**Outline: Post-exposure prophylaxis in Madasgacar**

1. **Clinic provisioning and functioning**
   1. IPM CTAR (any shortages? RIG data, etc.)
   2. Discrepancies between provisioning and reporting for peripheral ctar
      1. Temporal (i.e. gaps in reporting in time series by ctar, could also use spatscan or other metric to identify these gaps)
      2. Spatial (i.e. CTAR specific using theoretical number of vials used vs. vials delivered and vice versa)
   3. Description of how provisioning works (i.e. looking at frequency of vaccine requests, reports of shortages, delivery to peripheral clinics, etc.)

***Figure: Time series + map of consultations***

1. **Descriptive data on patient and biting animal data**
   1. Patient data (demographics, wound type, delays, compliance, etc.)
   2. Animal data (species, ownership, outcome, etc.)

***Table 1: Patients***

***Table 2: Animals***

1. **Spatial analysis of access**
   1. Inter-district travel networks (including IPM!)

***Figure: Networks of travel by ctar/district***

* 1. Reported bite incidence by
  2. Cleaned data to the commune level, bayesian model of underreporting by travel time/distance to clinic

***Figure: Estimated PEP access by commune or district, predicted model relationship between access + travel time/distance***

1. **Estimated burden of rabies in Madagascar incorporating spatial access and using decision tree parameter estimates from Rajeev et al. (Moramanga paper).** 
   1. Baseline
   2. Reduction if access is expanded
      1. to all district hospitals
      2. to all CSB IIs

***Figure: Estimated burden across different scenarios (base/expanded1, expanded2)***

**Main points:**

* Challenges in PEP provisioning and recommendations for improving it
* Animal bites and victim characteristics similar to those in other countries
* When incorporating spatial access, better/more precise estimates of burden—we have a unique data set in which to look at this (i.e. in most other countries, data on PEP use is not collected centrally and also confounded by private provisioning of PEP).
* Improvements to PEP efficacy if access is expanded (i.e. through a GAVI investment)
* Limited rabies data, clinic based surveillance could be great!

**Data:**

- Peripheral ctar data

- IPM ctar data (+ RIG)

- Monthly provisioning data (Dr. Ravo)

\* Any reports of suspect human rabies deaths that received PEP? Other records of suspect human rabies cases?

\*\* Using Miora’s cleaned database (i.e. 2010-2014, just for spatial data (part 1 and/or 3) but not for part 2 as data is not clean)?

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