

The University of California, San Francisco

Malaria Elimination Initiative (MEI)



Module 6

Manage entomological data

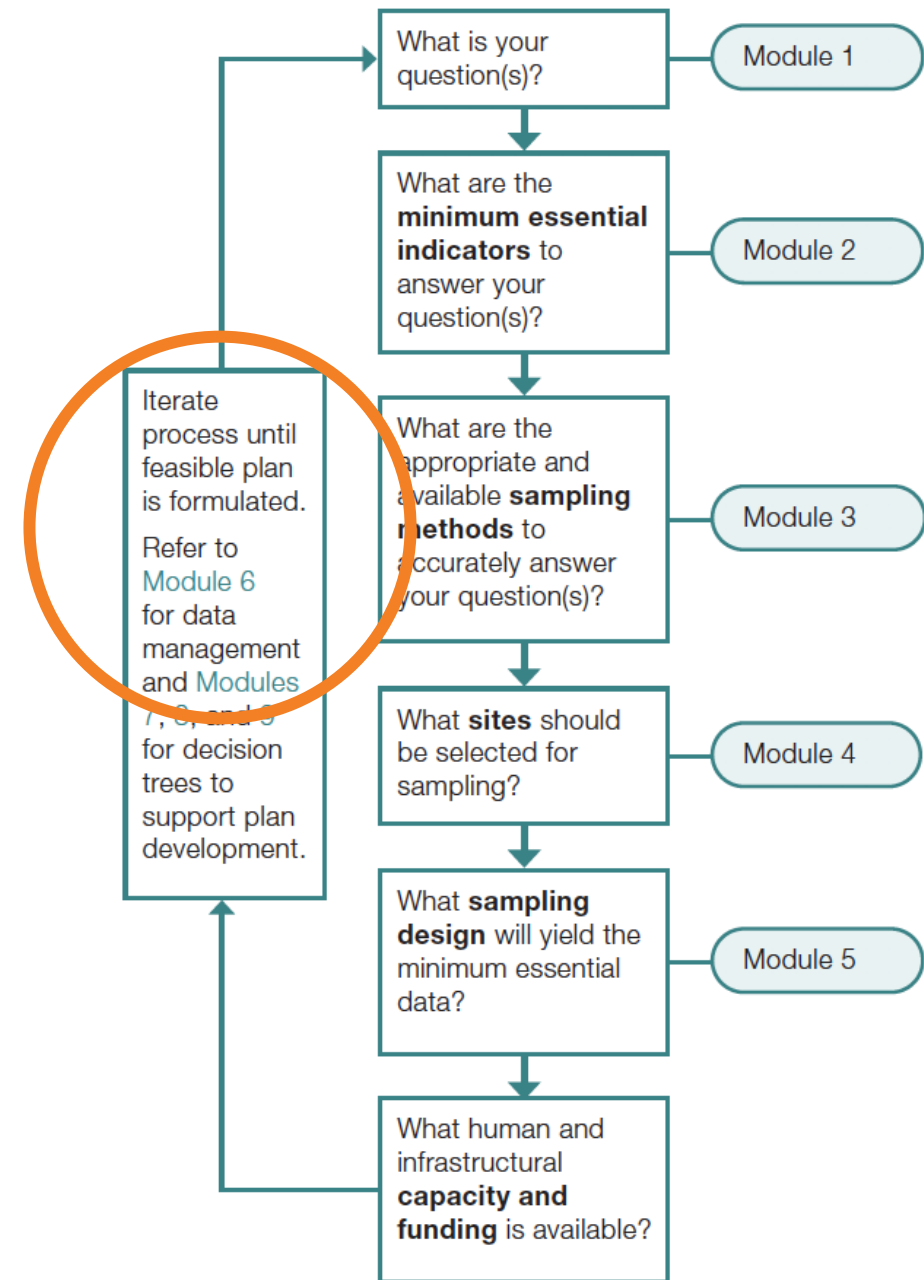
The Entomological Surveillance Planning Tool (ESPT)

Learning objectives: Module 6

1. To understand the basic steps in preparing for field and/or laboratory entomological data collection.
2. To identify key best practices for data entry, cleaning, and management.

Where are we in the ESPT?

- **Module 6** is a short module (2 pages) with basic step-by-step guidance on how to prepare for and manage entomological data collection
- Module 6 is divided into two sections:
 1. Steps to **prepare for entomological data collection**
 2. **Data management** including **data entry, cleaning, and storage**
- Module 6 walks through one field example and one lab example to illustrate the basic steps of entomological data collection



1. Preparing for entomological data collection

- Before collecting entomological data in either the field or the lab, the appropriate **data collection form(s)** must be established
- The ESPT outlines **3 key steps** for establishing appropriate data collection forms for field or lab entomological data collection

Step 1. Identify required data collection forms



Step 2. Adapt forms to your specific activities



Step 3. Establish data dictionaries

Step 1. Identify required data collection forms

- For each lab and field activity, there must be an associated and appropriate data collection form to record key data in a standardized way.
 - ***Example:*** For conducting an insecticide susceptibility test, there must be a corresponding insecticide susceptibility data collection form that needs to be filled out during the test.
- Establish a list of required data collection forms based on the different field and/or laboratory entomological activities that your team has planned

Step 2. Adapt existing forms to your activities

- Many entomological data collection forms have already been developed by organizations like the WHO, CDC, PMI, and other resource platforms
- Pre-existing forms are excellent examples (or templates), but they may not be adapted to your specific activities or data collection needs
 - Important to adapt these forms to your planned activities to ensure your team is collecting the appropriate data points to answer your program question
 - **Example:** The ESPT provides an example **Human Behavior Observation (HBO) data collection form** ([Annex IV](#)). You can use this form as a template and adapt it to capture exactly what data your program needs to measure

Example HBO form

Annex IV

Example Human Behavior Observations Form

Add columns to also look at hammock net use

Locality _____ District _____ Region _____

Supervisor name _____ Collection Date __ / __ / ____ House number _____

Homeowner name _____ GPS coordinates of house: Lat _____ Long _____

Add row to include earlier or later times (e.g., 5:00 – 6:00 pm)

Hour of observation	Name of observer	Location of observer (inside/outside)	Number of people at the END of the collection hour:			
			Sleeping		Awake	
			Using a bednet	NOT using a bednet	Using a bednet	NOT using a bednet
6:00–7:00 PM		Inside				
		Outside				
7:00–8:00 PM		Inside				
		Outside				
8:00–9:00 PM		Inside				
		Outside				
9:00–10:00 PM		Inside				
		Outside				

Step 3. Establish data dictionaries

- Each data collection form is made up of column headers to ensure the appropriate data is collected in a **standardized** way
- Critical to establish data dictionaries to describe precisely what each column header requires, how to record the data, and in what unit to record it.
- Data dictionary for example HBO form is provided in [Annex IV](#) (excerpt to the right)

Column Header	Description	Notation
Duration of Rainfall	Provide the length of time during which rainfall occurred each hour.	<ul style="list-style-type: none">• Indicate the duration in minutes (e.g., if it rained for 1 hour, write: 60)• If no rainfall occurred, write: 0

2. Data management

This short section provides guidance on key considerations for:

- Data entry and cleaning
- Data storage



Data entry and cleaning

- Data collected in the field or lab (on paper or digital data entry tools) must be digitized in a database
- During this process, **data cleaning and quality checking** is key to identify data errors and empty cells and to ensure that formatting is standardized across data entries



Example data quality check

FILL IN FIELD									IN LAB	
Hou r No.	Collection Hour	Start Time	Temp	%RH	Rain (Y/N)	Wind Speed	Collector Name	BATCH code (Unique Form Serial Number-Hour Number)	No. A	No. Other
1	18.00-19.00	1805	35	85	N	5_SW	JND	HLC-230-5409-1	20	1
2	19.00-20.00	1901	32	85	N	5_SW	JND	HLC-230-5409-2	15	3
3	20.00-21.00	2015	32	85	N	5_SW	JND	HLC-230-5409-3	18	5
4	21.00-22.00	2101	32	85	YN	10_SW	JND	HLC-230-5409-4	2	2
5	22.00-23.00	2302	300	85			JND	HLC-230-5409-5		0
6	23.00-00.00	2305	30		Y	10_SW	JND			0
7	00.00-01.00	0012	28	70	N	10_SW	HFO	HLC-230-5409-7		0
8	01.00-02.00	0114	28	70	N	2_SW	HFO	HLC-230-5409-8	20	3
9	02.00-03.00	02020	28	70	N	2_SW	HFO	HLC-230-5409-9	18	2
10	03.00-04.00	0300	28	70	N	2_SW	HFO	HLC-230-5409-10	15	3
11	04.00-05.00	0404	26	65	N	2_SW	HFO	HLC-230-5409-11	14	33
12	05.00-06.00	0510	24	65	N	10_SW	HFO	HLC-230-5409-12	18	2

Recheck?

Mistake

Mistake in time entry

Empty Cell

Data storage

- Electronic data forms should be securely stored in a **database**, and the database should only be accessible to the relevant individuals (e.g., entomologist, statistician, program manager)
- It is important to keep **historical entomological data** from past activities, and databases allow for this accumulation and storage of data

Participant exercise 1



Part 1: How would you modify Annex IV (example HBO form) to record:

- Use of Spatial repellents,
- Include earlier evening hours: 4:00 – 5:00 PM, 5:00 – 6:00 PM

Part 2: How would you adjust the data dictionary of Annex IV?