Introduction

• Current vector control methods in Cambodia could be improved by increasing community engagement and by the use of biological control methods to mitigate temephos-resistance in *Aedes aegypti* [1];

• Larvivorous fish are a cost-effective, domestic vector control method. They have demonstrated effectiveness in small-scale studies [13] and their usage is culturally accepted in Cambodia [10];

• A controlled release pyriproxyfen (PPF) matrix release formulation (Sumilarv® 2MR) has been developed requiring distribution every six months and reducing operational costs when compared to temephos/Bt, which have residual efficacy of two to three months and can be used at levels well below World Health Organization’s Joint Meeting on Pesticide Residues potable water limits.

• This trial study aims to demonstrate community effectiveness of guppies, PPF and Communication for Behavioural Impact (COMBI) activities.

Methods

Study site

The study site includes 30 clusters with approximately 200 households (HHs) or 1,000 individuals per cluster, randomised into three Arms:

1) Guppies, PPF, and COMBI activities (see black circles)

2) Guppies and COMBI activities (see red circles)

3) Standard vector control activities from the Ministry of Health (see green circles)

Survey design and implementation

• Two guppy fish (*Poecilia reticulata*) were placed into each water container greater than 50L (in Arms 1 and 2) and one Sumilarv® 2MR was placed in each container from 10-50L (in Arm 1).

• Community health workers (CHWs) were responsible for distribution of guppies from the health centre guppy banks (supplied with 20 jars of 500L) and their homes (supplied with two 500L jars).

• Sumilarv® 2MR were replaced at six months post-intervention.

• COMBI activities included health education sessions, posters, banners, t-shirts and songs.

Surveys and Assessments

• 4 Entomology surveys conducted with a sample size of 10 clusters per Arm and 40 HHs per village at baseline and every 4 months post-intervention.

• Baseline/endline KAP surveys with a sample size of 10 clusters per Arm and 20 HHs per cluster

• CHWs recorded monthly coverage of guppy fish and Sumilarv® 2MR in each household container

• Focus group discussions and in-depth interviews were conducted to assess the acceptability of vector control tools in the study area.

Discussion and conclusions

• Throughout the study period, the mean number of adult *Aedes* females per household (primary outcome) was significantly greater in Arm 3 (0.72, 95% CI 0.59-0.84) than Arm 1 (0.42, 95% CI 0.37-0.47) or Arm 2 (0.37, 95% CI 0.32-0.42), with the greatest difference between Arms in Ento 3 (See Figure 1). A controlled release pyriproxyfen (PPF) matrix

• Figure 2 shows a statistically greater number of pupae per person (PPP) overall in Arm 3 (0.65, 95% CI 0.55-0.75) than in Arm 1 (0.41, 95% CI 0.34-0.47).

• Figure 3 shows that coverage of pupae remained high in Arm 2 while PPP and guppy coverage fluctuated in Arm 1.

• The KAP and qualitative findings revealed strong community participation in COMBI activities, high acceptability rates and demand for the guppies.

References:


