CEPI’s Lassa Vaccine Development Activities: Vaccine Portfolio and Epidemiology Programme

Date: 27th January 2020
CEPI’s Lassa Vaccine Development Program

• Aligns with WHO Blueprint R&D Roadmap

• Supports 6 Lassa vaccine candidates
  - First-in-human trials already underway
  - Anticipate there will be attrition as vaccine candidates progress

• Supports activities critical to vaccine development regardless of developer
  - Epidemiology (incidence/prevalence, capacity strengthening, trial planning, community mobilization)
  - Developing and validating assays & standards – first interim standards ➔ WHO IS
  - Diagnostic test validation (for epidemiology and clinical trial endpoints)
  - Clinical trial site mapping and evaluation in endemic countries (trial planning)
  - Development of pharmacovigilance framework across development programs (trial execution) and case definitions (e.g. SNHL)
CEPI’s Development Portfolio [Lassa]

Current Status (as of January 2020)

- **Preclinical**
  - UOXF/J ChAdOx1
  - Emergent rVSVΔG
  - IAVI rVSVΔG
  - CureVac Lassa fever

- **Phase I**
  - Inovio DNA
  - #NCT03805984

- **Phase II Safety & Immuno**
  - Themis Measles vector

- **Phase IIb/III Efficacy**

- **Regulatory/Introduction**

**Pathogen (CFP1)**
- (WHO Blueprint R&D pathogen)

**Platform-specific (CFP2)**
- (rapid response)

“Investigational stockpile” → preparing CTM for subsequent field efficacy trial
Randomised controlled field efficacy trial:

- LF Incidence
  - Depending on vaccine efficacy (50%, 70%, 90% ???), approx. 19 to 360 confirmed cases will be necessary [Ira Longini]
  - Depending on incidence (1%? or 0.5%? or even lower?), this may require between a few thousands to 10,000s of subjects
- Role of seropositivity?
- Risk factors → inclusion (exclusion) criteria to recruit populations at highest risk
- Case definitions: test and revise case definitions for LF as well as for disease severity
- Operational methods: recruitment strategy? Follow-up strategy? Community engagement, etc.
Targeted Lassa Epidemiology Studies

2 pivotal questions:

- LF incidence?
- Role of seropositivity?
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→ Primary objectives:
- **Sero-incidence cohort**: estimate incident infections / country level
- **Prospective LF-cohort**: assess incident LF cases / country level and stratify by serostatus @ baseline
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**Further aims / objectives:**
- Incidence / prevalence in subgroups
  - Age, season, clade, site, etc.
- Risk factors for infection and disease
- Clinical course and outcome of LF illness (incl. SNHL)
- Frequency of co-infection with malaria parasites
- Capacity strengthening to conduct clinical trials in endemic areas
Prospective Lassa Epidemiology Study

RECRUITMENT

FOLLOW-UP

Interim Analysis

FOLLOW-UP

Final Analysis

RECRUITMENT

FOLLOW-UP

Reported LF cases

Spring 2020
Fall 2020
Spring 2021
Fall 2021
Spring 2022
Fall 2022

SERO-INCIDENCE COHORT

PROSPECTIVE LF-COHORT
Clinical Trial Site Mapping

CEPI identified & evaluated clinical trial sites in endemic countries in West Africa

- A total of $n=37$ sites suitable for clinical vaccine trials have been identified in Lassa-endemic countries
- State of readiness: Sites have been visited and evaluated based on a detailed questionnaire (ICON Government and Public Health Solutions, GPHS) $\rightarrow$ strengths and weaknesses $\rightarrow$ areas for capacity building
- Some of these sites are part of CEPI’s multi country Lassa epidemiology study starting within the next months
- Site mapping report available