

Supporting roll-out of revised dengue prevention and control guidelines in Myanmar



Key messages

- Dengue prevention and control relies on the proficient application of guidelines by frontline health workers. Guideline revisions need to be communicated to health workers in a way that allows them to understand how the revisions affect their roles and responsibilities.
- It is well-established that participatory training approaches including adult learning techniques are more effective than traditional didactic training. However, in resource-poor settings with little prior experience of participatory training, it is important to consider the feasibility and acceptability of this approach, as well as its impact on health worker knowledge, skills and health system capacity.
- This study found major limitations to the use of participatory training to train health workers in Myanmar on revised dengue prevention and control guidelines. The approach did not result in better knowledge, skills or outbreak preparedness compared with more traditional didactic training.
- To benefit from more participatory training approaches, it will be necessary to broaden the pool of potential trainers and invest in their ability to provide good quality training. Over time and with continued exposure to adult training techniques, acceptability of this approach among health workers is likely to increase.

Introduction

Dengue, a neglected tropical disease (NTD) prioritised by the World Health Organization (WHO), is a mosquito-borne viral infection which induces flu-like symptoms and occasionally develops into a potentially fatal illness called severe dengue. The incidence of this disease has increased thirty-fold over the past 50 years^[1]. It is thought that approximately three-quarters of those exposed to the disease live in the Asia-Pacific region^[2]. In 2015, Myanmar saw the highest number of dengue cases since records began, with 35,993 cases and 120 deaths between January and September^[3]. While a vaccine is being rolled out in other countries in the region, there is currently no approved vaccine available for the prevention of dengue in Myanmar and no antiretroviral is

available for its treatment. In the absence of these, effective prevention and control of dengue is crucial in reducing dengue transmission and caseloads.

In 2015/16, Malaria Consortium worked with the Ministry of Health and Sports (MoHS) in Myanmar to revise the country's national dengue prevention and control guidelines. The new guidelines were adapted from the most recent WHO recommendations, making them more applicable under programmatic conditions and providing more detailed guidance on integrated vector management, surveillance and outbreak preparedness. While clear and concise guidelines are a necessary requirement for improved dengue prevention and control, it is also crucial that those

responsible, in particular frontline health workers, must be trained on how the guidelines affect their roles and responsibilities and they must be proficient in their use.

It is well known that interactive and participatory teaching methods are more effective than traditional didactic training^[4]. However, in an environment where training opportunities have typically been limited and resources are scarce, it is important to consider training approaches' feasibility and acceptability, as well as their potential impact on health worker knowledge, skills and health system capacity, to make informed decisions with regard to the appropriate use of resources.

Methods

Study design

This study was designed as a small-scale pilot study, which aimed to compare two approaches to rolling-out revised dengue prevention and control guidelines to basic health staff in Myanmar:

- Basic didactic training
- Comprehensive participatory training, using adult learning techniques

The main research question it aimed to address was whether comprehensive dengue prevention and control training is a feasible and acceptable approach, which has the potential to achieve better impact on health worker knowledge, skills and health system capacity than conventional basic training.

Setting

The study was conducted in four townships in two regions of Myanmar with high burden of dengue cases: Yangon and Ayeyarwaddy. Within each region, one predominantly urban and one predominantly rural township was selected. Townships were assigned to either the basic or comprehensive training approach, such that both approaches were tested in both regions and in both rural and urban townships (Figure 1).

Taking into account limitations with regard to available time and budget, training all relevant health workers in the selected townships was not considered feasible. Township Medical Officers in the study townships were therefore asked to purposively select a sample of health facilities, from which 25 basic health staff attended the training in each study township.



Figure 1: Township sampling frame

Pilot intervention

A total of 100 health workers from the four study townships were trained in October 2016 (Table 1). Both basic and comprehensive training approaches covered relevant aspects of the revised dengue prevention and control guidelines. However, while the basic training lasted one day and consisted mainly of didactic lectures using presentation slides, the comprehensive training lasted two days and included a range of participatory practical exercises, such as role play, case scenarios, small group work and field exercises.

Trainings were delivered by nine trainers selected by MoHS from health officials working with Vector-borne Disease Control or Health Education Bureau teams at central and regional level. The training intervention followed a four-step process (Figure 2):

- The trainers attended a training-of-trainers module, which introduced the revised dengue prevention and control guidelines and the training

slides to be used in the basic training approach.

- Two teams of trainers subsequently delivered the basic training in the two townships assigned to this approach.
- The trainers then attended a second training-of-trainers module, which focused on adult training techniques and the exercises to be used in the comprehensive training approach.
- The two teams of trainers then conducted the comprehensive training in the two townships assigned to this approach.

Most of the training-of-trainers was delivered in English by a master trainer, while township-level trainings were generally conducted in Myanmar language. Evaluation reports were submitted by the master trainer following the training-of-trainers and members of the study team who observed each township-level training.

Table 1: Training participants by region and sex

Demographic variable	Basic training group (n=50)	Comprehensive training group (n=50)
Region		
Yangon	25	25
Ayeyarwaddy	25	25
Sex		
Female	30	35
Male	20	15

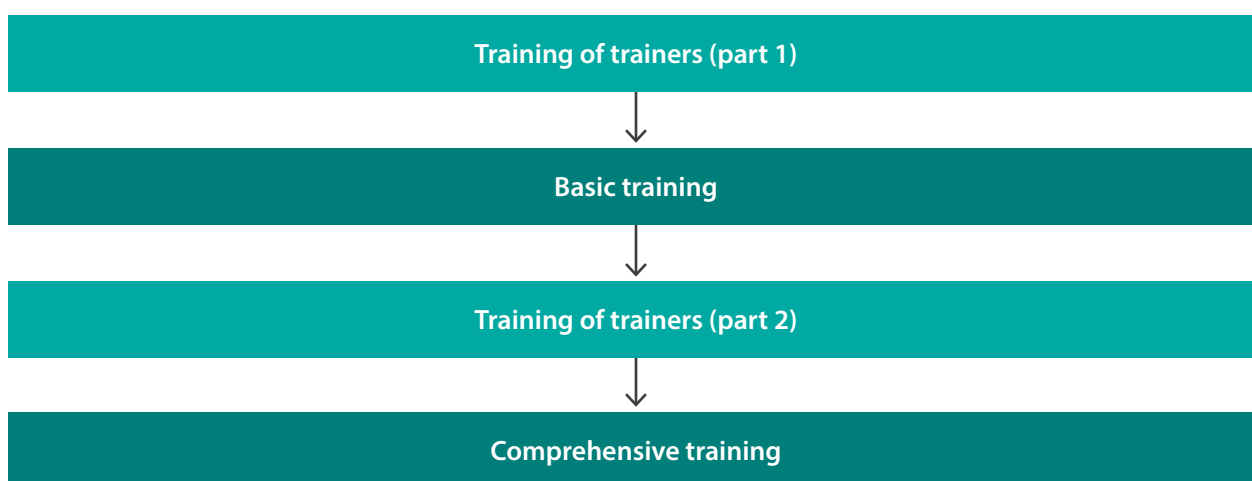


Figure 2: Dengue prevention and control training activities

Evaluation

1. Health worker knowledge

Health worker knowledge of dengue prevention and control was assessed using a multiple-choice questionnaire administered to training participants immediately before and after the training. All questions related to content covered during the training. In order to assess trainers' knowledge of dengue prevention and control, they were also asked to complete the questionnaire before and after the first part of the training-of-trainers. Responses were scored by awarding one point for each question answered correctly. Mean pre- and post-training scores (expressed as % of correct answers) and 95% confidence intervals (CIs) were calculated and compared between basic and comprehensive training groups. A difference-in-difference (DID) multivariate linear regression analysis using a random effects model was used to determine whether health worker knowledge was significantly different between groups over time. A two-sided p-value of <0.05 was considered to be significant for all tests.

2. Health worker skills

Health workers' competence in applying the knowledge gained from the training to their day-to-day jobs was tested through an examination of their practical skills, using methods adopted from the Objective Structured Clinical Examination (OSCE) approach^[5]. During an OSCE, candidates are observed and evaluated as they go through a series of stations in which they interview, examine and treat standardised patients who present with a medical problem. For this study, ten stations were developed which tested participants' skills with regard to dengue prevention and control. All health workers who had attended the dengue prevention and control training were invited to participate in the skills assessment, which was conducted about one month after the training. Each station was supervised by a field researcher who scored each participant against a set of scoring

criteria. A maximum of ten points could be awarded for each station. Mean scores (expressed as % of correct answers) and 95% CIs were calculated and compared between basic and comprehensive training groups. A two-sided p-value of <0.05 was considered to be significant for all tests.

3. Outbreak preparedness

Based on the provisions outlined in the revised dengue prevention and control guidelines, a checklist and scoring system were developed to assess the extent to which health facilities are prepared to deal with a dengue outbreak. This included assessing indicators relating to data reporting surveillance and case detection, referral system, health education and drugs and equipment. All health facilities with at least one health worker present at the dengue prevention and control training were visited about two months after the training by a team of six field researchers who awarded scores between 0 and 2 for each indicator. The maximum score was 35. Mean scores and 95% CIs were calculated and compared between basic and comprehensive training groups. A two-sided p-value of <0.05 was considered to be significant for all tests.

4. Focus groups and interviews

In each study district, two FGDs, each involving eight participants, were conducted with the following target audiences:

- Senior health workers who had attended the dengue prevention and control training
- Junior health workers who had attended the dengue prevention and control training

In addition, three in-depth interviews were conducted with trainers. All focus groups and interviews were conducted by three field researchers using semi-structured discussion guides, audio-recorded and transcribed verbatim about two months after the training. Transcripts were analysed thematically and summarised in English, including translations of illustrative quotes.

Results and discussion

Health worker knowledge

Correct knowledge of dengue prevention and control was comparatively low among the nine selected trainers before they attended the training-of-trainers, with a mean score of 59%. The scores of all but two of the trainers improved after the training-of-trainers, with a mean score of 77% (Figure 3).

However, assuming knowledge levels of >85% as desirable, trainers' knowledge was unsatisfactory overall, with only three trainers exceeding 85% and a further two trainers achieving a score close to this threshold.

Of the 100 health workers trained, 97 completed the knowledge questionnaire before and after the

training, 48 from the basic training group and 49 from the comprehensive training group. Before the training, the mean knowledge score among the basic training group was 68% (95% CI 64-73), compared with 66% (95% CI 62-69) among the comprehensive training group. As expected, the difference between the groups was not significant, as the composition of the two training groups was comparable and no training had been received by either group at that point. Average scores among both training groups increased post-training, with the basic training group scoring 90% (95% CI 88-93) on average, compared with 69% (95% CI 66-72) among the comprehensive training group (Figure 4). This difference was statistically significant ($p < 0.001$).

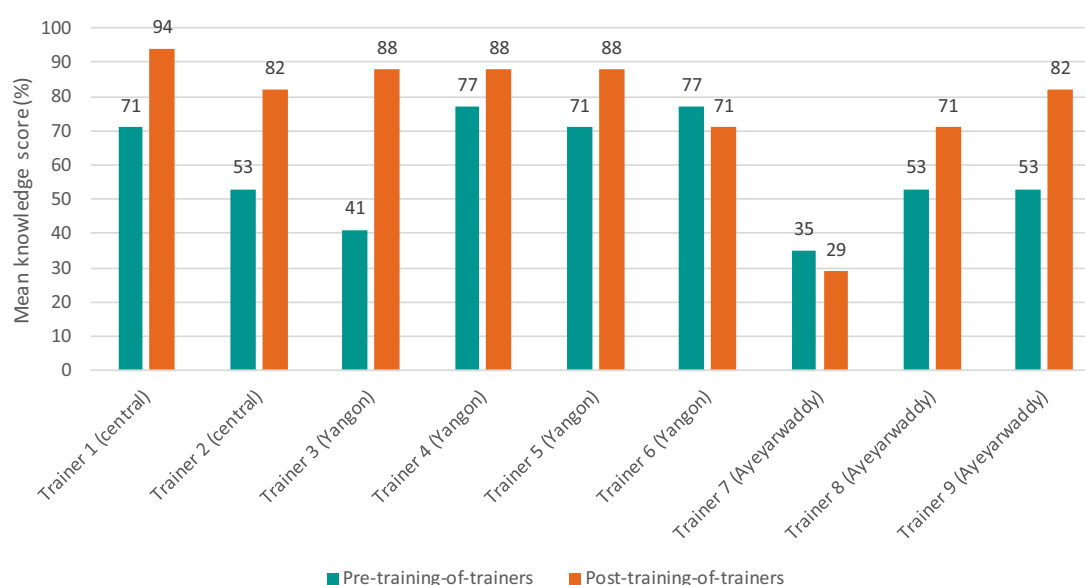


Figure 3: Trainers' mean knowledge scores (%) pre-/post-training-of-trainers



Figure 4: Mean knowledge scores (%) pre-/post training

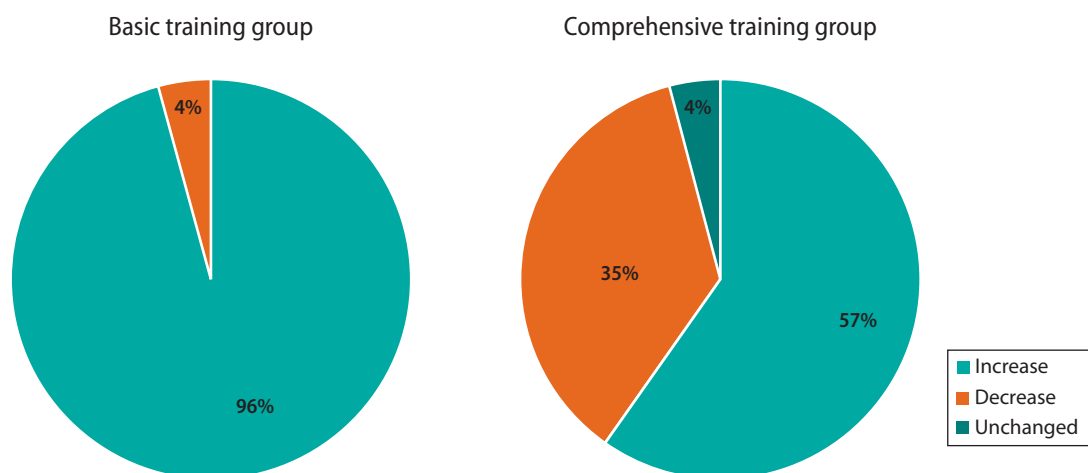


Figure 5: Change in individuals' knowledge scores pre-/post-training

Among the basic training group, 46 individuals (96%) showed improved scores after the training compared with before the training, while only 28 individuals (57%) among the comprehensive training group improved their scores (Figure 5). For the comprehensive training group, this is a much lower than expected increase in knowledge following a training activity.

The total DID between the two training groups was -18% (95% CI -27- -9). This was statistically significant ($p=0.009$), indicating that, contrary to expectations, the comprehensive training approach resulted in poorer health worker knowledge post-training than the basic approach.

Health worker skills

Of the 100 health workers who attended the trainings, 92 participated in the OSCE examination, 45 from the basic training group and 47 from the comprehensive training group. The mean score among health workers from the two training groups was nearly identical. Respondents from the basic training group scored an average of 70 points, compared with a mean score of 71 among health workers from the comprehensive training group. The difference between the two groups was not statistically significant, which suggests that the comprehensive training did not result in better health worker skills with regard to applying knowledge of dengue prevention and control to their day-to-day job compared with the basic training.

Outbreak preparedness

A total of 70 health facilities from which health workers were trained were visited for the outbreak

preparedness assessment, 32 in townships assigned to the basic training approach and 38 in townships assigned to the comprehensive training approach. Mean scores at facilities in townships assigned to the basic approach were very similar to those at facilities in townships assigned to the comprehensive approach, with 20.6 and 20.9 out of a possible 35 respectively.

Feasibility and acceptability

Perspective of master trainers, observers and trainers

Three in-depth interviews with trainers were conducted, one central-level trainer and one from each study region. One training-of-trainers evaluation report and four township-level training observation reports were submitted.

A key challenge reported by the master trainer was the small pool of candidates for the role of trainer. This meant that some of the trainers had limited experience and expertise, which may have contributed to the lower than expected knowledge levels among trainers post-training-of-trainers. The trainers generally expressed a preference for the comprehensive training approach, mainly citing its more participatory nature.

As a trainer, I prefer the comprehensive training to basic training because we could get a chance to participate actively in comprehensive training. During basic training, our trainer taught us according to the training schedule with less participatory approach and it made the trainees bored and less interest in basic training.

Central trainer

Observers, on the other hand, concluded that this training approach had been more challenging for the trainers than the basic training. While observers' evaluation of the basic trainings was generally good, challenges reported from the comprehensive trainings included failure to use training materials as intended, low participation from health workers and poor time management.

Health workers' perspective

A total of 64 health workers participated in eight focus group discussions, 16 in each study township and, consequently, 32 per training type. Health workers' perception of the training content did not differ between the two training types. The updated dengue prevention and control guidelines introduced through the training were generally seen as an improvement over the previous guidelines. Despite the different training approaches used, it was also noticeable that the main challenge raised with regard to the format of the training was identical across the two training groups. There was broad agreement that the time available for the training was not sufficient and that it had been difficult to take in and reflect on the information provided during the training. While mentioned by health workers in all study districts, this challenge was emphasised by participants from the comprehensive training group, where the practical training elements appeared to have contributed to the perception that too much information had been provided.

Main point is that we were working with tight schedule during the training. Time given for the training was too short to remember everything what we learnt. Training was given non-stop. We were going to do dengue control activities in the community while attending the training. So it is not a big deal for young health staff, but for elder health staff, like me, it was hard to follow all the training session and remember everything. That is the point I do not like from the training.

Senior health worker, comprehensive training group

Only one participant from the basic training group commented on the lack of practical exercises during the training. Several other participants, on the other hand, stated that they enjoyed listening to the presentations.

Teaching with PowerPoint presentation is good for us. In the township training, there was PowerPoint presentation together with print-out copies of the PowerPoint presentations which were given to us. This is better for us and it is hard to write down all the notes during the presentation.

Junior health worker, basic training group

There was no noticeable difference in how participants from the two training groups described the impact of the training on their day-to-day jobs. When asked about the impact of the training at the health facility or community level, participants from both groups speculated that the training may result in better outbreak preparedness and more effective outbreak response.

If a dengue outbreak occurred, we can take prompt action and prevent from another attack. And we can conduct more larval survey and prevention and control measure of dengue. These are the benefits for us from the training.

Junior health worker, basic training group

Limitations

An important limitation of this study was the small pool of available candidates for the role of trainer. As most of the training of trainers was delivered by one master trainer in English, it is possible that the trainer's performance may have affected the quality of the training or that some of the training content, especially on the comprehensive approach, may have been insufficiently understood, in particular some of the more complex information participants may have been less familiar with, for example adult training techniques.

Conclusion

This study found major limitations to the feasibility and acceptability of adopting a participatory approach to health worker training on revised dengue prevention and control guidelines compared with a more traditional, didactic training approach. More participatory training did not result in better outcomes with regard to knowledge, skills or outbreak preparedness. With regard to health worker knowledge, health workers who had been trained using the basic training approach even outperformed those who had been trained using the comprehensive approach. Two factors appear to have played a crucial role:

- Trainers' knowledge of dengue prevention and control and their capacity to provide training using adult training techniques
- Health workers' capacity to take in complex information and positive perception of more didactic training

References

1. World Health Organization. 2012. *Investing to overcome the global impact of neglected tropical diseases: a roadmap for implementation*. Geneva, Switzerland.
2. World Health Organization. 2008. *The dengue strategic plan for the Asia Pacific region 2008-2015*. Geneva, Switzerland.
3. Laignee B, Myint SYS. 2015. Dengue fever outbreak sweeps the region, sets local record. Myanmar Times [Internet]. Oct 1; Available from: www.mmtimes.com/index.php/national-news/16769-dengue-fever-outbreak-sweeps-the-region-sets-local-record.html
4. Khan KS, Coomarasamy A. 2006. A hierarchy of effective teaching and learning to acquire competence in EBM. *BMC Med Educ*. 6:59.
5. Sloan DA, Donnelly MB, Schwartz RW, Strodel WE. 1995. The Objective Structured Clinical Examination: the new gold standard for evaluating postgraduate clinical performance. *Ann Surg*. 222(6):735-42.

Our findings suggest that the ability to benefit from more participatory training approaches will require broadening the pool of potential trainers and investing in their ability to provide good quality training, both with regard to subject matter and the use of adult training techniques. This should include a process of certifying trainers based on their competencies and only selecting those who meet the certification criteria.

At present, there appears to be a preference among health workers for more traditional didactic training approaches, possibly because of limited experience with more participatory approaches. Over time, improved quality of the training and increased exposure to adult learning techniques are likely to result in better acceptance of this approach among health workers. It will, however, be important to consider other capacity building mechanisms in addition to classroom training, such as supervision or mentoring, in order to improve health worker performance.

Author

Christian Rassi, Malaria Consortium

Contributors

Aung Naing Cho, Malaria Consortium
Alison Crawshaw, Malaria Consortium
Aileen Sammon, Malaria Consortium
Constance Shumba, Malaria Consortium

Prudence Hamade, Malaria Consortium
Madeleine Marasciulo-Rice, Malaria Consortium
Nyo Nyo Kyaing, Malaria Consortium
Zaw Lin, Ministry of Health and Sports

Acknowledgements

The study was conducted through COMDIS-HSD, a Research Programme Consortium funded by the UK government. However, the views expressed do not necessarily reflect the UK government's official policies.

Malaria Consortium would like to acknowledge the kind support from the Dengue Control Programme at Myanmar's Ministry of Health and Sports.

For more information about the study

Christian Rassi, COMDIS-HSD Project Coordinator: c.rassi@malariaconsortium.org

Published by Malaria Consortium / March 2017

This publication may be reproduced in whole or in part for non-profit or educational purposes, provided that acknowledgement is made to Malaria Consortium. Please send a copy or link of the reprinted material to Malaria Consortium. No images from this publication may be used without prior permission from Malaria Consortium.

