

## Establishing Cluster Boundaries

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### 1. PURPOSE

This document describes the process by which DeWorm3 study cluster boundaries will be defined following the baseline population census.

### 2. INTENDED USERS

The intended users of this SOP are DeWorm3 site Principal Investigator (PI), leadership teams and representatives of the central DeWorm3 team.

### 3. RESPONSIBILITIES

All DeWorm3 site PIs, leadership teams and central DeWorm3 team should understand and follow this SOP during the establishment of cluster boundaries. It is the responsibility of the site PI to ensure compliance with this SOP.

### 4. DEFINITIONS

- 4.1. **DeWorm3 baseline census:** The exhaustive survey of all inhabitants living in the DeWorm3 study clusters in the study site, describing key demographic, economic and social attributes of the population, conducted at baseline prior to other study activities.
- 4.2. **Community:** A village or other named settlement, whether officially recognized or not, listed by the DeWorm3 baseline census household respondents within the study area.
- 4.3. **Cluster:** The DeWorm3 study unit of randomization, consisting of a community, fraction of a community or group of communities with a combined population of ~1,650-4,000.
- 4.4. **Study Cluster Map:** A map of the study site with the 40 DeWorm3 cluster boundaries defined.

### 5. REQUIRED MATERIALS

- 5.1. Baseline Census
- 5.2. Map of study area
- 5.3. Field notes from teams involved in the Baseline Census

### 6. PROCEDURE

#### 6.1. Timeline of activities

- a. The demarcation of clusters and establishment of cluster boundaries must be undertaken after the DeWorm3 Baseline Census has been completed and data are clean, but before randomization and other study activities such as the cross-sectional survey, at the site.

#### 6.2. Make-up of the boundary establishment team

- a. The team involved in the establishment of cluster boundaries should involve:
  - i. The trial coordinator
  - ii. The data manager
  - iii. Field supervisors (involved in the baseline census who know the communities well)
  - iv. At least one representative from the central DeWorm3 team
- b. With consultation of:
  - i. Representatives from district health team to advise on existing Ministry of Health boundaries.

- ii. Representatives from local administration (local government or community leaders) to advise on existing administrative and or political boundaries.

**6.3. Procedures of establishing the cluster boundaries**

- a. In total, 40 clusters will be demarcated within the study site. These may be contiguous, but will have clear boundaries, where possible, defined by clear geographical or administrative features.
- b. Using the DeWorm3 Baseline Census data, export:
  - i. GPS coordinates of each household
  - ii. District ID
  - iii. Subdistrict ID
  - iv. Village ID (village affiliation)
  - v. Household ID
  - vi. Total number of residents of each household
  - vii. Schools attended by children in each household
- c. Using the GPS coordinates collected at the DeWorm3 baseline census, the DeWorm3 central team will use ArcMap / Google Earth to visualize the household distribution within the study site.
- d. Review a list of the communities (villages/neighborhoods/settlements) identified in the DeWorm3 baseline census and the total population of each according to household affiliation.
  - i. If an individual community has a population within the range identified for Cluster size, that community should be considered an independent cluster and boundaries drawn based on the location of each participating household.
  - ii. Where communities are too small to compose an independent cluster, GPS coordinates, field reports and the ArcMap / Google Earth map of the study area should be used to identify communities and / or non-community-affiliated households that can reasonably be combined to form a cluster with a population within the proposed range.
  - iii. Where communities are too large to be considered a single cluster, GPS coordinates, field reports and an ArcMap / Google Earth map of the study area should be used to identify intuitive boundaries that result in clusters with populations within the proposed range.
- c. Households not listed as belonging to a specific community should be assigned to a cluster based on geographic features and / or distance from the center of the nearest clusters to the household's GPS coordinates.
  - i. Where a household is equidistant between the center of two clusters, geographic features and / or the location of schools attended by children in the household may be used to make a determination.
- d. Once the DeWorm3 baseline census database has been coded to reflect the cluster boundaries, this database will be sent back to the central DeWorm3 team who will review the GPS coordinates of households in each cluster to verify that households affiliated with each community fall within cluster boundaries identified. Cluster boundaries will also be reviewed in relation to geographical boundaries such as rivers and transport boundaries such as main roads.
- e. Where necessary, households may be reassigned by the central DeWorm3 team to a different cluster based on cluster boundaries and GPS coordinates.
- f. An ArcMap shapefile outlining all 40 clusters will be produced by the central DeWorm3 team and will be sent to the sites to serve as the Study Cluster Map.

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<b>Principal Investigator</b>	<b>Signature</b>	<b>Date</b>	
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