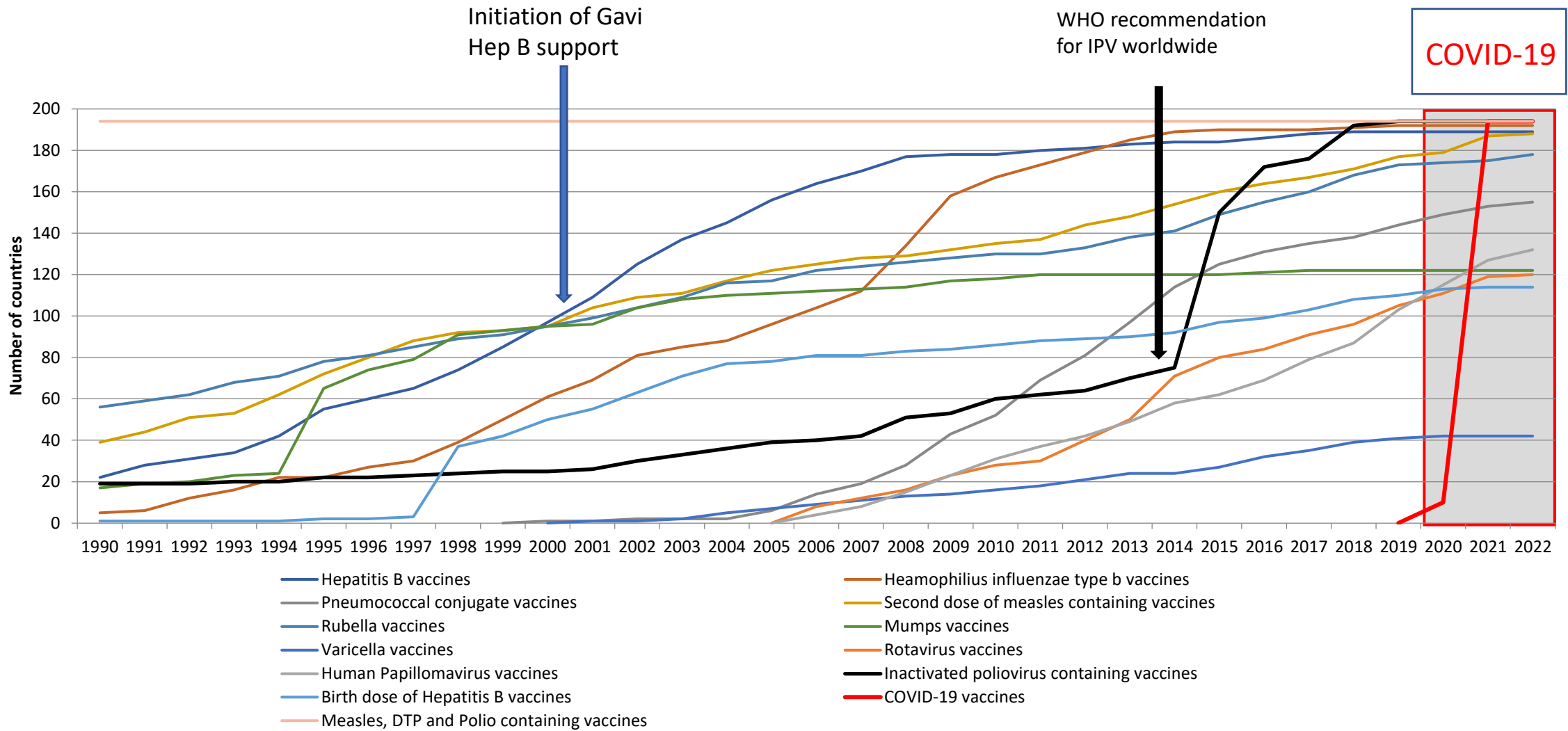
Presentation outline



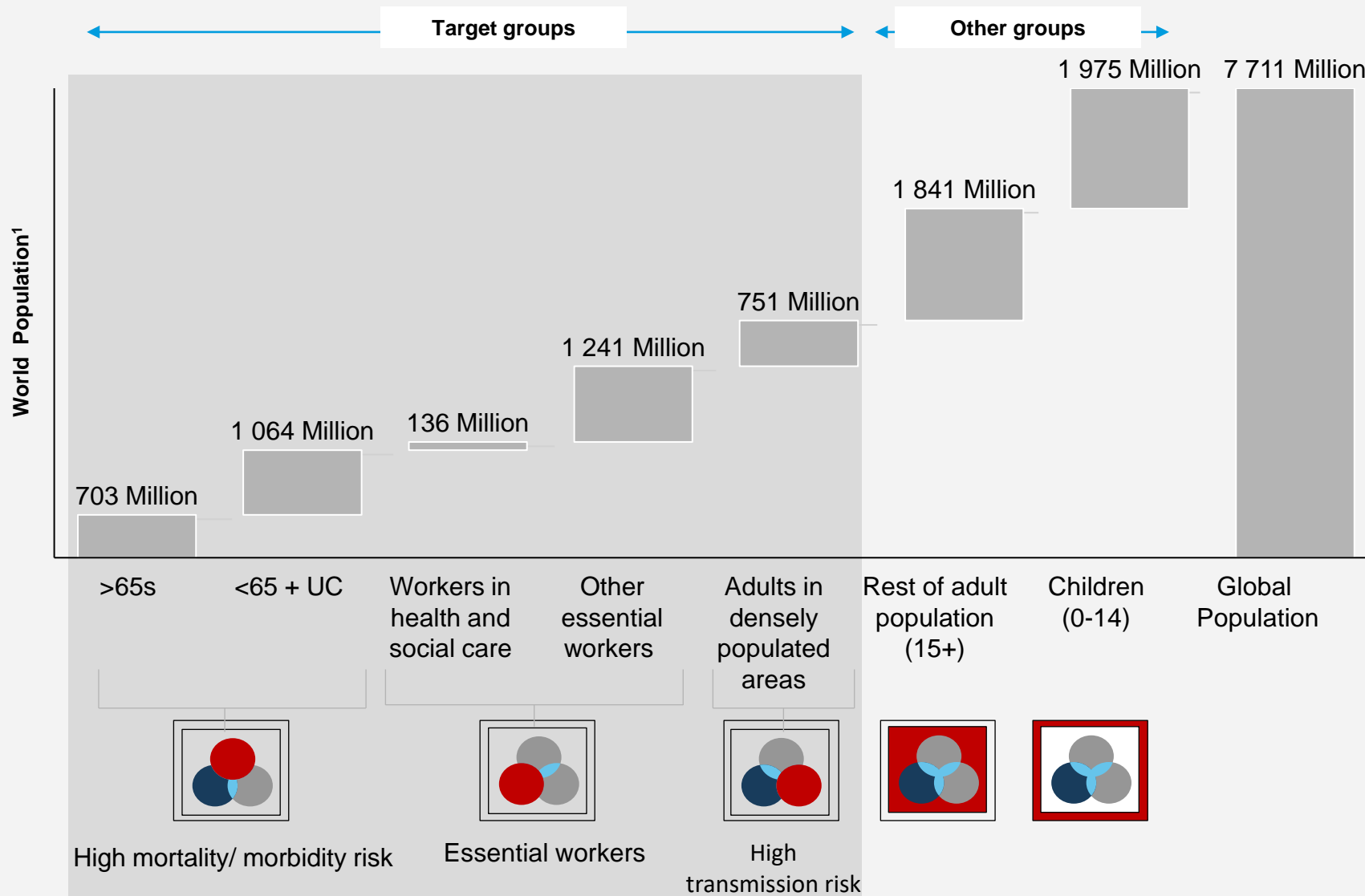
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Vaccines uptake in national schedules, 1990-2019 and projections

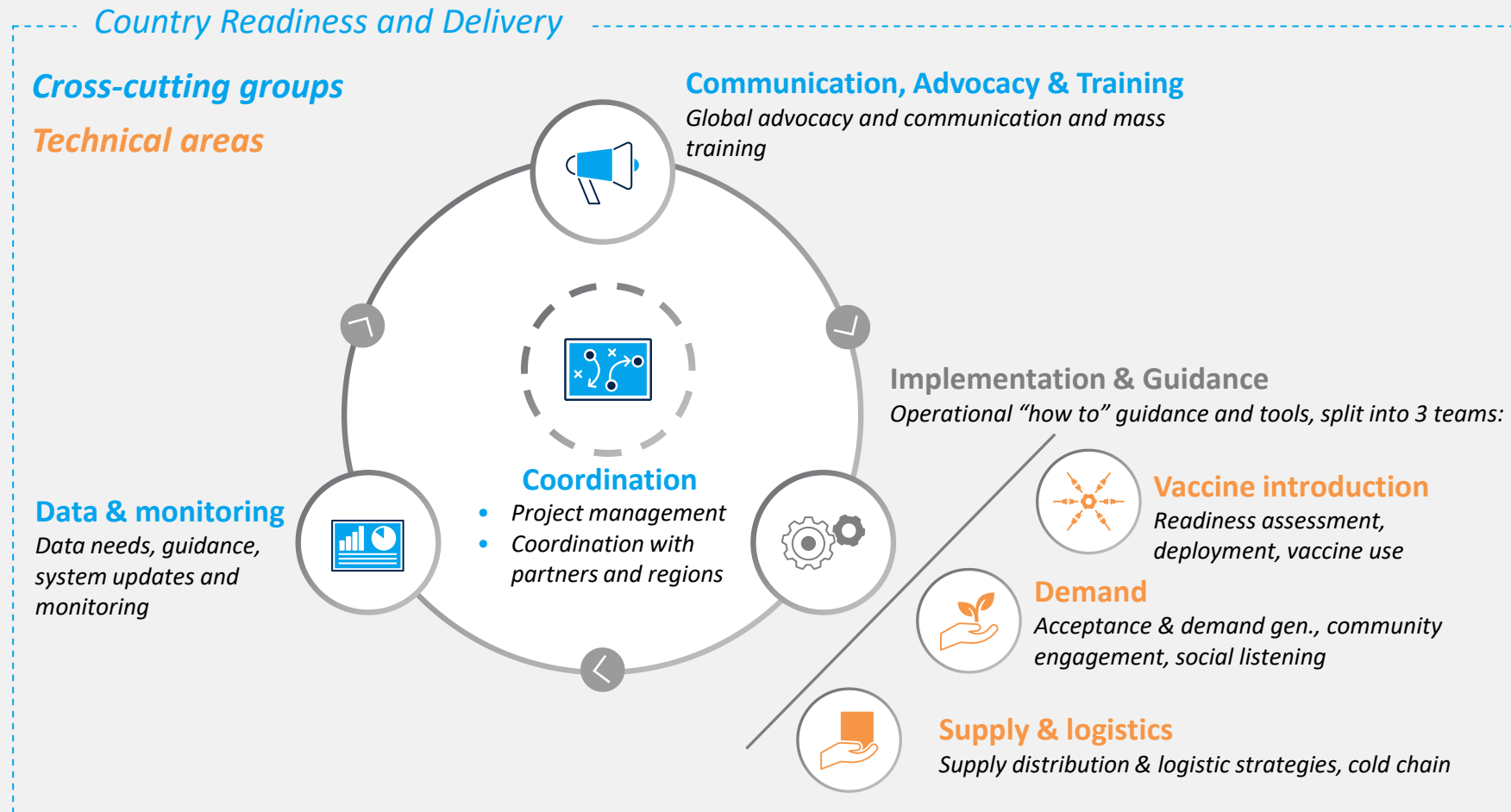


Potential target groups by population size



1. Population sizes taken from a range of sources including the UN databank, ILO and other data reports. They do not account for overlaps between the three priority populations

The Country Readiness and Delivery workstream is divided in 6 different WGs, with participation of multiple stakeholders



Core members from:



Other Partners:



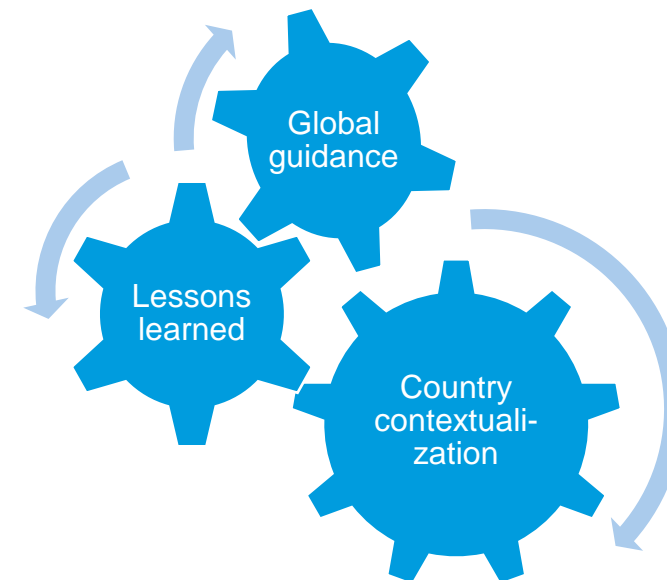
HQ +
Regions

Note: Safety, Regulatory and Legal work is being conducted by different workstreams, but in close alignment and communication with the Country Readiness and Delivery group

Country readiness and deployment

Work streams

- COVID-19 Vaccine Introduction Readiness Assessment Tool (checklist)
 - A tool for self-monitoring of countries for readiness progress against milestones (launched, and ongoing)
- Guidance for National Deployment and Vaccination Plan (NDVP) for COVID19 Vaccines
 - Assist countries in developing specific plans, prepare for country support, and roll-out of vaccine (in process)
- Cold chain guidance (in progress)
- Working groups constituted
 - Data and monitoring
 - Vaccine demand
 - Supply and logistics
 - Delivery cost



What are our experiences and learnings?

- a snapshot from regional discussions -



Targeted Population	Learn from past vaccine introduction and regional experiences survey of regions.	Delivery considerations
Health & social workers	Experiences mostly from influenza vaccination, HepB, MCV (more limited); H1N1 pandemic vaccination	Hospital, health centres, health care offices
Older people	Most information from influenza EURO from 53 countries: 49 – have vaccination programs for adults 42 - issued recommendations for vaccination of residents of long-term care facilities	House to house screening to find the eligible people Health Facilities or community outreach clinics for EPI as done in other SIAs
Medical risk groups	Overall limited experience (except pregnancy) EURO: 48/53 countries have influenza vaccination policies for adults with high-risk chronic conditions	House to house screening to find the eligible people Specialized clinics from where they get treatment



SPINOFF

New poll shows 16% of New Zealanders don't want to be Covid-19 vaccinated

The Guardian

Nearly one in six Britons would refuse Covid-19 vaccine - survey

GALLUP

One in Three Americans Would Not Get COVID-19 Vaccine

euobserver

Poll: only 61% of Germans would get Covid-19 vaccine

HUFFPOST

Le vaccin contre le coronavirus? 1 Français sur 3 le refuserait, voilà pourquoi [SONDAGE EXCLUSIF YOUNGOV]

La France est championne du monde de la méfiance à l'égard des vaccins, le coronavirus n'échappe pas à la règle.

Most Canadians would get COVID-19 vaccine: survey

NEWS 1130

BY AMANDA WAWRYK AND NIKITHA MARTINS
Posted Aug 4, 2020 5:39 pm PDT Last Updated Aug 5, 2020 at 1:16 am PDT

MailOnline

Half of Kiwis say they would NOT take a coronavirus vaccine if it was

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