Framework for prioritization of COVID-19 vaccine

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Acknowledgements

Core of Medicine  
Equity  
Reciprocity  
Legitimacy

Value Framework Core Principles

HUMAN WELL-BEING  
GLOBAL EQUITY  
NONPARTISANSHIP

Allocation, Prioritization, and Recommendations

SAGE Framework  
Prioritization Roadmap  
Vaccine-Specific Recommendations

COVAX Allocation Framework

COVAX  
 设立优先道路上的国家和地理区域的检测

Principles

Objectives

- Reduce deaths and disease burden from the COVID-19 pandemic
- Reduce societal and economic disruption by accelerating transmission, reducing severe disease and death, and economic permitting
- Protect the continuing functioning of essential services, including health systems

Equity

Ensure that potential benefit of COVID-19 vaccines is distributed to all populations, groups, and countries in a fair and equitable manner

Global Equity

Ensure that the composition and prioritization of the benefits of COVID-19 vaccines is distributed to all of the world

Humanity

Ensure that the composition and prioritization of the benefits of COVID-19 vaccines is distributed to all of the world

Equity

Ensure that the composition and prioritization of the benefits of COVID-19 vaccines is distributed to all of the world

Transparency

Ensure that the composition and prioritization of the benefits of COVID-19 vaccines is distributed to all of the world

Legitimacy

Engage in transparent and accountable processes for determining what scientific, ethical, public health, and political criteria are suitable and stakeholders involved in determining criteria
To support country planning, the roadmap suggests public health strategies and target priority groups for different levels of vaccine availability in different epidemiologic settings.

The consensus is that currently available evidence is too limited to allow any recommendations for use of any specific vaccine against COVID-19 at this time.

**Key Assumptions**

- Vaccines are fully licensed and meet WHO Target Product Profiles for COVID-19 vaccines
- Age-dependent efficacy unlikely to change recommendations
- No substantive differences in protective immune response in subpopulations

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**Prioritization Dimensions**

- Epidemiologic Scenario
- Overall Public Health Strategy
- Vaccine Supply Scenarios

**Epidemiologic Scenarios**

- Community Transmission
- Sporadic Cases or Clusters of Cases
- No Cases

**Community Transmission**

Overall Public Health Strategy

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.
### COVID-19 Hospitalization and Death by Age

#### Factors That Increase Community-Specific and Individual Risk

- Race/ethnicity
- Chronic conditions
- COVID-19 severity
- Immunosuppressant use
- Intubation
- Age

#### Actions to Reduce Risk of COVID-19

- Avoid close contact
- Wear masks
- Practice social distancing
- Wash hands

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### Sporadic Cases or Clusters of Cases

#### Overall Public Health Strategy

- Initial focus on direct reduction of morbidity and mortality and maintenance of most critical essential services; also, reciprocity.
- Expand to substantially control transmission and minimize disruption of social and economic functions.

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### No Cases

#### Overall Public Health Strategy

- Initial focus on prevention of community transmission; also, reciprocity.
- Expand to preserve control of transmission and reduce reliance on most burdensome non-pharmaceutical interventions, as well as to protect highest risk individuals in the event of importation-associated outbreaks.

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### Vaccine Supply Scenarios

#### Stage I (very limited availability, 1-10%)

#### Stage II (limited availability, 11-20%)

#### Stage III (moderate availability, 21-50%)

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### How Supply Staging of Priority Groups Relates to Population Size

- Groups are staged sequentially.
- Groups within stages are not rank ordered. (with the exception of Stages Ia and Ib)
- In some countries, the amount of vaccine for a vaccine supply stage may be insufficient.
- These instances will require within-stage prioritization by countries.

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How Supply Staging of Priority Groups relates to Population Size

Groups are staged sequentially. Groups within stages are not ranked ordered.

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Scenario: Community Transmission

Strategic: Total focus on emergency vaccination and maintenance of most critical essential services, activities, initially focused on sustaining and transitioning to extreme situations of social and economic activities.

Stage I (1-10%)
- Health workers at high risk of acquiring infection
- Laboratory staff
- Other adults not covered in Stage I

Stage II (11-20%)
- Older adults defined by age-based risk
- Other adults at high risk of acquiring infection

Stage III (21-50%)
- Health workers at high risk of acquiring infection
- Other adults at high risk of acquiring infection

Scenario: Sporadic Cases or Clusters of Cases

Strategic: Total focus on prevention of community transmission, initially focused on prevention of transmission and maintenance of most critical essential services, activities, temporarily focused on sustaining and transitioning to extreme situations of social and economic activities.

Stage I (1-10%)
- Health workers at high risk of acquiring infection

Stage II (11-20%)
- Older adults defined by age-based risk
- Other adults at high risk of acquiring infection

Stage III (21-50%)
- Health workers at high risk of acquiring infection
- Other adults at high risk of acquiring infection

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National Equity Considerations

Ensure that vaccine prioritization within countries takes into account the vulnerabilities, risks and needs of groups who, because of underlying societal, ethnic/racial, geographic or biometric factors, are at risk of experiencing greater burdens from the COVID-19 pandemic.

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Elements of Framework

**GOAL**
- Reduce morbidity and mortality and negative societal impact due to transmission of SARS-CoV-2

**RISK-BASED CRITERIA**
1) Risk of acquiring infection; 2) Risk of severe morbidity and mortality; 3) Risk of negative societal impact; 4) Risk of transmitting infections to others

**PHASES**
- 4 phases

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**Reduce severe morbidity and mortality and negative societal impact**

**Reasons for this approach**
- Death is irreversible
- Social consensus preventing severe morbidity and mortality
- Uncollaborating critical mass
- Data and designed to assess impact on transmission
- Limited transmission data on risk groups

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**Ethical Principles**

- Minimum benefit
- Equal concern
- Mitigation of health inequities

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**Procedural Principles**

- Fairness
- Transparency
- Evidence-based

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**Phases**

- **Phase 1**
  - Phase 1: Emergency Phase
  - Critical health
  - Unknown effectiveness

- **Phase 2**
  - Phase 2: High risk
  - Pandemic responders
  - Unknown effectiveness

- **Phase 3**
  - Phase 3: High-risk priority groups
  - Pandemic responders
  - High mortality and/or morbidity

- **Phase 4**
  - Phase 4: General population
  - General population
  - Unknown effectiveness
Social vulnerability scale

Based on 15 census track variable

Can be calculated at the census track

Mello, Norman, Omer 2020, NEJM

Triggers for COVID-19 vaccine mandate

Inadequately contained

ACIP recommended

Adequate supply

Transparent communication

Infrastructure present

Inadequate voluntary response

Thank You!

Yale Institute for Global Health