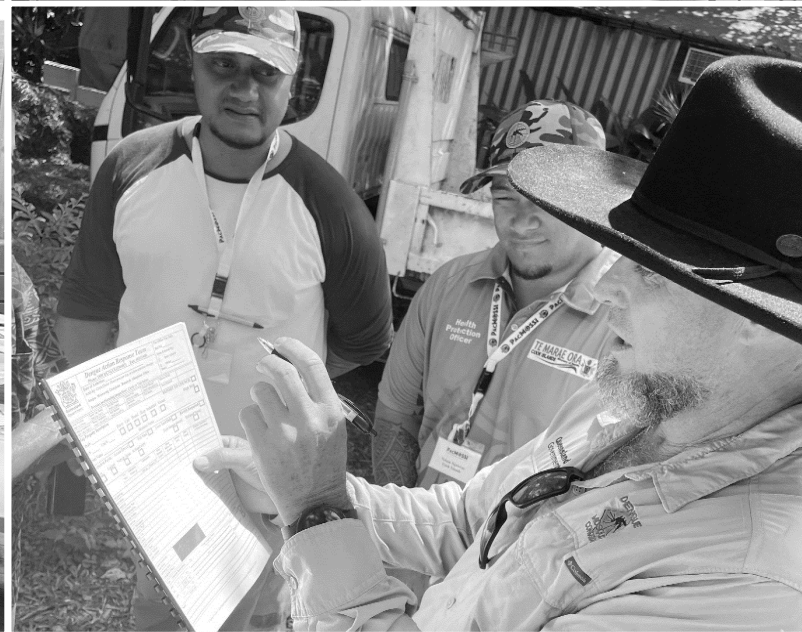


PACMOSSI

Pacific Mosquito Surveillance Strengthening for Impact



RESIDUAL SPRAYING

AGAINST *Aedes* VECTORS IN THE PACIFIC

Spray Operator Workshop Facilitator Guide

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Acronyms

CFV	control flow valve
cm	centimetres
DFAT	Australian Department of Foreign Affairs and Trade
IRS	indoor residual spraying
m	metres
N/A	not applicable
PacMOSSI	Pacific Mosquito Surveillance Strengthening for Impact
PPE	personal protective equipment



About this workshop

Rationale

Aedes mosquitoes can transmit diseases to humans such as dengue, chikungunya and Zika. Residual spraying against *Aedes* involves applying a long-lasting insecticide to surfaces on which these mosquitoes commonly rest. Depending on the resting sites of local *Aedes* vectors, residual spraying can be conducted indoors or outdoors, including in harbourages for adult and immature (aquatic) vectors.

For residual spraying to be effective, spray operations must ensure high coverage of households, structures and harbourages, with high quality and safe application of insecticides. Low-quality spraying can jeopardise residual spray program effectiveness. When insecticide is not applied correctly, mosquitoes can rest on unsprayed and under-sprayed patches of the wall which will allow continued transmission of pathogens to humans and potentially promote the development of insecticide resistance—making residual spray operations appear ineffective.

Training of spray operators is therefore important to ensure impactful vector control that reduces or prevents vector-borne diseases. It is essential that every spray operator demonstrates competency before moving to the field and performing residual spraying without supervision.

This workshop curriculum has been designed for spray operators to support training for safe and effective residual spraying against *Aedes* in the Pacific. This guide is to help facilitators with the design and delivery of the curriculum. It is not intended to be prescriptive, but to be used as a guide with training activities to be adapted based on the requirements of local vector-borne disease control programs, the expertise of the facilitators, and the experience and training needs of the participants.

Overview

Course duration

This has been designed as a 5-day course. Additional days may be added for Spray Team Leader training, if necessary.

Course goal

This workshop is designed to build spray operator capacity to conduct safe, quality and effective residual spraying, including communicating effectively with community members.

Course objectives

By the end of the workshop, participants will be able to:

1. Recount key requirements for quality, safe and effective residual spraying indoors and in harbourage sites of *Aedes* vectors
 2. Understand:
 - a. How to sensitize households and prepare houses for spraying
 - b. How to target spraying to specific locations and areas within locations
 - c. Correct spraying techniques for hand compression sprayers (and motorised backpack mist-blowers)
 - d. Correct handling, use, maintenance and disposal of residual spraying equipment and supplies
 - e. Correct completion of spray activities, including tracking/reporting
-

Participants and trainers

Participants

The recommended number of participants for this course is 10-20 though in some cases additional people can be accommodated. Appropriate participants are spray operators who are staff of, or are contracted through, Ministries of Health or other national and subnational health services or their development partners in Pacific Island Countries. This may include specific vector control personnel, Environmental Health Officers or community members. Participants may be experienced spray operators or new to the job.

Trainers

The recommended number of trainers for this course is 1 facilitator for every 10 participants. Appropriate trainers include experienced local residual spray staff who have experience facilitating workshops and local or international technical assistants with relevant expertise and experience.

Workshop modes

The training has been designed to be delivered in three modes. In this Facilitator's Guide, each session is colour-coded to indicate which mode is used:

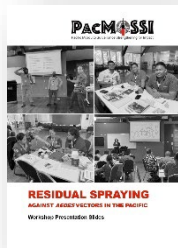
Classroom learning
Practical demonstrations
Hands-on participation

Content may be delivered in a different mode to that specified, depending on available time, facilities, or the number of participants. For instance, extended sessions of hands-on practice (rather than classroom learning) may be useful.

Technical content



The *PacMOSSI Spray Operator Field Guide* is the principal technical resource to be used during the workshop. It provides a simplified overview of key technical content to be covered. Links to relevant sections of the Field Guide are provided in this Facilitator Guide. A copy of the Field Guide should be available to participants and facilitators throughout the workshop. An electronic copy can be emailed to participants in advance.



The *PacMOSSI Spray Operator Workshop Presentations* of technical content for each session also accompany this Facilitator Guide. A copy of these compiled presentations should be available to participants and facilitators throughout the workshop. An electronic copy can also be emailed to participants following workshop completion.

Other resources for use in the workshop are outlined in the “Preparing for the workshop” section of this Facilitator Guide.

Participant assessments

Attendance sheets

- The workshop attendance list (Annex 1) can be completed at the end of each day, so that there is a formal record of who participated in which sessions.

Pre- and post-workshop written tests

- The pre-workshop written assessment (Annex 2) helps the facilitator better understand the level of knowledge and experience participants have when they enter the course, indicating areas where additional emphasis may be needed.
- The post-course assessment (Annex 3) affirms that participants have reached the required level of competency and gained the required knowledge.

Skills test

- The spray operator skills test (Annex 4) allows facilitators to observe the participants and provide any corrective directions to improve their spray technique.

Workshop assessment

- The end of workshop feedback form (Annex 5) provides feedback to facilitators to inform any adjustment of workshop content or delivery so that future workshops adequately meet the needs of participants.
-

Workshop schedule

	Day 1	Day 2	Day 3	Day 4	Day 5
8:30-9:15	Opening Pre-workshop test	Review of Day 1	Review of Day 2	Review of Day 3	Review of Day 4
9:15-10:15	S1: Introduction • Residual spraying principles	S6: Daily preparations and tasks • Daily spray tasks	S12: Indoor spray technique • Re-pressurising the sprayer	S19: Sprayer maintenance and storage	S24: Spraying in difficult situations
10:15-10:30	<i>BREAK</i>	<i>BREAK</i>	<i>BREAK</i>	<i>BREAK</i>	<i>BREAK</i>
10:30-12:30	S2: Overview of residual spraying against Aedes • Mosquitoes • Spray priorities • Do not spray	S7: Preparing spray units S8: Practice communicating with community • Preparing housing units	S13: Practice indoor spray technique	S20: Practice checking discharge rate	S25: Practice troubleshooting
12:30-13:30	<i>LUNCH</i>	<i>LUNCH</i>	<i>LUNCH</i>	<i>LUNCH</i>	<i>LUNCH</i>
13:30-15:30	S3: Health and safety • Incidents • First Aid	S9: Spray equipment and insecticides	S14: Outdoor harbourage treatment S15: Practice treatment of outdoor harbourages	S21: Supervision and data management S22: Practice using forms	S26: Review session • Code of conduct
15:30-15:45	<i>BREAK</i>	<i>BREAK</i>	<i>BREAK</i>	<i>BREAK</i>	<i>BREAK</i>
15:45-17:00	S4: Personal protective equipment (PPE) S5: Practice with PPE • Don/doff	S10: Mixing insecticide and pressurising S11: Practice mixing and pressurising	S16: Outdoor residual spraying beyond the yard S17: Practice spraying beyond the yard S18: End of day clean up • Progressive rinse	S23: Spray skills observation • Skills test	Closing • Post-workshop test

Key:

<i>Classroom learning</i>	<i>Practical demonstrations</i>	<i>Hands-on participation</i>
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Preparing for the workshop

Preparations

It is essential to undertake the necessary preparations well in advance of the workshop date. Below is a brief outline of key steps to be taken in the months leading up to the workshop.

At least 4 weeks in advance

- Identify selection criteria for workshop participants.
- Formulate a list of proposed participants for the workshop, ensuring geographic and gender representation.
- Identify facilitators for the workshop.
- Send invitations to proposed participants and facilitators.
- Organise travel and per diems, as appropriate.
- Identify the venue and visit to ensure all requirements are met (see below).
- Procure required equipment and materials (see below).

At least 2 weeks in advance

- Share this Facilitator's Guide and resources with the facilitation team.
- Adapt workshop content to the local context, considering local structure definitions, forms in use, equipment available, logistics and specific challenges faced or anticipated.
- Assess whether translation is needed during workshop sessions.

At least 1 week in advance

- Share the *PacMOSSI Spray Operator Field Guide* with participants.
- If conducting the field simulation, work with community leaders to identify several houses near the training venue (1 house for every 5–10 participants) and obtain permission for use during the workshop.
- Print field guides, facilitator's guides, participant materials, and handouts.

At least 1 day in advance

- Prepare participant folders (pre-workshop written test, agenda, PowerPoint printouts, notebook, pen).
- Prepare facilitator folders (attendance list, facilitator guide, worksheets, written tests, test answers, spray skills assessment).
- Test venue audio-visual equipment.
- Confirm other required equipment and materials are available.
- Identify the wall that will be used for spray practice.

Resources

The following key resources are to be used during the workshop:

- *PacMOSSI Spray Operator Workshop Facilitator Guide*, including all annexes.
- *PacMOSSI Spray Operator Field Guide*
- *PacMOSSI Workshop Presentations*
- [Goizper training videos](#) (assembly, starting up, cleaning, troubleshooting)*
- SPC/WHO [Manual for Aedes Vector Surveillance and Control in the Pacific](#)

**Note: these videos are appropriate if Goizper IK Vector Control Super hand compression sprayers are used in the training.*

Equipment and materials

Audio-visual equipment

- Projector and screen (or TV)
- Laptop (dedicated for the workshop)
- Speakers for playing videos on the laptop
- Sound system: speakers and 2 microphones (needed if there are more than 30 participants in the training or poor training room layout)
- Extension cords with multi-plugs
- Translation equipment (translation booth, receivers, headphones) if needed

Spray equipment

- Complete set of PPE (at least 1 for each pair of participants)
- Hand-compression sprayer with control flow valve (CFV) installed (at least 1 for each pair of participants)
- Filter cloth (1 per sprayer)
- Mist-blower (at least 1 for each 4 participants)
- 2-stroke oil and petrol (enough for mist-blowers)
- Funnels to introduce oil-petrol into mist-blower (1 per mist-blower)
- Flashlight/torch (1 per sprayer)

- Jug with measurements for calibrating nozzle (1 per sprayer)
- Faux insecticide – empty bottles or plain envelopes to simulate bottles or sachets of insecticide (1 for each pair of participants)
- Sticks longer than 45 cm (1 for each sprayer)
- String or gaffer tape (to fasten sticks to lance)
- Timekeeping device, such as stopwatch or cell phone (1 for each pair of participants)
- Calculating device, such as calculator or cell phone (1 for each pair of participants)
- Chalk (1 box, for preparing the wall for spray practice)
- Tape measure (3 or 4 for measuring and creating the practice wall)
- Water-based dye (to mix with 1 tank of water for the skills test demonstration)
- Plain cloth, 3 m x 10 m (1 piece to demonstrate the spray test)
- Spill response kit (shovel, bucket with absorbent sand or sawdust, long-handled brush with stiff bristles, short-handled brush, pan)
- First aid kit, including adhesive bandages, gauze, antibiotic cream, eye wash, hydrocortisone cream/calamine, aspirin

Stationary

- Binders of facilitator guide, handouts, tests etc. (1 for each facilitator)
 - Folders with agenda, presentations etc. (1 per participant plus several extras)
 - Participant name badges
 - Sticky notes in 2 different colours (1 pad per 10 participants)
 - Flipchart paper (4 pads)
 - Markers (10, more if the group is large)
 - Plain white paper (about 5 sheets per participant)
 - Printer with extra toner and paper (optional)
-

Venue requirements

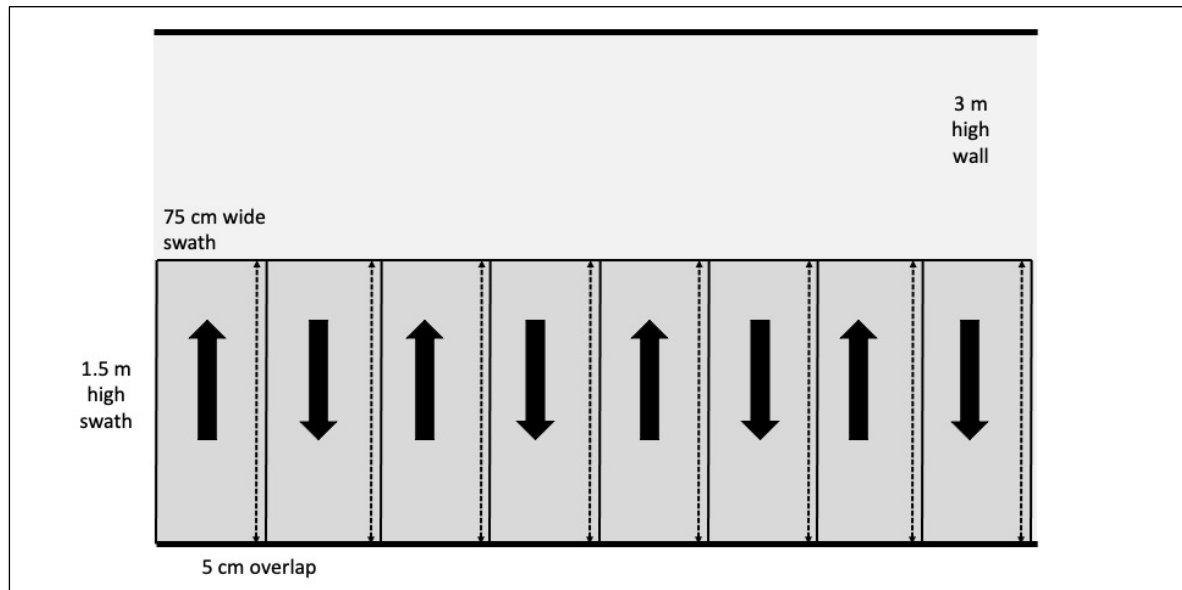
Classroom

- Sufficient space for accommodating all participants.
- Appropriate and functional audio-visual equipment.
- Facilities meet the needs of participants, e.g. accessible, toilets, water.

Practice wall

- Outdoor space available with an empty wall for spray demonstrations and practice.
- Should be long enough for half of the participants to practice spraying with water in their sprayers.

Example of a spray wall



Preparing the wall for spray practice

1. Mark the upper spray height with a solid line.
 - Start at the left bottom corner or edge of the wall, measure 1.5 m high and make a small mark.
 - At the other edge or about 6 m along, measure 1.5 m high and make a small mark.
 - Halfway or about 3 m along, measure 1.5 m high and make a small mark.
 - Connect the three marks with a solid horizontal line.
2. Mark the width of one spray swathe with a solid line.
 - Start at the left bottom corner or edge of the wall, measure 75 cm from the corner and make a small mark.
 - At the 1.5 m high solid line, measure 75 cm from the corner and make another small mark.
 - Connect the two marks with a solid line.
3. Mark the width of the second spray swathe, with a dotted line indicating the 5 cm overlap.
 - Starting at the 1.5 m high solid line, measure 5 cm to the left of the solid line you marked in the previous step. Mark the wall.
 - At the bottom of the wall, measure 5 cm to the left of the solid line. Mark the wall.
 - Connect these three marks by creating a dotted line down the wall.
4. From the dotted line, measure 75 cm to the right and draw a solid line. This width, from the dotted line to the solid line, represents the second spray swathe.
5. Continue this pattern until the wall is fully marked for spray practice so that:
 - Solid lines are the end of the previous spray swath.
 - Dotted lines are the start of the next spray swath.
 - The distance between the dotted and solid lines (5 cm) is the swath overlap.

Tips for facilitators

Facilitating effectively requires a combination of interpersonal skills, communication abilities, and a good understanding of group dynamics. If you are a new facilitator, here are some tips to help you excel in your role.

Prepare yourself for the facilitator role by familiarising yourself with the day's agenda and objectives and training materials but avoiding memorising a script. Arrive at the workshop space early and setup the space to meet the requirements of that day's sessions.

Know your role. A facilitator is a guide to help people move through a process together to achieve specific goals and outcomes. In general, the facilitator does not take an active role in the conversation or provide solutions, but instead *facilitates* group members in generating their own ideas and coming to their own conclusions.

Know your audience. Understand the needs, expectations, and characteristics of your participants, and tailor your approach to their level of expertise and interests. Keep in mind that everyone learns differently, so make sure to include variety in approaches and activities to accommodate different learning styles within your sessions.

Outline your expectations for the day at the beginning of each session. This should include the purpose of the session, what they will learn (the learning objectives), what you expect from them as active participants and what they can expect from you as the facilitator. Provide enough time for participants to achieve the exercise's learning objectives.

Create a positive environment. Set a welcoming and inclusive tone. Make participants feel comfortable expressing their ideas and opinions. Recognise and reinforce supportive behaviours and responses by highlighting the experiences of participants and encouraging peer-to-peer learning. Use icebreakers or warm-up activities to break the ice and build rapport. Annex 6 includes example energisers that can be used when needed.

Watch body language. Observe the mood of the room and know when to adjust your facilitation style and communication (e.g., when to conduct a quick energiser exercise or ask check-in questions).

Communicate clearly. Use lay language and everyday words during lectures and group discussions. Remain impartial and avoid favouring any particular viewpoint.

Listen attentively. Pay close attention to what participants are saying. This demonstrates that you value their input and helps you understand their perspectives better. Engage all participants by asking open-ended questions, inviting quieter individuals to speak, and ensuring that dominant voices do not dominate the conversation.

Summarise and synthesise. Regularly summarise key points to ensure everyone is on the same page. This helps participants stay focused and reinforces important takeaways. At the end of each day, take a bit of extra time to summarise key learnings and discuss next steps.

Reflect and improve. At the end of each day, take a moment to thank participants for their contributions and invite feedback on the facilitation process. Reflect on what went well and what could be improved. Continuous learning will help you refine your facilitation skills over time. Remember that each group you work with will have unique dynamics, so adapt these suggestions to suit the specific needs of your group. Annex 7 and Annex 8 provide exercises for daily evaluation of learnings and for closing the training day.




Workshop sessions

Opening session

Session mode	Classroom learning
Duration	30 mins
Learning objectives	By the end of this session, participants will be able to: <ul style="list-style-type: none">• Explain the focus of the workshop• Express their expectations for the workshop
Resources	<ul style="list-style-type: none">• Pre-workshop written test forms (Annex 2)• Session 0 presentation
Equipment & materials	<ul style="list-style-type: none">• Participant name cards, folders, pens, notepads• Flipchart, markers
Advance preparation	<ul style="list-style-type: none">• Ensure participant folders include agenda• Ensure facilitator folder has pre-workshop tests

Steps

1. **GREET** participants as they enter the room. **ASK** them to take a nametag to wear throughout the workshop.
2. **WELCOME** participants to the workshop once they are settled in seats. This welcome may be done by an invited guest speaker. **NOTE** the importance of the topic and the need for active engagement of all participants.
3. **PRESENT** the Session 0 content introducing the workshop. **OVERVIEW** the following: 
 - Aims and approaches
 - Agenda and expected schedule
 - Rationale for assessments
 - Any logistical arrangements
 - Relevant facilities or services, such as toilets, drinking water and WIFI
4. **INTRODUCE** the facilitators and ask each to share:
 - Their name
 - Experience with residual spraying
 - Expectations for the workshop
5. **ASK** participants to similarly introduce themselves using the same three elements.
6. **WRITE** key expectations on the flipchart as they are mentioned. To prompt:
 - What do you expect from the facilitators?

- What do you expect from other participants?
- What do you expect from yourself?
- What do you expect to know after completion that you did not know before?
- What do you expect to be able to do after completion that you cannot currently do?

7. **CONDUCT** the pre-workshop test:

- Brief participants on the test process.
- Distribute written tests to participants.
- Allow 30 minutes for completion.
- Collect and mark tests. Answers for the technical knowledge section are as follows: 1=d, 2=a, 3=b, 4=c, 5=b, 6=a, 7=d, 8=a, 9=c, 10=a, 11=d, 12=a

Note: Participants should NOT be allowed to keep the test form.


8. **ASK** participants what questions they have and address them.

Session 1. Introduction to residual spraying

Session mode	Classroom learning
Duration	1 hour
Learning objectives	By the end of this session, participants will be able to: <ul style="list-style-type: none">• Describe the basic principles of residual spraying• Discuss training principles
Resources	<ul style="list-style-type: none">• S1 presentation
Equipment & materials	<ul style="list-style-type: none">• Flipchart, markers• Two signs one AGREE, and one DISAGREE
Advance preparation	<ul style="list-style-type: none">• Set up the signs on either side of the classroom

Steps


1. **INTRODUCE** the session and **REVIEW** the learning objectives.
2. **ASK** participants what they know about residual spraying against *Aedes*. **RECORD** their responses on a flipchart.
3. **ASK** participants what they have heard from the radio, family or friends about residual spraying. **RECORD** their responses on a flipchart.
4. **TELL** participants that you will now play a game.
 - On one side of the room is a sign with **AGREE** and on the other side is a sign with **DISAGREE**.
 - As a statement is read out, participants can choose either side - or stand in the middle if they are not sure.
 - It is OK not to have an answer correct, as this is a fun learning experience not a test.
5. **READ** the following statements one at a time. **DEBRIEF** after each question to share the correct response.
 - i. Residual spraying will kill all mosquitoes and reduce the risk of contracting disease to zero. **FALSE**. It can reduce the risk but may not kill all mosquitoes and reduce risk to zero.
 - ii. Spray operators must wear protective gear only while they are spraying. **FALSE**. PPE should be used even before spraying, when mixing insecticides and then after spraying when cleaning equipment.
 - iii. Pregnant women should refuse residual spraying because the insecticide can cause her to miscarry. **FALSE**. Residual spraying is safe in households where pregnant women live. In fact, vector-borne diseases can be very complicated for pregnant women, so reducing the risk through interventions like residual spraying is important.

- iv. When residual spraying is completed, all insects will be killed, including bedbugs. FALSE. Residual spraying insecticides are designed to kill mosquitoes. Some other insects may also be affected by the insecticide, but in most cases, bedbugs are not killed. Insecticide may irritate bedbugs, making them more active immediately after spraying.
 - v. Once the walls of a home are sprayed, the homeowner should clean the walls with soap and water. FALSE: After residual spraying, it is important that the walls are not washed. Soap and water will wash off the insecticide, leaving the household vulnerable to mosquitoes.
 - vi. Including women more fully in spray operations leads to better performance for the whole team. TRUE: Statistics show that female spray operators perform as well as their male counterparts. Additionally, some households may be more open to a female spray operator—having women as part of the team gives spray operators more options as they work in the community.
6. **PRESENT** the Session 1 content on residual spraying features and benefits. 
7. **ASK** participants what questions they have and address them.
-

Session 2. Overview of residual spraying against *Aedes*

Session mode	Classroom learning
Duration	2 hours
Learning objectives	By the end of this session, participants will be able to: <ul style="list-style-type: none"> • Explain key considerations for residual spraying against <i>Aedes</i> • Describe the priorities for spraying
Resources	<ul style="list-style-type: none"> • S2 presentation • PacMOSSI Spray Operator Field Guide pages 1-3
Equipment & materials	<ul style="list-style-type: none"> • Flipchart, markers
Advance preparation	<ul style="list-style-type: none"> • Set up the flipcharts

Steps

1. **INTRODUCE** the session and **REVIEW** the learning objectives.
2. **ASK** participants what they know about mosquitoes. **NOTE** their answers on the flipchart. **PROVIDE** additional information or corrections when needed.
3. **ASK** participants what they know specifically about *Aedes* mosquitoes. **EMPHASISE** that habitats and behaviours differ from *Anopheles* and can also differ between the *Aedes* species.
 - Why they bite. TO OBTAIN BLOOD TO NOURISH THEIR EGGS.
 - When they bite. USUALLY DURING THE PERIOD OF DAWN AND DUSK AND THROUGHOUT THE DAY.
 - Who they bite. CAN BE HUMANS AND OTHER ANIMALS.
 - Where they bite. OFTEN INSIDE OR AROUND THE HOUSE, DEPENDING ON THE LOCATION OF HOSTS DURING THEIR ACTIVE BITING PERIOD.
 - What they do after they bite. REST ON SURFACES USUALLY CLOSE TO THE LOCATION THEY TOOK BLOOD.
 - Where they rest. THIS IS USUALLY IN DARK AREAS, SUCH AS IN CORNERS, UNDER FURNITURE OR IN FOLIAGE.
4. **PRESENT** the Session 2 content on residual spraying against *Aedes*. **EMPHASISE** the key features of *Aedes* for consideration during residual spraying. 
5. **TELL participants that you will give examples of** structures, locations or surfaces and ask the participants to call out “yes” or “no” as to whether they are considered spray priorities. Provide corrective information. Use the following:
 - Bedroom — SPRAY

- Bedroom with someone sick who cannot be moved — DO NOT SPRAY
- Hallway — SPRAY
- Kitchen — SPRAY ONLY AFTER FOOD STUFFS AND UTENSILS ARE COVERED. SPRAY IF A DETACHED UNIT
- Wallpaper — DO NOT SPRAY
- Houses with a vicious dog — DO NOT SPRAY

6. **ASK** participants what questions they have and address them.

Session 3. Health and safety

Session mode	Classroom learning
Duration	1 hour 15 minutes
Learning objectives	By the end of this session, participants will be able to: <ul style="list-style-type: none">• Identify best practices for minimising exposure to insecticides• Explain the symptoms and treatment of insecticide exposure
Resources	<ul style="list-style-type: none">• S3 presentation
Equipment & materials	<ul style="list-style-type: none">• Flipchart, pen• First aid kit
Advance preparation	N/A

Steps

1. **INTRODUCE** the session and **REVIEW** the learning objectives.
2. **INDICATE** that any spraying or handling of insecticides comes with health hazards to spray operators. It is therefore important that all spray operators are aware of these hazards to manage them. **EXPLAIN** that the two main hazards are:
 - Insecticide exposure in the lungs, in the eyes or on the skin.
 - Overheating, exhaustion, fatigue and weakness.
3. **REVIEW** each of these hazards and lead a discussion with the group on the steps to take to reduce the risk.
 - Insecticide exposure. How can we avoid getting insecticide in our mouths?
 - Do not eat while in the field conducting residual spraying. Eat a big breakfast before leaving for the field to stay energised. Drink plenty of water in the morning and evening, before and after work. Remember that you will not be able to stop for a water break while you are spraying.
 - While spraying, avoid putting anything you have touched near your mouth. Insecticide on your gloves or other PPE can easily be transferred to food, cigarettes or other equipment.
 - Wash hands and face before going home. Bathing should be part of every spray operator's routine after they finish work.
 - Overheating, exhaustion, fatigue, and weakness. How can we avoid overheating on the job?

- Drink plenty of water before and after work. You may not eat or drink while working. Eat a large breakfast to give yourself the energy you need for spraying.
 - If you begin to feel overheated (lightheaded or dizzy), move to the shade and take off excess clothing so your body can cool itself.
 - If you continue to feel unwell, report your condition to a supervisor.
 - If you continue to feel weak, you might need to stop for the day so you can drink and rest to regain your strength.
 - If you continue to feel poorly, report your condition to a supervisor.
 - NEVER drink alcohol before coming to work or while performing your duties. Each spray operator must be able to perform their physical duties, represent themselves well to the community and be focused.
4. **REMINDE** participants that the best way to protect themselves from insecticide is to wear the correct personal protective equipment at all times.
 5. **ASK:** Should we be careful about pregnant women and breastfeeding mothers working as spray operators? Why?
 - Yes! Continuous exposure to insecticides during pregnancy or breastfeeding may be harmful to the child. However, residual spray programs should also focus on attracting and retaining women as part of the program.
 6. **TELL** participants that all female spray operators of childbearing age may be required to take a pregnancy test as part of their health assessment before the spray campaign. Give further information on the specific requirements for pregnant or breastfeeding women, and implications for continued engagement as a spray team member (e.g., alternative engagement as community mobilisers, data entry clerks, supervisors or in other roles that have limited contact with insecticide).
 7. **TELL** participants that one of our greatest safety nets when working as spray operators in the field is our team. **ASK:** What are some ways we can help keep our team stay safe when we are working? How can we look out for each other's safety? **RECORD** participants' responses on a flipchart.
 8. **TELL** participants that everyone must be aware of the signs and symptoms of insecticide exposure. Fast treatment is the key to minimising the effects of the exposure!
 9. **PRESENT** the Session 3 content on health and safety, including response to incidents and first aid.



Note: Be sure to cover any specific incident-reporting protocols in place for your team. Each program could have its own protocol that needs to be followed.

10. **SHOW** a stocked first aid kit. **REVIEW** the contents and the use of each item. **TELL** participants that first aid kits should be kept at all storage facilities and in transport vehicles. **EMPHASISE** that all wounds beyond minor cuts and scrapes should be treated at the local clinic.

11. **EMPHASISE** that team members should be looking out for each other's safety and well-being. **REMIND** the group that they should all be paying attention to their teammates and should take immediate action to help if someone is not feeling well or has been exposed to insecticide.
 12. **ASK** participants what questions they have and address them.
-

Session 4. Personal protective equipment

Session mode	Practical demonstration
Duration	30 minutes
Learning objectives	By the end of this session, participants will be able to: <ul style="list-style-type: none">• Explain requirements and correct use of PPE
Resources	<ul style="list-style-type: none">• PacMOSSI Spray Operator Field Guide page 4
Equipment & materials	<ul style="list-style-type: none">• Flipchart, markers• 1 set of PPE per participant
Advance preparation	N/A

Steps

1. **INTRODUCE** the session and **REVIEW** the learning objectives.
2. **SHOW** participants each piece of PPE, describe its use, and explain how it contributes to protecting the wearer. **EMPHASISE** that all PPE should be carefully inspected each morning before you put it on. Any worn items or equipment with visible holes should be reported and replaced.

Note: Emphasise that spray operators may not put any personal items in the haversack, since these items will be exposed to insecticide. Cell phones, identification and other items must be left at home. If there are personal items that are absolutely necessary (such as medication or sanitary products for menstruating women), they can be given to someone else who is not spraying. This could be the team leader, supervisor or driver.

3. **DEMONSTRATE** putting on PPE:
 - First, have your co-facilitator or a volunteer from the class **PUT ON** the PPE and allow participants to watch without commentary on the process.
 - Second, have your co-facilitator dress in PPE again, this time as you **DESCRIBE** what is happening as they dress.
 - Gloves should be over the sleeves of the overalls, preventing insecticide that could run down the glove from touching the skin.
 - Overall legs should be pulled out over the top of the boots, not tucked inside, to protect the feet from insecticide that might fall inside the boots.
 - There is a correct order to putting on the PPE: overalls, then boots, then neck protection, then nose mask, then helmet with face shield, and finally, gloves (so you can easily use your fingers to get the nose mask, shield and helmet positioned).

4. **ASK** if there is someone in the group who would like to try to demonstrate correctly dressing in PPE. **ENCOURAGE** any volunteer who would like to try and correct any issues that appear as they demonstrate.
 5. **ASK** the group if there is an order in which they should remove PPE.
 - Yes! Gloves should stay on as long as possible to protect your hands from insecticide on your helmet and boots—but avoid touching bare skin with the gloves.
 6. **DEMONSTRATE** removing PPE.
 - Wash gloves and boots.
 - Remove head and face protection (helmet/hat, face shield/goggles, mask/respirator).
 - Remove boots.
 - Remove gloves.
 - Remove neck cloth and overalls.
 - Remove socks.
 7. **ASK** participants what questions they have and address them.
-

Session 5. Practice with PPE

Session mode	Hands-on participation
Duration	45 minutes
Learning objectives	By the end of this session, participants will be able to: <ul style="list-style-type: none">• Demonstrate the correct use of PPE
Resources	<ul style="list-style-type: none">• PacMOSSI Spray Operator Field Guide page 4
Equipment & materials	<ul style="list-style-type: none">• 1 set of PPE per participant
Advance preparation	<ul style="list-style-type: none">• Stack PPE so the items are in neat sets (if sizes are not known beforehand, they may need to be stacked in size groupings for easy distribution)

Steps

1. **INTRODUCE** the session and **REVIEW** the learning objectives.
2. **ANNOUNCE** that everyone will now have the opportunity to put on and take off PPE. **ASK** participants to form pairs and request that each person collect the appropriate size of PPE.
3. **MOVE** the group to an open space where they have room to move around. **INSTRUCT** participants to take turns putting on PPE and observe each other as they work.
4. **ROTATE** through the groups to observe, give feedback, and answer questions as participants dress in PPE.
5. Once all participants have had the opportunity to put on PPE at least once, **ANNOUNCE** that there will now be a relay race!
6. **DIVIDE** the group into teams of 5 and line the teams up on one end of an open space. Establish an “end zone” at the other end of the space and place one stack of PPE for each team in the end zone.
7. **EXPLAIN** the rules of the race:
 - At the signal, one person from each team will run to the PPE, put on the PPE *in the correct order*, then take off PPE, *also in the correct order*, and run back to their team.
 - Once the first team member crosses the line, the second team member should run to the PPE and repeat the procedure until all team members have completed the race.
 - If one team has fewer members than the other teams, the first person should perform the task a second time.
 - The first team to complete the race wins!
 - **EMPHASISE** that though they should move quickly, the most important part of the race is putting everything on correctly and in the correct order. If it is not done correctly, they will have to do it over!

8. **GIVE** the start signal. **OBSERVE** that participants dress correctly in PPE, making corrections as needed during the race.
 9. **ANNOUNCE** the winner and applaud the winning team.
 10. **ASK** participants what questions they have and address them.
-

Session 6. Daily spray preparation and tasks


Session mode	Classroom learning
Duration	1 hour 20 minutes
Learning objectives	By the end of this session, participants will be able to: <ul style="list-style-type: none"> • Compare daily tasks of spray operators and team leaders • Explain procedures for commencing the spray day
Resources	<ul style="list-style-type: none"> • S6 Presentation • PacMOSSI Spray Operator Field Guide pages 7-8
Equipment & materials	<ul style="list-style-type: none"> • Flipchart, markers • 1 ball
Advance preparation	N/A

Steps

1. **INTRODUCE** the session and **REVIEW** the learning objectives.
2. **EXPLAIN** that before we begin a spray day, it is important to review key points from the day before.
3. **INVITE** the participants to come to an open area and form a circle. **TELL** the group you will be playing a game for the review.
 - **EXPLAIN** that each person in the circle will catch the ball once. When they catch the ball, they will give one piece of information from yesterday's training—something new they learned or something that surprised them.
 - **EXPLAIN** that they should try to avoid repeating things that have already been mentioned. This will make a more interesting review!
 - **TELL** participants that after they have caught the ball and given their statement about something they learned, they should toss the ball to another participant and then stay in the circle with their arms crossed, to indicate they have had the ball.
 - **PLAY** the review game. **CLARIFY** any statements, as needed.
 - After the game, participants may be seated. **ASK** for any questions about Day 1.
4. **ASK** participants to give feedback on the best practices for eating and drinking water before and during spray operations.
 - **EMPHASISE** that eating and drinking must be done before picking up equipment and insecticides, because these items could have some insecticide residue on them.
5. **ASK** participants to break into small groups of 3 or 4. **INSTRUCT** them to discuss all the other things they need to do in the morning before leaving to begin spray operations in the community.
6. **GIVE** them about 10 minutes to discuss.

7. **ASK** each group to share one item from their list. **RECORD** these on a flipchart under the heading of *Spray Operator* and *Team Leader*. **FILL IN** any items that they miss.
 8. **DISCUSS** the importance of ensuring you have everything you need before leaving for the community.
 9. **TELL** participants they should expect to have a team meeting each day before they leave for the field. Sometimes the meeting is led by the spray team leader. Other times, it will be led by a supervisor who has come to the operating base.
 10. **CONDUCT** a short role play. The facilitator plays the spray team leader, conducting the morning meeting. **ASK** participants to play the role of spray operators. The spray team leader (facilitator) should cover:
 - How was your work yesterday? Any concerns about the spray? What went well?
 - Update on performance targets.
 - Areas where the team is excelling and areas that need improvement.
 - Plan for the day's work.
-

Note: Be sure to allow your spray operators to speak. Ask them their opinions on the work and how the team can improve, and allow them to ask questions. Encourage their active participation in the meeting.

11. **PRESENT** the Session 6 content on daily tasks and team meetings. 
 12. **REVIEW** the specific procedures for spray operators to receive their spray equipment each morning. Ensure the following are mentioned:
 - Location to meet each morning
 - Expected arrival time
 - Check-in with team leader
 - Team leader health checks (reporting illness or concerns to the team leader)
 - Confirming all equipment is in good condition
 - Transporting personnel, equipment and supplies to the field
 13. **ASK** participants what questions they have and address them.
-

Session 7. Preparing housing units

Session mode	Classroom learning
Duration	1 hour
Learning objectives	By the end of this session, participants will be able to: <ul style="list-style-type: none"> • Articulate what is required to prepare housing units for spraying
Resources	<ul style="list-style-type: none"> • S7 presentation • PacMOSSI Spray Operator Field Guide page 9
Equipment & materials	<ul style="list-style-type: none"> • Spray Preparation activity strips • Property spray card (Annex 9) • Daily spraying record (Annex 10)
Advance preparation	<ul style="list-style-type: none"> • Prepare the activity strips

Steps

1. **INTRODUCE** the session and **REVIEW** the learning objectives.
2. **PRESENT** the Session 7 content on preparing housing units. **TALK THROUGH** the steps a spray operator should take when arriving at a household. Ensure the following steps are mentioned:
 - Greet the household members and explain what you are about to do.
 - Confirm that informed consent has been given to spray.
 - Ensure there is water available to the spray team if needed to mix insecticides.
 - Ensure that necessary relevant items are removed or covered, including:
 - Food and food containers
 - Water and water containers
 - Cooking utensils
 - Children's toys
 - Bedding and clothing
 - Ensure that all objects of value have been put away e.g., mobile phones, money, documents
 - Ensure that all people and animals have exited the house
3. **TELL** participants it is important that the community assists to correctly prepare a house to receive residual spraying.
4. **ASK** the participants to form groups of 3 or 4. **GIVE** each group a set of *Spray Preparation activity strips*. These are 6 small pieces of paper, with one of each of the instructions as listed above in step 2.



5. **TELL** the group to read all the activities and determine the order in which they should be performed. Give a few minutes for the groups to work, then **DEBRIEF** as a group.
-

Note: For some steps, there is no single correct answer; just make sure all groups have an order that makes sense, includes good, up-front household communication, and ensures all preparations of the house are fully complete before spraying starts.

6. **ASK** participants what questions they have and address them.
-

Session 8. Practice communicating with community

Session mode	Hands-on participation
Duration	1 hour 30 minutes
Learning objectives	By the end of this session, participants will be able to: <ul style="list-style-type: none"> • Articulate key messages to be delivered to communities on actions to take before, during and after spraying
Resources	<ul style="list-style-type: none"> • PacMOSSI Spray Operator Field Guide pages 46-47
Equipment & materials	<ul style="list-style-type: none"> • Flipchart, markers
Advance preparation	N/A

Steps



1. **INTRODUCE** the session and **REVIEW** the learning objectives.
2. **TELL** participants they play a very important role in improving participation in the communities where they live and work. The information they give to the community before the spray campaign and when they are in the community will help improve participation rates.
3. **EXPLAIN** that with their help you will now summarise the instructions for communities before, during and after spraying. **POINT** to the three flipcharts ready to write on.
4. **ASK:** What are all the things that householders should be asked to do before the spray operator arrives? **WRITE** the answers on the first flipchart.
5. **ASK:** What are all the things that the householders should be asked to do once the spray operator arrives and the spraying is conducted? **WRITE** the answers on the second flipchart. **REFER** to the PacMOSSI Spray Operator Field Guide for key points.
6. **ASK:** What are all the things that the householders should be asked to do once the spraying has finished? **WRITE** the answers on the third flipchart. **REFER** to the PacMOSSI Spray Operator Field Guide for key points.
7. **EXPLAIN** that all community members have the right to refuse residual spraying. **ASK:** Why do you think community members may refuse participating in residual spraying? **RECORD** a list on a flipchart as participants respond.
8. **BREAK** participants into small groups and assign each group one or two of the reasons community members give for not participating in residual spraying. These could include that one or more occupants:
 - are pregnant and worried that spraying may injure the unborn child

- experienced side effects during previous spraying and therefore does not want to allow spraying again
 - suffers from asthma and is concerned about whether spraying will make it worse
 - does not trust the spray team to be in the house alone and insists on staying during spraying
 - does not have time or does not want to be disturbed right now
9. **ASK** participants to think about how they can respond to community members when they raise these concerns. **GIVE** groups 10 minutes to discuss.
 10. **DEBRIEF** as a group, asking each group to give their “best response” to the community member’s issue. **DISCUSS** responses and add additional strategies where appropriate.
 11. **EXPLAIN** that we want to understand the reason for the refusal and try to find solutions that will satisfy the head of household.
 12. **ASK:** What opportunities do you think you will have to talk to people in your communities about residual spraying? **ALLOW** participants to respond. **SUGGEST** some of the following:
 - Engage with community leaders and groups.
 - Talk to your family about spraying.
 - Talk to neighbours and friends about spraying.
 - Post spray posters and other information in communities.
 - Encourage community members to listen to radio programs about vector-borne diseases and residual spraying.
 - On the day of spraying, communicate clearly with each head of household when arriving at their home. Confirm they have prepared for spraying and understand the spray process and post-spray safety requirements.
 13. **ASK:** How can female spray operators help overcome resistance in some households? When might it be better to have a female spray operator?
 - When the head of household expresses hesitation related to having a man in the house. For example, if a female head of household hesitates to let a man in while her husband is away.
 - When there are concerns about the safety of residual spraying for children, pregnant women or the elderly. For example, a female spray operator may be able to best allay household fears related to these groups.
 14. **ASK** participants what questions they have and address them.
-

Session 9. Spray equipment and insecticides

Session mode	Hands-on participation
Duration	1 hour 15 minutes
Learning objectives	By the end of this session, participants will be able to: <ul style="list-style-type: none"> • Identify the parts of a sprayer and their basic functions • Demonstrate how to assemble a sprayer • Extract key information from insecticide product labels
Resources	<ul style="list-style-type: none"> • S9 presentation • PacMOSSI Spray Operator Field Guide page 13 • Goizper video: iK-Vector Control / Assembly
Equipment & materials	<ul style="list-style-type: none"> • Print out of diagram of a hand-compression sprayer (unnamed) (Annex 11), markers • Sprayers with CFV (1 sprayer for each pair of participants and 1 for facilitator) • Examples of insecticide product labels (Annex 12)
Advance preparation	<ul style="list-style-type: none"> • Set up sprayers throughout the training room or outside for easy access

Steps

1. **INTRODUCE** the session and **REVIEW** the learning objectives. **EMPHASISE** that all spray equipment should be carefully inspected each morning before going to the field. Any damaged or worn parts should be reported and replaced.
2. **PRESENT** the Session 9 content on spray equipment. 
3. **PLAY** Goizper video: [iK-Vector Control / Assembly](#) (3 mins) 
4. **ASK** participants to split into groups of two and to stand beside one sprayer.
5. **INTRODUCE** each part of the sprayer, one by one, using this three-step process for each part:
 - **SHOW** the part on the sprayer and **ASK** participants to find the corresponding part on their sprayers.
 - **POINT OUT** the part on the flipchart.



ANNOUNCE the name of the part while writing it on the flipchart, then **DESCRIBE** its purpose in simple terms.
6. **DEMONSTRATE** how to disassemble and assemble the equipment. All spray operators must know how the pieces come apart and fit together for purposes of washing and cleaning.

- Note that all sprayers are required to have a CFV to help ensure proper deposit of insecticide on the wall. This may be inbuilt in the sprayer (such as for Goizper iK Vector Control Super) or fitted between the nozzle body and nozzle cap.
 - 7. **TELL** the group you are going to play a game to help everyone remember the parts of the sprayer.
 - 8. **HIDE** the flipchart with the sprayer and part names.
 - 9. **EXPLAIN** that you will call out a name of a sprayer part. Each team should work together to find the part. When they have the part, they should raise a hand and one of the facilitators will come to check.
 - **CALL OUT** one part at a time and give time for participants to locate it.
 - **As** groups raise their hands, **CIRCULATE** through the room to confirm they have identified the correct part. If not, **ASSIST** them in finding the correct part.
 - 10. **SHOW** the group an insecticide bottle and label. **DISPLAY or HANDOUT** example labels so they are visible to all participants. **EXPLAIN** each of the pieces of information on the label and their relevance.
 - 11. **GIVE** an example product bottle or copy of a label to a participant and ask them to explain the product based on the label information. **EXPLAIN** and provide more information.
 - 12. **REPEAT** with two or three labels and ask a new participant to explain each.
 - 13. **ASK** participants what questions they have and address them.
-

Session 10. Starting up

Session mode	Practical demonstrations
Duration	45 minutes
Learning objectives	By the end of this session, participants will be able to: <ul style="list-style-type: none"> • Explain correct mixing procedures for insecticides • Articulate how to correctly pressurise and depressurise the hand-compression sprayer
Resources	<ul style="list-style-type: none"> • S10 presentation • PacMOSSI Spray Operator Field Guide pages 14-19 • Goizper video: iK-Vector Control / Starting Up
Equipment & materials	<ul style="list-style-type: none"> • Sample of insecticide (liquid formulation or power/granule) • Empty containers for faux insecticide • Plastic sheet • Filter cloth • 1 sprayer • Water
Advance preparation	<ul style="list-style-type: none"> • Identify an easily accessible water source

Steps

1. **INTRODUCE** the session and **REVIEW** the learning objectives.
2. **PRESENT** the Session 10 content on starting up (mixing insecticide and pressurising) for hand-compression sprayers. 
3. **PLAY** Goizper video: [iK-Vector Control / Starting Up](#) (3 mins) 
4. **EXPLAIN** that we will now discuss the process for mixing insecticide. To give participants space, **MOVE** outside to an open area for demonstration and practice.
5. **ASK** participants to set their sprayers to the side for the moment and prepare to watch a demonstration.
6. **TELL** the participants that when they are working in communities, they will be using insecticides. The insecticide package is mixed with water in the sprayer, and this mixture is sprayed onto the walls.
7. **TELL** them that we will use water during the practice sessions this week, but they will still need to demonstrate the correct procedure for mixing insecticide.
 - Although they are not using insecticide, they should practice the mixing technique they learn today as they work with sprayers over the next few days.
 - Tell them they will “go through the motions” of mixing insecticide to show they know the correct technique. To do this, they will use faux insecticide: empty containers will be used for pretend mixing.

8. **SHOW** participants a sample of the actual insecticide they will be using. Also show the substitute to be used for practice (an envelope or water bottle).
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Note: Insecticide-mixing procedures are different, depending on the type of insecticide used. Review the notes below and explain ONLY the method your team will use. It is not necessary to review all mixing methods.

9. **GIVE** a brief overview of the process for mixing insecticide.
 - The final volume of diluted insecticide should be 7.5 litres.
 - When mixing, place the sprayer on top of the plastic sheet and on firm ground outside the house, away from any household items.
 - Use a filter cloth to sieve all the water being introduced into the sprayer.
10. First, **DEMONSTRATE** the mixing technique step-by-step, without words. Select either a liquid formulation or power/granule for the demonstration. **ENSURE** that all steps as outlined in the PacMOSSI Spray Operator Field Guide are included.
11. **DEMONSTRATE** the process again, this time with each step explained aloud. One facilitator should perform the steps as the other facilitator **EXPLAINS** each step. **EXPLAIN** that these steps are also outlined in the PacMOSSI Spray Operator Field Guide.
12. **EMPHASISE** that we must be careful not to fill the sprayer past 7.5 litres. **EMPHASISE** the importance of pouring the insecticide slowly and carefully into the sprayer to keep it from splashing when it hits the water.
13. **EXPLAIN** that when spray operators are mixing the first tank of insecticide in the morning at the store, they should use the water left from the previous night's progressive rinse instead of clean water.
 - At the progressive rinse area, dip leftover rinse water from barrels 1, 3, 5, or 7.
 - Fill to the 3-litre mark—do not use a filter cloth.
 - When barrel 1 has been emptied, spray operators should move to the third barrel, then the fifth, and so on.
14. **TELL** participants that after they have mixed the insecticide, they are almost ready to spray. The last step is pressurising the sprayer.
15. **ASK:** Why is it important to have the sprayer at the right pressure? What can go wrong if the pressure is not correct? **HIGHLIGHT** that having correct pressure in the tank helps ensure that the correct amount of insecticide is deposited on the wall of each house.
 - If the pressure is too high, too much insecticide will be deposited, which can cause dripping. This is a health risk and a waste of valuable insecticide.
 - If the tank pressure is too low, too little insecticide will be deposited, and it may not be effective in killing mosquitoes that rest on the walls, giving the community the impression that residual spraying is not effective.
 - The CFV helps ensure that we deposit the correct amount of insecticide on the wall. When the pressure drops below the required level, the insecticide flow is cut

off. When the spray operator brings the pressure back up to the correct level, the flow returns to normal.

16. **EXPLAIN** that how the sprayer is pressurised depends on the type of sprayer being used and whether there is a CFV. **USE** the re-pressurising flowchart in the PacMOSSI Spray Operator Field Guide (page 18) to show the process.

17. **DEMONSTRATE** pressurising the sprayer, without words. **ENSURE** the following steps are included:

- After you have finished shaking the sprayer to mix the insecticide, place it on the ground. The sprayer should be on your side, next to your foot (not between your feet or directly below your face. You never want to lean over the sprayer while pressurising the sprayer).
- Place your foot firmly on the sprayer's footrest.
- Pump the sprayer to pressurise the contents. Use full strokes, lifting the T-bar fully and steadily pressing it down until it stops.
- Listen for leaks (air escaping) as you pump the sprayer. Inform your team leader if you suspect the sprayer has a leak.
- Pump until the safety valve releases pressure (green mark visible). For a Goizper iK Vector Control Super that is about $\frac{3}{4}$ full, it should take pumping around 70 times with full even strokes to reach this point.

18. **DEMONSTRATE** the process again, this time with a verbal explanation—one facilitator performing the demonstration while the other explains step-by-step.

19. Next, **DEMONSTRATE** how to release the pressure from the tank.

- It is important to depressurise tanks when you are not spraying. Tanks should be depressurised while being transported by vehicle, motorcycle, bicycle and walking between houses.
- The correct method for depressurisation is to release the pressure valve. Do not attempt to open the lid of a pressurised sprayer.

20. **ASK** participants what questions they have and address them.

Session 11. Practice mixing and pressurising

Session mode	Hands-on participation
Duration	30 minutes
Learning objectives	By the end of this session, participants will be able to: <ul style="list-style-type: none">• Show correct mixing procedures for insecticides• Show how to correctly pressurise and depressurise the sprayer
Resources	<ul style="list-style-type: none">• PacMOSSI Spray Operator Field Guide pages 14-19
Equipment & materials	<ul style="list-style-type: none">• 1 sprayer per 2 participants• Faux insecticide
Advance preparation	<ul style="list-style-type: none">• Identify an easily accessible water source

Steps

1. **INTRODUCE** the session and **REVIEW** the learning objectives. **EXPLAIN** that we will now practice the process for mixing insecticide and pressurising and depressurising the sprayer.

Note: When participants practice the mixing process, they will need access to 7.5 litres of water. Ensure that a water source is easily accessible from a tap or barrels of water positioned around the practice area.


2. **ASK** the participants to add water to their sprayers, following the correct mixing procedure described above.
3. **HAND OUT** the faux insecticide (empty water bottles or envelopes) for mixing practice. **EXPLAIN** that although there is no insecticide in these packages, each participant should go through the motions of opening the package and adding the insecticide.
4. Once all sprayers have water in them, **CALL OUT** each step in the mixing process and observe that the groups are following along with their own sprayers.
5. **MOVE THROUGH** at a slow, steady pace, so participants have time to hear your directions and perform each step with their own sprayers. If you move too fast, participants could get lost and become frustrated.
6. **CIRCULATE** around the room to correct any issues and answer questions.
7. **TELL** the group that as they conduct residual spraying, the sprayer will need to be pressurised several times while spraying a single structure.
 - Pressurise the tank again when the CFV automatically cuts off the flow of insecticide to the nozzle or when the pressure drops below 25 psi (if no CFV).

8. **ASK** participants to take turns pressurising the sprayer until the safety valve begins releasing pressure and green mark shows (Goizper iK Vector Control Super) or when 55 psi is reached (if no CFV). They should then depressurise using the release valve.
 9. **CIRCULATE** around the room to ensure participants are pressurising and depressurising the tank correctly. Answer questions as you go.
 10. **ASK** participants what questions they have and address them.
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Session 12. Indoor spray technique

Session mode	Practical demonstration
Duration	1 hour 15 minutes
Learning objectives	By the end of this session, participants will be able to: <ul style="list-style-type: none"> • Describe the sequence of spray activities • Explain the differences in spraying walls, curtains and furniture (distance from surfaces, application speed, etc.) • Describe the importance of repressurising and lifting sprayers correctly
Resources	<ul style="list-style-type: none"> • S12 presentation • PacMOSSI Spray Operator Field Guide pages 20-29
Equipment & materials	<ul style="list-style-type: none"> • Sprayers with CFV fitted (1 for each four participants and 1 for facilitator) • PPE (1 set per participant) • Spray wall • Furniture
Advance preparation	<ul style="list-style-type: none"> • Set up sprayers for easy access • Set up demonstration areas walls and furniture

Steps

1. **INTRODUCE** the session and **REVIEW** the learning objectives.
2. **PRESENT** the Session 12 content on indoor spray technique. 
3. **INVITE** the participants to come to an open area and form a circle.
4. **TELL** them you would like to review with them some of the information they learned yesterday. **SHOW** participants the sprayer and **REVIEW** the component parts of the sprayer.
5. **ASK** participants to identify the parts of the sprayer. **TELL** participants it is important to correctly prepare a house to receive IRS. **ASK**: What are all the things that should be done before the spray operator arrives?
6. **DEMONSTRATE** putting on PPE.
7. **ASK**: Why do you think we have a specific technique that we use?
 - To ensure the wall surface receives an even coating of insecticide and that we apply the right amount—not too much, which creates waste, and not too little, which is not effective.
8. **EXPLAIN** that there are several parts of the technique that are important:
 - Distance of the nozzle from the wall.
 - Speed of moving the lance from top to bottom on the wall (and bottom to top).

- Pattern and rhythm for moving down the wall.
9. **DEMONSTRATE** wall spraying:
 - Keep body about 1 m from surface to be sprayed.
 - Leave about 45 cm between surface and spray nozzle (for swath width of 75 cm).
 - Start spraying at the top (a height of 1.5 m), move spray down, step to the right, then spray from the bottom up to 1.5 m.
 - Ensure a 5 cm overlap between spray swaths.
 10. **ASK** for a volunteer to spray a wall. **DESCRIBE** the steps they are taking as they perform the spray to reiterate the key points.
 11. **DEMONSTRATE** spraying furniture, behind curtains and wall hangings.
 - Introduce the lance below the furniture to reach the side farthest from the spray operator.
 - Orient the inclined nozzle towards the wardrobe to ensure that the spraying jet is on the target surface.
 - Keep the nozzle about 30 cm away from the surface.
 - Spray at twice the speed for wall surfaces, i.e., 1 second per m.
 - Ensure the entire target surface is covered, noting that the swathes will be narrower.
 12. **ASK** for a volunteer to spray furniture. **DESCRIBE** the steps they are taking as they perform the spray to reiterate the key points.
 13. **EXPLAIN** the importance of maintaining correct pressure and the differences between hand-compression sprayers with a CFV and without.
 14. **DEMONSTRATE** checking pressure and repressurising.
 15. **TELL** participants that proper lifting and carrying of the sprayer is also critical to delivering high-quality IRS.
 16. **ASK** why they think it is important to lift and carry the sprayer correctly.
 - Improper lifting and carrying technique can result in back strain and poor spraying posture, which affects the quality and speed of spraying.
 17. **DEMONSTRATE** the correct lifting procedure, first using an empty sprayer, then using a full one. **EXPLAIN** the 3 positions to understand:
 - Position 1—preparing to lift: Sprayer on the floor, strap facing forward (in the same direction the person is facing).
 - Position 2—walking position: Lift the sprayer onto the shoulder and hold it with the right arm, centred on the shoulder.
 - Position 3—spraying position: Transfer the sprayer from behind the shoulder to in front of the shoulder, with the lance in one hand and the other hand on the T-handle of the sprayer.
 18. **ASK** participants what questions they have and address them.

Session 13. Practice indoor spray technique

Session mode	Hands-on participation
Duration	2 hours
Learning objectives	By the end of this session, participants will be able to: <ul style="list-style-type: none"> • Demonstrate the correct use of a sprayer • Apply residual insecticide to walls and furniture
Resources	<ul style="list-style-type: none"> • PacMOSSI Spray Operator Field Guide pages 20-29
Equipment & materials	<ul style="list-style-type: none"> • Sprayers with CFV fitted (1 for every four participants and 1 for the facilitator) • PPE (1 set per participant) • Spray wall • Furniture
Advance preparation	<ul style="list-style-type: none"> • Set up sprayers for easy access • Set up demonstration area walls and furniture

Steps

1. **INTRODUCE** the session and **REVIEW** the learning objectives. **EMPHASISE** that all spray equipment should be carefully inspected each morning before going to the field. Any damaged or worn parts should be reported and replaced.
2. **ASK** participants to split into groups of four and to stand beside one sprayer.
3. **DEMONSTRATE** lifting of the sprayer and then wall spraying, emphasising correct *distance*, *spray speed*, *pattern*, and *rhythm*.
4. **ASK** participants to explain what they have observed, noting the specifics of proper spray technique and what happens if the correct spray speed or distance is not maintained.
5. **INSTRUCT** one participant from each group to lift the sprayer correctly and to face the spray wall, keeping 2 m apart.
6. **ASK** participants to spray the wall starting at 1.5 m and spraying down to the floor before moving to the right and spraying up.
 - **REPEAT** for each participant in each group.
7. **CONTINUE** the exercise until each participant has practiced wall spraying, demonstrating correct distance, speed and pattern.
8. **DEMONSTRATE** furniture spraying, emphasising correct distance, spray speed, pattern, and rhythm.
9. **ASK** one participant from each group to spray each piece of furniture.
 - **REPEAT** for each participant in each group.
10. **ASK** participants what questions they have and address them.

Session 14. Outdoor harbourage treatments

Session mode	Practical demonstration
Duration	45 minutes
Learning objectives	By the end of this session, participants will be able to: <ul style="list-style-type: none"> • Explain how to treat adult resting sites in the yard • Explain how to identify and treat different larval habitats (containers) in the yard
Resources	<ul style="list-style-type: none"> • PacMOSSI Spray Operator Field Guide pages 38-42
Equipment & materials	<ul style="list-style-type: none"> • Sprayers with CFV fitted (1 for the facilitator) • Containers
Advance preparation	<ul style="list-style-type: none"> • Set up sprayers for easy access • Set up demonstration outdoor areas with variety of containers and potential resting sites e.g. benches, tables

Steps

1. **INTRODUCE** the session and **REVIEW** the learning objectives.
2. **DEMONSTRATE** the sequence of events for inspecting and treating outdoor *Aedes* resting sites and larval habitats in the yard as per PacMOSSI Spray Operator Field Guide pages 38-42, including:
 - Ask and receive permission to inspect and spray yard
 - Check yard for any hazards (tripping, animals, people)
 - Look around the yard for potential *Aedes* resting sites e.g., benches, chairs, sheds, tyres, sizeable disused equipment
 - Begin inspection and treatment of adult resting sites and larval habitats, moving around the yard
 - **Look down:** wells, rainwater down pipes, storm water pits, drain sumps, disused septic tanks, filter/skimmer box of untreated swimming pools
 - **Look around:** artificial containers, and natural containers e.g., palm fronds, coconut husks, shells
 - **Look up:** roof gutters, especially where trees overhang them.
3. **EXPLAIN** the purpose of yard treatments of *Aedes* resting sites and larval habitats.
4. **DEMONSTRATE** how to treat containers based on their type (spray, empty/drain, move, invert, cover/screen or larvicide)
5. **ASK** participants how they would treat different container types (would they spray, drain, move, etc.)

- Spray: apply residual spray with a compression sprayer
 - Empty or drain: tip out or remove water
 - Move: place under cover out of rain
 - Invert: turn over so it cannot hold water
 - Cover/screen: add barrier to mosquito entry
 - Larvicide: treat water to kill aquatic stages
 - **ASK** participants what questions they have and address them.
-

Session 15. Practice treatment of outdoor harbourages

Session mode	Hands-on participation
Duration	1 hour
Learning objectives	By the end of this session, participants will be able to: <ul style="list-style-type: none">• Identify and treat containers by spraying, empty/drain, move, invert, cover/screen or larviciding• Demonstrate spraying of <i>Aedes</i> resting sites found in the yard
Resources	<ul style="list-style-type: none">• PacMOSSI Spray Operator Field Guide pages 38-42
Equipment & materials	<ul style="list-style-type: none">• Sprayers with CFV fitted (1 for every 4 participants)• PPE (1 set per participant)
Advance preparation	<ul style="list-style-type: none">• Set up sprayers for easy access• Set up demonstration outdoor areas with variety of containers and potential structures as resting sites

Steps

1. **INTRODUCE** the session and **REVIEW** the learning objectives.
 2. **REVIEW** the steps to inspect and spray *Aedes* resting sites (e.g., outdoor furniture) and to treat containers based on their type, including:
 - Look down, look around, look up
 - Spray, empty/drain, move, invert, cover/screen or larvicide
 3. **ASK** participants to form groups of four next to a sprayer.
 4. **INSTRUCT** all participants to don their PPE in the correct order.
 5. **INSTRUCT** one participant to identify and spray potential *Aedes* resting sites for 5 minutes. Ask the other group member to observe and provide any corrective advice.
 6. **REPEAT** with the three other members of each group.
 7. **ASK** participants what questions they have and address them.
-

Session 16. Outdoor residual spraying beyond the yard

Session mode	Practical demonstration
Duration	15 minutes
Learning objectives	By the end of this session, participants will be able to: <ul style="list-style-type: none"> Describe the preferred resting sites of sylvatic species (e.g. <i>Ae. albopictus</i> and <i>Ae. polynesiensis</i>) Explain the parts and how to operate a motorised backpack mist-blower
Resources	<ul style="list-style-type: none"> PacMOSSI Spray Operator Field Guide pages 30-37
Equipment & materials	<ul style="list-style-type: none"> Suitable motorised backpack mist-blower e.g. Stihl SR 450
Advance preparation	<ul style="list-style-type: none"> Select demonstration outdoor areas with leafy vegetation

Steps

- INTRODUCE** the session and **REVIEW** the learning objectives.
- EMPHASISE** that:
 - Main sylvatic species targeted are *Ae. albopictus*, *Ae. polynesiensis*.
 - Main resting sites are foliage along the forest fringes (or bushy backyards).
 - Fringing vegetation is best sprayed with backpack mist-blower (unless vehicle mounted Quick-spray unit with retractable hose is available).
- REVIEW** the names of the parts of a motorised backpack mist-blower and conduct a quiz to identify names:
 - Point to each part of the blower on the flipchart diagram in turn and ask for volunteers to identify the part.
 - RECORD** the correct answers on the flipchart and provide additional information or corrections when needed.
 - ASK** participants to fill in the names of the parts on the Worksheet (Annex 11)
- EXPLAIN** how to operate a backpack mist-blower, using the steps in the PacMOSSI Spray Operator Field Guide pages 30-37. This includes:
 - Parts of the blower
 - Preparing the blower
 - Operating the blower
 - Cleaning the blower

5. **DEMONSTRATE** how to treat leafy vegetation with a motorised backpack mist-blower. **EMPHASISE** the key principles:
- Targeted vegetation includes low leafy shrubs, bushes, hedges, and trees – spraying below 2 m height, including leaf litter on the ground
 - Spray the fringing border area of residential or community properties – reaching about 3 m into the forest
 - Spray foliage almost to the point of run-off – avoid runoff where possible
 - Environmental considerations:
 - Wind direction and risk of spray drift
 - Do not spray if vegetation is wet or rain is expected within 1-2 hours
6. **ASK** participants what questions they have and address them.
-

Session 17. Practice outdoor residual spraying beyond the house and yard

Session mode	Hands-on participation
Duration	30 minutes
Learning objectives	By the end of this session, participants will be able to: <ul style="list-style-type: none"> Name the parts and show how to operate a motorised backpack mist-blower Explain how to spray leafy vegetation habitats of sylvatic <i>Aedes</i> species (e.g. <i>Ae. albopictus</i>, <i>Ae. polynesiensis</i>)
Resources	<ul style="list-style-type: none"> PacMOSSI Spray Operator Field Guide pages 30-42
Equipment & materials	<ul style="list-style-type: none"> Motorised backpack mist-blowers (1 per 4 participants) Mist-blower accessories e.g., fuel, oil PPE (1 set per participant)
Advance preparation	<ul style="list-style-type: none"> Set up mist-blowers for easy access Select practice outdoor areas with leafy vegetation

Steps

1. **INTRODUCE** the session and **REVIEW** the learning objectives.
2. **REVIEW** the steps to spray beyond the house and yard as per the PacMOSSI Spray Operator Field Guide pages 42.
3. **ASK** participants to form groups of four next to a sprayer.
4. **INSTRUCT** all participants to don their PPE in the correct order.
5. **INSTRUCT** one participant to identify and spray potential *Aedes* resting sites for 5 minutes. Ask the other group member to observe and provide any corrective advice.
6. **REPEAT** with the three other team members.
7. **ASK** participants what questions they have and address them.

Session 18. End of day clean-up

Session mode	Practical demonstration
Duration	30 minutes
Learning objectives	By the end of this session, participants will be able to: <ul style="list-style-type: none"> • Explain the importance of proper equipment clean up • Describe the steps in the progressive wash method • Recite the order of removal of PPE • Describe cleaning procedures
Resources	<ul style="list-style-type: none"> • PacMOSSI Spray Operator Field Guide pages 43-44
Equipment & materials	<ul style="list-style-type: none"> • Sprayer with CFV fitted (for facilitator) • 7 barrels, 3 with rinse water
Advance preparation	<ul style="list-style-type: none"> • Set up barrels in outdoor demonstration area

Steps



1. **INTRODUCE** the session and **REVIEW** the learning objectives.
2. **EXPLAIN** why clean up matters.
3. **DEMONSTRATE** the sequence of events of the triple rinse procedure while wearing full PPE:
 - Pour leftover insecticide solution from the sprayer into barrel 1.
 - Scoop 2 litres of clean water from barrel 2 into a sprayer, put the cap on, pressurise and shake.
 - Discharge for 10 seconds into the next barrel, depressurise and empty.
 - Repeat twice more using clean water from barrels 4 and 6 and emptying into barrels 5 and 7. Wipe out the tank and wash the outside of the sprayer.
 - Disassemble the sprayer and nozzles and rinse using water from barrel 6.
 - Ensure sprayers are dry and clean before storing.
4. **ASK** the group if there is an order in which they should remove PPE. **REMINDE** them that gloves should stay on as long as possible to protect hands from insecticide on the helmet and boots—but avoid touching bare skin with the gloves.
5. **REMINDE** the group the order of taking off PPE (from Session 5) as you demonstrate: wash gloves and boots; remove head and face protection; remove boots; remove gloves; remove neck cloth and overalls; remove socks.
6. **ASK** the group what the next things to do should be once PPE is removed.
 - Wash protective clothing in detergent

- Wash whole body, hands and face with soap
 - Dispose of washing water and rinse water
7. **DEMONSTRATE** how to wash PPE, including the following steps:
- Contaminated protective clothing should be washed daily in designated wash areas with industrial grade detergent followed by several rinses.
 - Wash protective clothing while wearing a particulate filter mask, safety glasses or goggles, long sleeved overalls, apron, gloves and boots.
 - Washed clothes should be hung to dry in or around the soak pit or storage tank wash area.
 - When a large patch of clothing that has been contaminated and replacement clothing is available, dispose of the clothing as contaminated waste.
8. **ASK** participants what questions they have and address them.
-

Session 19. Sprayer maintenance and storage

Session mode	Classroom learning
Duration	1 hour 15 minutes
Learning objectives	By the end of this session, participants will be able to: <ul style="list-style-type: none"> • Name the different parts of spray equipment • Explain the steps involved in properly maintaining spray equipment • Describe the appropriate storage conditions of spray equipment • Know the steps to ensure sprayers function, identify challenges, and troubleshoot
Resources	<ul style="list-style-type: none"> • S19 presentation • Goizper video: iK – Vector Control / Cleaning
Equipment & materials	<ul style="list-style-type: none"> • Slide or flipchart of unlabelled sprayer diagram, markers
Advance preparation	<ul style="list-style-type: none"> • Prepare printouts of Annex 11

Steps

1. **INTRODUCE** the session and **REVIEW** the learning objectives.
2. **REVIEW** the names of the parts of a sprayer (introduced in Session 6) and conduct a quiz to identify names:
 - **PRESENT** an unlabelled diagram of the sprayer on a slide or flipchart.
 - Point to each part and ask for a volunteer to identify the part.
 - **RECORD** the correct answers and provide additional information or corrections when needed. Conceal or remove the flipchart or slide.
 - **ASK** participants to fill in the names of the labelled parts on the Worksheet (Annex 11).
3. **ASK** participants what they know about sprayer maintenance and storage.
4. **PRESENT** the S19 content on sprayer maintenance and storage, including how to calibrate sprayers, the importance of sprayer discharge rate, and steps necessary to ensure sprayer function.  **HIGHLIGHT** potential challenges faced and troubleshooting.
5. **PLAY** Goizper video: [iK – Vector Control / Cleaning](#) (6 mins) 
6. **ASK** participants what questions they have and address them.

Session 20. Practice checking discharge rate

Session mode	Hands-on participation
Duration	2 hours
Learning objectives	By the end of this session, participants will be able to: <ul style="list-style-type: none"> • Calibrate and check the discharge rate of spray equipment • Identify ways to address leaks or pressurisation problems
Resources	<ul style="list-style-type: none"> • PacMOSSI Spray Operator Field Guide page 19
Equipment & materials	<ul style="list-style-type: none"> • Sprayers with CFV fitted (one for every 4 participants) • Clean water • Measuring jug
Advance preparation	<ul style="list-style-type: none"> • Set up 4 sprayers and water in outdoor demonstration area

Steps


1. **INTRODUCE** the session and **REVIEW** the learning objectives.
2. **ASK** participants to split into groups of four and to stand beside one sprayer.
3. **DEMONSTRATE** the sequence of events to calibrate and check the discharge rate of spray equipment, while wearing PPE:
 - Pour clean water into the tank (max 3/4 full).
 - Cap and pressurise.
 - Check that the tank is holding pressure (listen for hiss).
 - Check that there are no leaks along the lance and hose, especially at any joins.
 - Confirm the on/off valve works.
 - Spray for 1 minute, collecting discharge in the measuring jug.
 - Read and record the collected volume and empty out.
 - Repeat 2 more times for 1 minute each and record the volume.
 - Calculate the average of the 3 records, to know the average volume (in millilitres) released per minute.
4. **ASK** for one or two volunteers to explain what they have observed.
5. **INSTRUCT** one participant from each group to read the discharge rate correctly and to demonstrate there are no leaks.
6. **ASK** the participant to spray for 1 minute and collect the discharge in the jug. Repeat 3 times and calculate the average millilitres released per minute.

7. **REPEAT** for each participant in each group. Ask groups to work together to calculate the average millilitres/minute for each person.
 8. **ASK** participants what questions they have and address them.
-

Session 21. Supervision and data management

Session mode	Classroom learning
Duration	1 hour
Learning objectives	<p>By the end of this session, participants will be able to:</p> <ul style="list-style-type: none"> • Explain the importance of good record keeping for spray data • Explain how and why to complete the Property Spray Card • Explain how and why to complete Daily Spraying Records • Identify common mistakes in completion of the spray data and how to avoid them
Resources	<ul style="list-style-type: none"> • S21 presentation • Spray Operator Field Guide page 45 • Property Spray Card (Annex 9) • Daily Spraying Record (Annex 10)
Equipment & materials	<ul style="list-style-type: none"> • Flipchart or white board, markers
Advance preparation	N/A

Steps

1. **INTRODUCE** the session and **REVIEW** the learning objectives.
2. **DESCRIBE** the importance of good recordkeeping for spray data. **EXPLAIN** that the data collected each day by spray operators is a crucial part of tracking progress during the spray campaign and makes an important contribution to understanding the successes and challenges of spray programs:
 - Data are used to make decisions about future spray operations and other strategic plans to address vector-borne diseases in-country.
 - Collecting accurate data has impacts far beyond the daily count of properties sprayed.
 - Inaccurate data can have a national impact on future spray operations.
3. **ASK** participants what they know about the management and use of spray data. **NOTE** the answers on the flipchart. **PROVIDE** additional information or corrections when needed.
4. **EXPLAIN** that it is not a difficult task, but it needs to be done correctly and consistently at each site.
5. **PRESENT** the Session 21 content on supervision and data management including the concept of spray operator performance monitoring. 
6. **HIGHLIGHT** some of the important points to remember:

- Individual spray operators complete information on a Property Spray Card to leave for those occupying the premises sprayed to keep as a record and to refer to for subsequent spray rounds if needed.
 - Individual spray operators also complete information on a Daily Spraying Record form that is kept by the operators.
 - At the end of the day, the Daily Spraying Record is passed to the Team Leader.
 - Remember to use a unique identifier (or GPS location) for each house/building/area sprayed so it can be identified again in future visits or spray rounds.
 - For performance monitoring and to inform future operations, it is important to record:
 - any issues encountered with accessing houses or structures for spraying
 - type and amount of insecticide used should be recorded at the start (amount received) and end (amount remaining) of the day
 - Team Leader summarises the team’s work and provides totals to the Group Leader or Supervisor.
 - Tallied information for each operating site is sent to the district or provincial team, where it is added to data from other operating sites in the district.
 - All district/province information is tallied to create national statistics.
7. **DISCUSS** some areas where the data recorded may be outside the norm:
- **DISCUSS** how to record different types of premises sprayed on the spray forms e.g., business premises, versus public spaces versus households. **EXPLAIN** how to document different types of properties on the spray forms.
 - **DISCUSS** how to calculate the sprayable structures: the total number of sprayable structures on the premises: how we identify what structures are eligible for spraying, how should we count the structures in different premises?
 - # Sprayed is the number of structures, out of the total found, that were actually sprayed. This number should always be the same or less than the total number found.
 - # Not sprayed is the number of eligible/sprayable structures in the household that remain unsprayed after the spray team visit.
 - Refused key is a code that indicates the reason structures were not sprayed. Go through the list of common reasons for not spraying (this list should be tailored to your country)
 - **HIGHLIGHT** the importance of counting all structures that are not sprayed. Depending on the reason, these structures could be included in a “mop-up” exercise, when spray operators return to spray missed properties.
 - **TAKE** responses from the group, and **NOTE** the feedback on the flipchart, including any action points (e.g., edits to the forms to ensure they are fit-for-purpose in your country).
8. **TELL** participants that they will have the opportunity to practice completing these forms in the next session.

9. **ASK** participants what questions they have and address them.

Session 22. Practice using forms

Session mode	Hands-on participation
Duration	1 hour
Learning objectives	By the end of this session, participants will be able to: <ul style="list-style-type: none"> • Complete Property Spray Cards (Annex 9) • Complete Daily Spraying Record (Annex 10)
Resources	<ul style="list-style-type: none"> • PacMOSSI Spray Operator Field Guide page 45 • Property Spray Card (Annex 9) • Daily Spraying Record (Annex 10)
Equipment & materials	<ul style="list-style-type: none"> • Flipcharts, markers • Pen for each participant • Flipchart or print outs of the practical exercise from end of Session 21 presentation • Hard copies of Annex 9 and Annex 10 for each participant
Advance preparation	<ul style="list-style-type: none"> • Print hard copies of Annex 9 and Annex 10 for each participant • Prepare large versions of pre-completed forms from the practical exercise (Session 21) on flipcharts, or print hard copies

Steps


1. **INTRODUCE** the session and **REVIEW** the learning objectives.
2. **REVIEW** the process for completing the two spray operator forms demonstrated in Session 21.
3. **HAND OUT** the hard copies of the spray forms (Annexes 9 and 10).
4. **CONDUCT** practice exercises for completion of each of the Property Spray Form and Daily Spraying Record, referring to the practice exercises from the Session 21 presentation or on flipcharts, and ask students to follow each step, recording data on their own forms.
5. **REVIEW** pre-filled completed forms on flipcharts or in the presentation.
6. **CHECK** participant answers for correct data to be entered and discuss challenges or reasons for errors.
7. **NOTE** any feedback on the flipchart, including any action points (e.g., edits to the forms to ensure they are fit-for-purpose in your country).
8. **REMIND** participants that spray data are used to monitor spray operator performance and make decisions about future spray operations. Collecting accurate data has impacts far beyond the daily count of properties sprayed, and can inform national strategic plans to address vector-borne diseases. Inaccurate data can impact future planning and effectiveness of spray operations.

9. **ASK** participants what questions they have and address them.

Session 23. Spray skills observation

Session mode	Hands-on participation
Duration	1 hour 15 minutes
Learning objectives	<p>By the end of this session, participants will be able to:</p> <ul style="list-style-type: none"> • Demonstrate the correct way to pressurise the sprayers • Demonstrate the correct method for carrying the sprayer • Demonstrate correct spray distance and speed • Explain correct spray pattern and process for spraying different surfaces (e.g., walls, curtains, furniture, foliage)
Resources	<ul style="list-style-type: none"> • S23 presentation • PacMOSSI Spray Operator Field Guide pages 14-29 • Spray operator skills test (Annex 7)
Equipment & materials	<ul style="list-style-type: none"> • Sprayers (1 per 4 participants) • PPE (1 set per participant) • Sticks longer than 45 cm (1 per participant) • String or twine (to tie sticks to lance) • Filter cloth (1 per participant) • <i>Faux</i> insecticide: envelopes or water bottles (1 per participant) • Timekeeping device (must count seconds)
Advance preparation	<ul style="list-style-type: none"> • Identify groups for practice sessions. Pairing more experienced spray operators with new recruits can support mentoring during practice. • Bring the Sprayer Parts flipchart from an earlier session. Display it on the wall.

Steps

1. **PRESENT** the Session 23 content on spray skills observation. **INTRODUCE** the session and **REVIEW** the learning objectives and key points from the past few days. 
2. **LEAD** a short discussion to reflect on the importance of practicing the spray technique to get mastery and confidence. **EMPHASISE** that correct technique is what ensures (a) that all the surfaces that need to be sprayed receive the spray, and (b) that the right amount of insecticide gets on the walls.
3. **EXPLAIN** that you would like to see how much they have learned over the past few days. **INTRODUCE** the spray skills observation exercise. **EMPHASISE** that we all learn differently, and the step-by-step approach outlined in this practice session helps ensure that every participant has a deep understanding of spray skills.


4. **ASSIGN** all participants to one of three groups: A, B or C. **ASSIGN** one facilitator to each group.
5. **ASK** participants to retrieve a hand-compression sprayer if in Group A or B and a motorised mist-blower if in Group C and to report to the group facilitator.
6. **Each** facilitator should do the following with their groups:
 - **REVIEW** the parts of the sprayer or blower and the function of each part.
 - **ASK** participants what they need to do to get ready to spray. Take responses from the group and **ENSURE** the following points are covered:
 - Put on PPE correctly.
 - Select the chemical, read the label, shake the bottle before adding insecticide to tank.
 - Add water to the tank in the correct ratio.
 - Secure the lid and shake.
 - Add correct fuel and oil mix to the blower.
 - Pressurise the hand-compression sprayer or start the blower.
 - Lift or have assistance with lifting onto back.
 - Adjust the sprayer or blower so it fits properly.
 - Proceed with spraying or blowing.
7. **WALK** through the steps leading up to spraying or blowing, taking direction from the participants as much as possible. As you move to the next step, **ASK** “What comes next?” to solicit the next step from the group. **ENSURE** the following steps are mentioned:
 - For the sprayer: when mixing, place the sprayer on top of the plastic sheet and on firm ground outside the house, away from any household items; the final volume of diluted insecticide should be 7.5 litres; use a filter cloth to sieve all the water being introduced into the sprayer (if the water supply is dirty or contaminated).
 - For the blower: at start up, choke must be on if engine cool and manual fuel pump bulb should be pressed at least five times; disengage throttle as soon as running by turning choke off or pressing throttle trigger; chemical flow knob should usually be set in position 3
 - **DEMONSTRATE** the key processes (e.g., pressuring/depressurising or priming/starting motor).
8. **INSTRUCT** participants that you will now commence with the observation exercise. **REMINDE** them to pay attention to the position of their feet, elbows, and backs. Using the appropriate forms for Group A, B or C as provided in Annex 6, give instructions to the participants one at a time and rate them based on the criteria specified.
9. **EMPHASISE** that participants should help each other remember all the steps and give each other positive and high-quality feedback, learning from each other. **ASK** more experienced spray operators to assist with technique as they see opportunities to help their colleagues learn.

10. **CONTINUE** the spray observation exercise, calling out instructions to each spray operator in turn. **OBSERVE** each and mark the sheets. **GIVE** feedback to each participant as they are spraying to ensure correction of any issues with their technique.
11. **ASK**: What happens if we do not maintain the correct speed when conducting IRS?
- Too much or too little insecticide is deposited on the wall.
 - Too little may not kill mosquitoes sufficiently.
 - Too much may lead to insecticide shortages at the end of the spray season.
12. **ASK**: How do you know you are achieving the correct speed when spraying?
13. **ASK** participants what questions they have and address them.
-

Session 24. Spraying in difficult situations

Session mode	Classroom learning
Duration	1 hour 15 minutes
Learning objectives	By the end of this session, participants will be able to: <ul style="list-style-type: none">• Describe key challenges faced by spray operators• Explain how to manage/mitigate against them
Resources	<ul style="list-style-type: none">• S24 presentation• PacMOSSI Spray Operator Field Guide pages 48-49
Equipment & materials	<ul style="list-style-type: none">• Flipcharts, markers
Advance preparation	N/A

Steps


1. **INTRODUCE** the session and **REVIEW** the learning objectives.
 2. **ASK** participants what challenging situations they have faced before or may anticipate during spraying.
 3. **WRITE** suggestions on the board and discuss each individually, providing guidance on how to deal with the challenge. Use a different coloured marker (or column) for each suggestion that falls in a different category.
 - Personal factors (e.g., cultural or individual sensitivities)
 - Weather conditions (e.g., heavy rain, extreme heat)
 - Pets and wildlife (e.g., vicious dogs)
 - Environmental hazards (e.g., electrical wires, unsafe structures)
 - Householders (e.g., deny access, threatening)
 4. **PRESENT** the Session 24 content on key challenges and mitigation or solutions (as per the PacMOSSI Spray Operator Field Guide pages 4-49). 
 5. **EMPHASISE** that the safety and well-being of spray operators is a priority at all times and that this should not be compromised.
 6. **ASK** participants what questions they have and address them.
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Session 25. Practice troubleshooting

Session mode	Hands-on participation
Duration	2 hours
Learning objectives	By the end of this session, participants will be able to: <ul style="list-style-type: none"> • Describe common issues with spray equipment • Articulate solutions to troubleshoot common issues
Resources	<ul style="list-style-type: none"> • PacMOSSI Spray Operator Field Guide page 48 • Goizper video: iK – Vector Control / Troubleshooting
Equipment & materials	<ul style="list-style-type: none"> • 1 sprayer for the facilitator • 1 plastic sheet • 1 jug of clean water • 1 soft toothbrush • 1 screwdriver
Advance preparation	N/A

Steps

1. **INTRODUCE** the session and **REVIEW** the learning objectives.
2. **TELL** participants they will need to take the time to inspect their sprayers and should immediately report any issues with the sprayer to their team leader.
3. **EXPLAIN** that there should be no leaks along the lance and hose, especially where the hose joins the tank and the trigger on/off valve.
4. **EXPLAIN** that a common issue with sprayers is blockages that cause the flow of insecticide to stop or be reduced. The blockage is probably caused by:
 - CFV—when the pressure drops too low, the CFV cuts off the flow of insecticide. Pressurise the sprayer and the insecticide flow should return.
 - A blockage of the CFV or nozzle tip.
 - It is not unusual to develop blockages due to undissolved insecticide or debris in the water used to mix the insecticide.
5. **DEMONSTRATE** the method for cleaning a blocked nozzle.
 - Depressurise your sprayer.
 - Spread the plastic sheet on the ground outside.
 - Pour some clean water into your container/jug and place it on the sheet. Unscrew and insert the nozzle in the container.
 - Using the soft toothbrush, gently brush the tip of the nozzle repeatedly.
 - If the nozzle still does not work, request a new nozzle from your team leader.
6. **EXPLAIN** that you should:

- Never clean nozzles with a piece of wire or a hard pin, because this will widen the nozzle, making the nozzle release too much insecticide.
 - Never put a nozzle to your mouth to blow through it.
7. **DEMONSTRATE** the method to clean a blocked CFV.
- Depressurise your sprayer.
 - Spread the plastic sheet on the ground outside of the structure being sprayed.
 - Pour some clean water into your container/jug and place it on the sheet. Unscrew and insert the CFV in the container.
 - Scoop water into the hollow of the CFV, which has a tiny metal valve.
 - Using a screwdriver, press the metal valve until water drips out from the other end of the CFV. Repeat the process 3 times.
 - Re-assemble the CFV and the nozzle and pressurise the equipment before attempting to spray.
8. **PLAY** the Goizper video: [iK – Vector Control / Troubleshooting](#) (10 mins). 
9. **TELL** the group that in some cases, an issue with the sprayer cannot be resolved in the field and it must be taken back to the operating base for repair. In this case, ask your team leader for instructions on how to proceed for the rest of the day.
10. **PRESENT** the group with the following short scenarios and ask what they would do in each case. Give participants the chance to respond and **DEBRIEF**.
- **Scenario 1:** Your team leader was mixing insecticide when a dog ran into the area and knocked the sprayer into her, splashing insecticide on her arm, knee, and lower leg. What do you do?
 - Remove the overalls and move her quickly to an area where she can wash the exposed skin with soap and clean water. Provide plenty of additional water so she can continue to rinse the affected area. If the skin appears irritated or is painful, transport her to the nearest clinic as quickly as possible.
 - **Scenario 2:** One of your team members was spraying inside a home and forgot to put his face shield down when he started spraying. He leaves the house, and his eyes are burning. What do you do?
 - Assist him to get clean water. Instruct him to splash water in the eyes (and under eyelids) for 15 minutes to clear any insecticide remaining in the eyes. If he has redness, pain, or trouble seeing, transport him to the local medical facility as soon as possible.
 - **Scenario 3:** While walking in the community, you fall and scrape your elbow. It is bleeding a little, but quickly stops. What do you do?
 - Wash the scrape with soap and water to remove dirt. Use an antibiotic cream and cover the scrape with a bandage.
11. **ASK** participants what questions they have and address them.
-


Session 26: Review session

Session mode	Classroom learning
Duration	1 hour 30 minutes
Learning objectives	By the end of this session, participants will be able to: <ul style="list-style-type: none"> • Articulate major considerations and the technique for residual spraying • Review the code of conduct for spray operators
Resources	<ul style="list-style-type: none"> • S24 presentation • PacMOSSI Spray Operator Field Guide page 50
Equipment & materials	N/A
Advance preparation	N/A

Steps

1. **INTRODUCE** the session and **REVIEW** the learning objectives.
2. **ASK** all the participants to stand. **EXPLAIN** that you will play a true/false game with them about residual spraying and how it works. They should put their hands on their heads if they feel it is true or put their hands on their hips if they feel it is false.
3. **READ** the following statements. Pause between each one to give participants time to think and react to the statement. **ASK** those who are incorrect to sit down and remain seated. **DEBRIEF** each statement as you go; ensure the correct information is communicated to participants.
 - Residual spraying is safe and effective.
 - TRUE: When well-planned and performed correctly by following all procedures and achieving high coverage, it will reduce vector-borne diseases and is safe for spray operators and house residents.
 - Anyone can spray the inside of their home if they have the right equipment.
 - FALSE: Only trained spray operators can perform residual spraying.
 - Residual spraying is heavy work that is best done by men.
 - FALSE: Men and women who are trained spray operators can perform IRS. The program benefits from having women and men on the team.
 - Residual spraying should only be done inside houses.
 - FALSE: Where there is evidence of a high proportion of *Aedes* vectors resting in areas outside houses, spraying in outdoor harbourages is justified.
 - There are more mosquitoes in the house after spraying.
 - FALSE: Mosquitoes usually rest on the walls in our houses. After spraying, these walls have insecticide, which irritates the mosquitoes and causes them to fly around. You might hear the noise and have the impression that there are

more mosquitoes. In fact, residual insecticide kills the mosquitoes that enter the house.

- Spray equipment should be inspected every day before going to the spray site and should be calibrated at least once a month.
 - TRUE: It is extremely important to ensure that sprayers continue to deliver the correct amount of spray, and to take corrective action when needed. Usually, the discharge rates of sprayers should be checked monthly or more.
 - The full set of PPE is a helmet and face shield, neck shield, overalls and rubber boots.
 - FALSE: Rubber gloves are also an essential part of PPE.
 - When spraying the wall, the sprayer should stand approximately 45 cm back from the wall.
 - FALSE: The sprayer should stand about 1 m from the wall, with about 45 cm from the lance and spray nozzle.
 - In a structure where walls are sprayed to approximately 1.5 m high, the correct speed for one full spray swath is between 1 and 2 seconds.
 - FALSE. To spray 1.5 m would be around 3.5 seconds.
 - Residual spraying should be done in kitchens because people spend a lot of time there.
 - FALSE: Kitchens are usually not sprayed to avoid contaminating food. If they are sprayed, it is important that all water, food and utensils are covered or removed first.
 - All insecticides should be applied at the same concentration and following the same procedure in all areas.
 - FALSE: Insecticides must be applied as stated on the product label. Ensure all directions for use are observed. Spray technique may be adapted based on spray targets.
4. **CONGRATULATE** the last person or persons standing.
5. **PRESENT** the Session 24 summary review content. 
- **REITERATE** the importance of courteous and professional conduct by spray operators at all times to maintain good rapport with communities and enable spray activities (referring to general rules in the PacMOSSI Spray Operator Field Guide page 50).
6. **ASK** the group if there are remaining questions about how residual spraying indoors and in harbourages works, or about spray programs, and address them.
-

Closing

Session mode	Assessment
Duration	45 minutes
Learning objectives	By the end of this session, participants will be able to: <ul style="list-style-type: none">• Explain key outcomes from the workshop• Reflect on progress made through the workshop
Resources	<ul style="list-style-type: none">• Closing session presentation• Post-workshop written test form (Annex 3)• Workshop assessment forms (Annex 5)
Equipment & materials	N/A
Advance preparation	<ul style="list-style-type: none">• Prepare forms and pens for distribution to participants

Steps

1. **CONDUCT** the post-workshop test:
 - Brief participants on the test process.
 - Distribute test sheets to participants.
 - Allow 30 minutes for completion of tests.
 - Collect and mark the test either on the day or after the course is finished.
Answers for the technical knowledge section are as follows: 1=d, 2=a, 3=b, 4=c, 5=b, 6=a, 7=d, 8=a, 9=c, 10=a, 11=d, 12=a
 - Provide scores or verbal feedback to participants.

Note: Participants should NOT be allowed to keep the test form.

2. **CONDUCT** the end of workshop feedback session:
 - Distribute the end of workshop feedback forms.
 - Indicate that these can be anonymous if preferred, by not including the participant's name.
 - Participants complete and hand in the completed form.
3. **CONCLUDE** by summarising key outcomes from the workshop, including the number of participants and any important points of discussion or clarification. Any recommendations or action points should be noted.
4. **CLOSE** the meeting by thanking all participants and facilitators. This may be done by the initial guest speaker.



Annexure of Resources

Annex 1. Participant daily attendance sheet

Workshop name:

Workshop date:

Workshop location:

Names of trainers:

Modules covered:

	Participant name	Job title	Institute	Gender	Email address	Signature
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

Total number of participants for day:

Comments:

.....

.....

Annex 2. Pre-training written test form

Participant name:

Gender: female / male /

Job title:

Organisation:

How many residual spray rounds have you completed before this workshop (tick)?

0

1-2

3-4

5-7

8+

Self-assessment

Please indicate your ability to perform the following **activities**:

	Not able to perform	Able to perform with significant guidance/assistance	Able to perform with limited guidance/assistance	Can perform fully without guidance
Describe correct PPE for spray operators				
Identify all parts of the sprayer, calling each part by its correct name				
Support and encourage women during residual spray training				
Correctly demonstrate mixing of insecticide and pressurising the sprayer				
Demonstrate correct spray technique (speed, nozzle distance, overlap)				
Give specific feedback about how to improve spray technique				
Calculate <i>houses sprayed per unit of insecticide</i>				
Know technique for calibrating the sprayer				
Explain correct use of progressive rinse				
Recite key messages to provide to householders before, during and after spraying				

Technical knowledge

1. Which are the minimum PPE required for every spray operator?

- a. Overalls, gloves and boots
- b. Nose mask, neck cloth, overalls, gloves and boots
- c. Face shield, nose mask, neck cloth, overalls, gloves and boots
- d. Helmet, face shield, nose mask, neck cloth, overalls, gloves and boots

2. Which of the following is correct for spray operator PPE:

- a. Gloves should be over the sleeve of the overall (gloves on top)
- b. Pant legs should be tucked into the boot (boot on top)
- c. Nose mask or face shield should be worn, not both
- d. Gloves must be worn only when spraying

3. Using a sprayer with a CFV, the right way to mix liquid insecticide is:

- a. Fill the spray tank with 7 litres of water. Add insecticide. Triple rinse the insecticide bottle. Close the lid.
- b. Fill the spray tank with 3 litres of water. Add insecticide. Triple rinse the insecticide bottle. Add more water up to the 7-litre mark. Add ½ litre of water. Close the lid.
- c. Fill the spray tank with 10 litres of water, then add insecticide. Close the lid.
- d. Add insecticide to the spray tank. Triple rinse the insecticide bottle. Add 10 litres of water. Close the lid

4. When preparing a house for spray, heavy furniture must be:

- a. Moved 45 cm from the wall, so the spray operator can spray behind it
- b. Moved to the centre of the room and fully covered with a plastic sheet
- c. Left in place and sprayed, underneath and behind
- d. Left in place and not sprayed

5. In a structure where walls are sprayed to approximately 1.5 m high, the correct speed for one full spray swath is:

- a. 2 seconds
- b. 3-4 seconds
- c. 5 seconds
- d. 10 seconds

6. The correct overlap between each spray swathe is:

- a. 5 cm
- b. 10 cm
- c. 20 cm
- d. 25 cm

7. When a spray operator is performing residual spraying correctly, the nozzle tip should always be:

- a. Touching the wall
- b. 5 cm from the wall
- c. 20 cm from the wall
- d. 45 cm from the wall

8. After spraying, all people must stay out of the structure for:

- a. At least 1 hour
- b. At least 2 hours
- c. At least 4 hours
- d. At least 1 day

9. If insecticide spills on the ground, you should:

- a. Cover the spill with sand and continue to spray the next structure.
- b. Add 3 litres of clean water to the spill.
- c. Put sand over the spill. Tell your supervisor. Using a shovel, put the contaminated sand into a bucket. Give the bucket to the driver for return to the operating site.
- d. Put clean water over the spill. Tell the head of household to stay away from the area for 2 hours.

10. If the nozzle of the sprayer is blocked, the right way to clear it is:

- a. Soak the nozzle in water, if possible. Brush gently with a toothbrush or a few pieces of soft grass.
- b. Remove the nozzle, hold it to mouth and blow gently through hole.
- c. Take a piece of wire and press it through the nozzle to clear the blockage.
- d. Continue spraying until the blockage is released.

11. Why are empty sachets/bottles collected at the end of each day?

- a. Accurate counting: full containers tracked going out should equal empties returned
- b. Accountability: spray operators are responsible for all insecticide issued to them
- c. Environmental compliance and safety: avoids re-use of empty containers and ensures proper disposal of contaminated material
- d. All the above

12. After the spray is complete and the insecticide has dried, the household should sweep the floor and _____.

- a. Bury dead insects at least 1 m deep or put them in a pit toilet
- b. Give dead insects to animals for eating
- c. Leave dead insects on the floor
- d. Put dead insects outside the structure

Score 1 point for each correct:

..... out of 12

Annex 3. Post-training written test form

Participant name:

Gender: female / male /

Job title:

Organisation:

How many residual spraying rounds have you completed before this workshop

(tick)? 0 1-2 3-4 5-7 8+

Which days did you attend the workshop (tick all that apply)?

Day 1 Day 2 Day 3 Day 4 Day 5

Self-assessment

Please indicate your ability to perform the following **activities**:

	Not able to perform	Able to perform with <u>significant</u> guidance/assistance	Able to perform with <u>limited</u> guidance/assistance	Can perform fully without guidance
Describe correct PPE for spray operators				
Identify all parts of the sprayer, calling each part by its correct name				
Support and encourage women during residual spray training				
Correctly demonstrate mixing of insecticide and pressurising the sprayer				
Demonstrate correct spray technique (speed, nozzle distance, overlap)				
Give specific feedback about how to improve spray technique				
Calculate <i>houses sprayed per unit of insecticide</i>				
Know technique for calibrating the sprayer				
Explain correct use of progressive rinse				
Recite key messages to provide to householders before, during and after spraying				

Technical knowledge

1. Which are the minimum PPE required for every spray operator?

- a. Overalls, gloves and boots
- b. Nose mask, neck cloth, overalls, gloves and boots
- c. Face shield, nose mask, neck cloth, overalls, gloves and boots
- d. Helmet, face shield, nose mask, neck cloth, overalls, gloves and boots

2. Which of the following is correct for spray operator PPE:

- a. Gloves should be over the sleeve of the overall (gloves on top)
- b. Pant legs should be tucked into the boot (boot on top)
- c. Nose mask or face shield should be worn, not both
- d. Gloves must be worn only when spraying

3. Using a sprayer with a CFV, the right way to mix liquid insecticide is:

- a. Fill the spray tank with 7 litres of water. Add insecticide. Triple rinse the insecticide bottle. Close the lid.
- b. Fill the spray tank with 3 litres of water. Add insecticide. Triple rinse the insecticide bottle. Add more water up to the 7-litre mark. Add ½ litre of water. Close the lid.
- c. Fill the spray tank with 10 litres of water, then add insecticide. Close the lid.
- d. Add insecticide to the spray tank. Triple rinse the insecticide bottle. Add 10 litres of water. Close the lid

4. When preparing a house for spray, heavy furniture must be:

- a. Moved 45 cm from the wall, so the spray operator can spray behind it
- b. Moved to the centre of the room and fully covered with a plastic sheet
- c. Left in place and sprayed, underneath and behind
- d. Left in place and not sprayed

5. In a structure where walls are sprayed to approximately 1.5 m high, the correct speed for one full spray swath is:

- a. 2 seconds
- b. 3-4 seconds
- c. 5 seconds
- d. 10 seconds

6. The correct overlap between each spray swathe is:

- a. 5 cm
- b. 10 cm
- c. 20 cm
- d. 25 cm

7. When a spray operator is performing residual spraying correctly, the nozzle tip should always be:

- a. Touching the wall
- b. 5 cm from the wall
- c. 20 cm from the wall
- d. 45 cm from the wall

8. After spraying, all people must stay out of the structure for:

- a. At least 1 hour
- b. At least 2 hours
- c. At least 4 hours
- d. At least 1 day

9. If insecticide spills on the ground, you should:

- a. Cover the spill with sand and continue to spray the next structure.
- b. Add 3 litres of clean water to the spill.
- c. Put sand over the spill. Tell your supervisor. Using a shovel, put the contaminated sand into a bucket. Give the bucket to the driver for return to the operating site.
- d. Put clean water over the spill. Tell the head of household to stay away from the area for 2 hours.

10. If the nozzle of the sprayer is blocked, the right way to clear it is:

- a. Soak the nozzle in water, if possible. Brush gently with a toothbrush or a few pieces of soft grass.
- b. Remove the nozzle, hold it to mouth and blow gently through hole.
- c. Take a piece of wire and press it through the nozzle to clear the blockage.
- d. Continue spraying until the blockage is released.

11. Why are empty sachets/bottles collected at the end of each day?

- a. Accurate counting: Full containers tracked going out should equal empties returned
- b. Accountability: Spray operators are responsible for all insecticide issued to them
- c. Environmental compliance and safety: Avoids re-use of empty containers and ensures proper disposal of contaminated material
- e. All the above

12. After the spray is complete and the insecticide has dried, the household should sweep the floor and _____.

- a. Bury dead insects at least 1 m deep or put them in a pit toilet
- b. Give dead insects to animals for eating
- c. Leave dead insects on the floor
- d. Put dead insects outside the structure

Score 1 point for each correct:

..... out of 12

Annex 4. Spray operator skills test

Assessment A: Wall treatment with hand-compression sprayer

Participant name:

Gender: female / male /

How many residual spray rounds have you completed before this workshop (tick)?

0 1-2 3-4 5-7 8+

To be completed by facilitator

Ask the participant to do the following:

- Fill their sprayers to 7.5 litres and pressurise them
- Perform 3 consecutive sprayings of swathes 1.5 m in height
- Remove the sprayer and de-pressurise it

Observe for the following as they work:

1. Was the sprayer filled correctly? (i.e., introduce 3 litres, add insecticide, fill to 7.5 litres)
2. Was the correct pressure applied to start (i.e., pump until auto-release)?
3. Did the trainee agitate the sprayer before spraying?
4. Did the trainee lift and adjust the sprayer for correct carrying and comfort?
5. Did the trainee face the wall correctly (i.e., lance direct to wall and at midline of the spray swath)?
6. Was the correct distance maintained (45 cm from wall)?
7. Did the trainee take proper steps from swathe to swathe?
8. Was a 5 cm overlap maintained between swathes?
9. Did the trainee take the correct time to cover swathes (judge two best times) of around 3.5 seconds?
10. Did the trainee correctly remove and de-pressurise the sprayer?

Yes	No

Score 1 point for each yes:

..... out of 10

Assessment B: Furniture treatment with hand-compression sprayer

Participant name:

Gender: female / male /

How many residual spray rounds have you completed before this workshop (tick)?

0 1-2 3-4 5-7 8+

To be completed by facilitator

Ask the participant to do the following:

- Fill their sprayers to 7.5 litres and pressurise them
- Perform 3 consecutive sprayings of 3 pieces of furniture
- Remove the sprayer and de-pressurise it

Observe for the following as they work:

1. Was the sprayer filled correctly? (i.e., introduce 3 litres, add insecticide, fill to 7.5 litres)
2. Was the correct pressure applied to start (i.e., pump until auto-release)?
3. Did the trainee agitate the sprayer before spraying?
4. Did the trainee lift and adjust the sprayer for correct carrying and comfort?
5. Did the trainee face or re-position the furniture correctly to enable correct positioning of the lance?
6. Was the correct distance maintained from the furniture?
7. Was a 5 cm overlap maintained between swaths?
8. Did the trainee use the correct speed (judge two best times) for the furniture i.e., faster where nozzle was closer than 45 cm?
9. Did the trainee re-position the furniture after spraying?
10. Did the trainee correctly remove and de-pressurise the sprayer?

Yes	No

Score 1 point for each yes:

..... out of 10

Assessment C: Harboursage treatment with motorised mist-blower

Participant name:

Gender: female / male /

How many residual spray rounds have you completed before this workshop (tick)?

0

1-2

3-4

5-7

8+

To be completed by facilitator

Ask the participant to do the following:

- Fuel mist-blower and introduce water and insecticide
- Start the mist-blower and lift to carry
- Perform vegetation spraying of three different sections, for at least 10 seconds each and with at least 5 m between sections
- Turn off the mist-blower and remove it

Observe for the following as they work:

1. Was the blower fuelled correctly (50:1 ratio) and the insecticide filled correctly?
2. Was the tank lid put on correctly and mixed properly?
3. Was the correct process used to start the blower (with the diffuser at the end of the spray hose set properly)?
4. Was the correct process used to pick up and wear the blower?
5. Did the trainee position themselves well for spraying?
6. Was a maximum height of 2 m used for blowing the mist (judge two best sections)?
7. When moving between sections, did the trainee take proper actions?
8. Was spray technique adjusted based on vegetation?
9. Was the chemical flow knob set at 3 and correct revs used throughout misting?
10. Did the trainee correctly remove and turn off the mist-blower, and close the chemical flow valve?

Yes	No

Score 1 point for each yes:

..... out of 10

Annex 5. End of workshop feedback form

Workshop name:

Workshop date:

Workshop location:

Names of trainers:

Which days did you attend the workshop (tick all that apply)?

Day 1 Day 2 Day 3 Day 4 Day 5

Please tick the column of your choice for each workshop element.

Workshop element	Poor	Fair	Good	Very Good	Excellent
Overall content of course					
Training methods used					
PowerPoint slides					
Presentation of material by trainers					
Handouts					
Demonstrations					
Hands-on activities					
Facilitation of activities by trainers					

What topics related to residual spraying for *Aedes* would you like more information on, if any?

.....

What information from the course was most useful for your *Aedes* residual spraying work?.....

.....

What information from the course was not useful for your work?.....

.....

Please share any other comments that would help up to strengthen this course:

.....

Annex 6. Energisers

Energisers are brief activities conducted in trainings that are intended to increase the energy level of participants by engaging them in physical activity or asking them to solve a problem. These activities are meant to be fun, interactive, and bring energy to a training group encouraging participants to look forward to the rest of the training.

The five energisers below are not intended to be prescriptive, and should be used and adapted as you see fit to meet the needs of your training group.

Energiser 1. Stand up if

Session mode	Classroom learning
Duration	5-10 mins
Equipment & materials	<ul style="list-style-type: none">• A prepared list of questions

Prior to the workshop the facilitator prepares a list of questions that can only be answered with yes or no. Questions can be related to the topic/content, but do not have to be. These questions should begin with "Have you ever...?" or "Stand up if...".

For example, content-related questions could include:

- Before this training, have you ever...
 - ...facilitated a group training?
 - ...used a Goizper iK Vector Control Super sprayer?
 - ...had your home sprayed for insecticide?

For example, general questions could include:

- Have you ever...
 - ...been horse riding?
 - ...seen a shark?
 - ...played a musical instrument?

Participants should sit down between questions.

1. **INTRODUCE** the energiser and **EXPLAIN** how it works, as described above.
2. **READ** out the questions or statements one by one. For each statement, the participants stand up if they answer the statement with yes.
3. **PLAY** as many rounds as you would like to boost energy or to help participants get to know each other better.

Energiser 2. Rock, Sprayer, Mosquito

Session mode	Classroom learning
Duration	5-10 mins
Equipment & materials	<ul style="list-style-type: none">N/A

This is a fun energiser based on the well-known “Rock, Paper, Scissor” game - with a twist:

- Rock breaks the sprayer
 - Sprayer kills the mosquito
 - Mosquito lands on the rock
1. **INSTRUCT** participants to find a partner and **EXPLAIN** the activity, as described above.
 2. **SHOW** participants the hand signs for each move:
 - The Rock is a clenched fist
 - The Sprayer is an open hand with fingers wide
 - The Mosquito is a closed hand with thumb and pointer finger together
 3. **ASK** pairs to play three rounds of "Rock, Sprayer, Mosquito" against each other – the partner who wins the most of the three turns wins.
 - The losing player sits down and the winning player finds a new opponent.
 - Repeat until there are only two opponents – the final winner wins the tournament and is congratulated.

Energiser 3. Group, ungroup, regroup

Session mode	Classroom learning
Duration	5-10 mins
Equipment & materials	<ul style="list-style-type: none">N/A

1. **ASK** participants to stand up and **EXPLAIN** the rules of the game:
 - In this short group challenge, you will move around the room until a number is called out. When you hear the number, form a group with that number of participants.
 - For example, if the facilitator calls out “four”, you will join other participants until you have formed a group of four.
 - In between numbers, the facilitator will call out “ungroup” and you will move to your own space again.
 - The facilitator will then call another number, and you will race to form groups of that size.
 - Anyone left standing on their own when all groups are full must sit down.
2. **PLAY** the game until the last two participants are left.
3. **CONGRATULATE** the winners.

Energiser 4. Line up race

Session mode	Classroom learning
Duration	5-10 mins
Equipment & materials	<ul style="list-style-type: none">N/A

1. **INTRODUCE** the energiser and **EXPLAIN** how it works:

- In this short group challenge, you will be divided into two groups and groups must race to organise themselves into a line according to certain criteria.

Note: This game can be played either with or without speaking allowed, depending on the criteria used.

2. **DIVIDE** participants into two equal groups.

3. **CALL** out the criteria and tell participants the race is on.

- Examples of criteria that groups can be asked to line up according to include:
 - First name or last name letter (A-Z) – with speaking
 - Years of experience in vector control – with or without speaking
 - Height – without speaking
 - Hair colour (lightest to darkest) – without speaking

4. **CONGRATULATE** the winning team that successfully organises themselves into a line according to the chosen criteria first.

Energiser 5. Two truths and a lie

Session mode	Classroom learning
Duration	5-10 mins
Equipment & materials	<ul style="list-style-type: none">N/A

1. **INTRODUCE** the energiser and **EXPLAIN** how it works:
 - Two Truths and a Lie is a classic get-to-know-you type energiser game. Players tell two truths and one lie about themselves in any order. The object of the game is for everyone else to determine which statement is false.
2. **ASK** participants to arrange themselves in a circle. Ask each player to think of three statements about themselves: the more unique or interesting the statement is, the better!
3. **ASK** for one volunteer to go first and share their statements with the group.
 - After sharing their statements once, they ask for a vote and repeat the questions.
 - The group votes on which one they feel is a lie by raising their hand when what they believe is the false statement is said.
 - The volunteer reveals the correct answer.
4. **REPEAT** the activity for either a predetermined number of volunteers or for the whole group.

Annex 7. Daily evaluation

Session mode	Classroom learning
Duration	5-10 mins
Equipment & materials	<ul style="list-style-type: none">• Flipchart, markers• Sticky notes

The daily evaluation can be conducted at the close of each day together.

1. **ASK** participants to take a moment to reflect on your day together. What did they enjoy? What was helpful in their learning? What would they like to see changed?
2. **INSTRUCT** them to write any feedback that they have on sticky notes and leave them on the Participant Feedback flipchart as they leave for the day: positive comments on the “plus” side and things they would like changed on the other side.

Note: If participants do not read and write well, you can conduct a verbal debrief of the day, encouraging them to share their views. They can offer their feedback in the large group, or privately with the facilitator, at any time.

3. **CHECK** the Participant Feedback flipchart after participants leave at the end of each day. As you start the next day, acknowledge any comments you can respond to.

Annex 8. Closing the training day

Session mode	Classroom learning
Duration	10-15 mins
Equipment & materials	<ul style="list-style-type: none">• Flipchart, markers

Closing the training day provides participants with a sense of accomplishment, reinforces key takeaways, and leaves them motivated for future learning.

1. **ASK** participants to assist with creating a list of the most important learning points from the day. **RECORD** the different topics on a flipchart as participants list them.
2. **REMIND** participants of key learning points from the day as topics are mentioned. Show how each objective has been addressed and achieved during the day.
3. **REMIND** participants of the start time for tomorrow and **ASK** if there are any questions or feedback from the group.
4. **GIVE** a brief preview of what participants can expect in the upcoming sessions.

Annex 9. Property spray card

Province/Island District/Zone Village/Suburb

Property ID Longitude Latitude

Date card issued

Property type (tick those that apply):

house

apartment

hotel

shop

office

industrial

vacant

public space

TREATMENT NO.	DATE SPRAYED	SPRAY OPERATOR	NO. PEOPLE IN TARGET PROPERTY		NO. SPRAYABLE ROOMS/STRUCTURES ON PROPERTY		NO. UNSPRAYED ROOMS/ STRUCTURES ON PROPERTY		INSECTICIDE USED	AMOUNT OF INSECTICIDE USED
			CHILDREN	ADULTS	INDOOR	OUTDOOR	TOTAL	REASON (SEE KEY)		
1										
2										
3										
4										
5										

Reason key / totals: **SC:** sick **NB:** newborn **F:** funeral **NH:** no one home **R:** refused spray **H:** hazard/unsafe **O:** Other

Date

Comments

.....

.....

Annex 10. Daily spraying record

Province/Island District/Zone Village/Suburb Spray date

PROPERTY NO.	TARGET PROPERTY ID (property name or #)	PROPERTY TYPE (SEE KEY)	GPS LOCATION		NO. PEOPLE IN TARGET PROPERTY		NO. SPRAYABLE ROOMS /STRUCTURES		NO. SPRAYED ROOMS /STRUCTURES		NO. UNSPRAYED ROOMS/ STRUCTURES		AMOUNT INSECTICIDE USED	
			LATITUDE	LONGITUDE	CHILDREN	ADULTS	INDOOR	OUTDOOR	INDOOR	OUTDOOR	TOTAL	REASON (SEE KEY)	INDOOR	OUTDOOR
1														
2														
3														
4														
5														
6														
7														
8														
9														
10														
TOTAL		na	na	na										

Property type key: H: house A: apartment HT: hotel S: shop O: office I: industrial V: vacant PS: public space

Reason key: SC: sick NB: newborn F: funeral NH: no one home. R: refused spray H: hazard/unsafe O: other

Daily summary

Amount insecticide issued

Amount insecticide used

Amount insecticide returned

Insecticide used: _____

	Properties sprayed	
	People in properties sprayed	
	Rooms/structures sprayed	

Property coverage: (total target-sprayed)/target x 100	%
Population coverage: (total target-sprayed)/target x 100	%
Room/structure coverage: (total-unsprayed)/total	%

Spray Operator name and signature: _____

Team Leader name and signature: _____

Comments:

Annex 11. Diagram of spray machines

Fill in the blanks

Hand compression sprayer

Components include:

.....to deliver insecticide to surfaces

Safety valve

to protect against over-pressurising

Lid with spare nozzle and filter storage

..... translucent to see insecticide volume

Straps

adjustable for use on 1 or both shoulders

..... integrated for securing sprayer

Filler filter carried inside tank

.....
.....
for constant pressure in nozzle and auto cut-off

.....
And..... for easy carrying

..... and filter for 580 ml/min with CFV

Nozzle protector to prevent clog or damage



Fill in the blanks

Motorised backpack mist-blower

Spray unit components include:



Annex 12. Example insecticide product labels

Example 1



Europe, Africa and Middle East



Actellic[®]300CS

Long lasting residual insecticide







Example 2

DIRECTIONS FOR USE:

PESTS	APPLICATION TECHNIQUE	DILUTION RATE	SPRAY VOLUME
Mosquitoes (Anopheles, Culex, Aedes, etc.)	Outdoors - ULV	50 ml product + 1000 ml diesel/ kerosene (1 : 20)	1 litre spray solution/ha
	Outdoors - Thermal fogging	100 ml product + 1000 ml diesel/ kerosene (1 : 10)	500 ml spray solution/ha
Flies (Musca domestica)	Outdoors - Thermal fogging	2 ml product + 1000 ml diesel/ kerosene (1 : 500)	*50 litre spray solution/ha
	Indoors - ULV	10 ml product + 1000 ml diesel/ kerosene (1 : 100)	**10 litre spray solution/ha
	Indoors - ULV	100 ml product + 1000 ml water (1 : 10)	10-20 ml spray solution/ house or 100 ml spray solution/200m ²
	Indoors - Thermal fogging	20 ml product + 1000 ml water (1 : 50)	1 litre spray solution/2000m ² or 100-200 ml spray solution/ house

* High output machines that gives a flow rate of 30-190 litre/hour.
 ** Low output machines that gives a flow rate of 12-25 litre/hour.





x 15

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READ THE LABEL BEFORE USE
 JIRP: P/0215/083

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