Demonstration of effectiveness of 2nd generation COVID-19 vaccines

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ICMRA COVID-19 VACCINE DEVELOPMENT: FUTURE STEPS WORKSHOP

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ICMRA
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Factors to consider:

- Epidemiology and trajectory of the pandemic (may be country specific)
  - e.g., high prevalence of SARS-CoV-2 circulation vs. low prevalence of SARS-CoV-2 circulation

- Proposed use of 2nd generation vaccine, i.e.,
  - used for primary series
  - used for booster vaccinations based on primary series with other COVID-19 vaccines (heterologous boost, mix & match)

Approaches to Authorization & Licensure of 2nd Generation COVID-19 vaccines

- Randomized placebo-controlled trials provide most reliable data regarding the efficacy
  - Performed properly, with prospectively determined and agreed upon endpoints and success criteria
  - Can still be ethically performed when they promote equity and vaccine access

Alternative approaches to demonstrating vaccine efficacy

- Relative efficacy studies using noninferiority and/or superiority designs
  - Need discussions on appropriate comparator, endpoints and NI margins
- Human challenge studies
  - Endpoints
  - Number of participants
  - Risks to participants

Approaches to Authorization & Licensure of 2nd Generation COVID-19 vaccines

Immunogenicity (bridging) studies

- To assess effectiveness of 2nd generation COVID-19 vaccines if controlled clinical endpoint efficacy studies are no feasible
  - Choice of Immune marker, e.g., neutralizing antibody
  - Choice of endpoints , e.g., GMT, seroresponse rates
  - Prespecified statistical criteria
  - Non-inferiority *vs* superiority

Approaches to Authorization & Licensure of 2nd Generation COVID-19 vaccines

Immunogenicity(bridging studies (cont.)

- Choice of comparator vaccine
  - Same platform/across platform
  - Original viral strain, variant strains
  - Vaccine with high efficacy
- Comparator group
  - Naïve individuals (may not be feasible)
  - Matched for age, race, ethnicity
- Dose and dose regimen
- Reliability of standardized assays to assess biomarkers