

## Vector Control in Humanitarian Emergencies Meeting of Geneva-based Agencies hosted by UNHCR

5 February 2020

### Background

Forcibly displaced persons now total more than 70.8 million; many are at increased risk for vector-borne diseases, malaria throughout much of Africa, leishmaniasis in Syria, Turkey and Iraq, dengue in Yemen and Bangladesh. While some are in settled camps where standard Indoor Residual spraying (IRS), and Insecticide Treated Mosquito Nets (ITNs), and larviciding can be deployed, many others are mobile, in makeshift shelters and situations where these are not practical; there is a gap where newly developed tools can play a life-saving role. Much of the high-burden malaria population in Africa are in these complex operating environments; we will not reach global malaria targets unless we address these ever-expanding challenges. There is an urgent need to strengthen collaboration among industry, approval and procurement agencies and implementing partners to expand use of existing vector surveillance and control tools and facilitate the development of new tools and processes for communities burdened by vector-borne diseases beyond the reach of current strategies.

The Roll-back Malaria (RBM) Partnership to End Malaria, Vector Control Working Group, hosts a partner initiative to address the growing needs of vector control in humanitarian emergencies. The inaugural VCHE meeting in September 2017<sup>1</sup> developed the following Mission Statement:

### ***Mission Statement***

*To reduce human suffering and death from vector-borne diseases in Humanitarian Emergencies by:*

- a) improving delivery, uptake, integration and evaluation of existing vector surveillance and control tools;*
- b) facilitating the development of an evidence-base and uptake of supplementary and emerging tools.*

The most recent VCHE meeting, hosted September 2019 by the UN Foundation in Washington DC, brought together partners from international and bilateral relief agencies, NGOs, research institutions and most importantly, industry partners and manufacturers of key vector control tools that can be adapted for humanitarian emergency situations.<sup>2</sup>

<sup>1</sup> <https://endmalaria.org/sites/default/files/Vector-Control-Humanitarian-Emergency-meeting-report-.pdf>

<sup>2</sup>

<https://endmalaria.org/sites/default/files/RBM%20Vector%20Control%20in%20Humanitarian%20Emergencies%2027%20Sept%202019.pdf>

The September 2019 meeting focused on three key outputs:

- Establish platform for information exchange for existing surveillance and control tools and to facilitate bringing new vector control tools to the field best suited for humanitarian emergencies, considering three phases of “acute emergencies”, “transition communities” and “protracted emergencies” with established camps.
- Strengthened network for improved implementation of vector-borne disease control training and mentoring, planning, implementation and assessments among partners and across the clusters, especially, Health, Water & Sanitation (WASH), Shelter and Non-food Items.
- Involve partners in industry, policy, implementation and product development consortia in adapting existing tools or developing new tools for vector surveillance and control in humanitarian settings.

The meeting also concluded the need to develop a “Call to Action” to focus attention and funding to address the critical unserved needs of these ever-expanding populations.

### **VCHE Meeting hosted by UNHCR Geneva, 5<sup>th</sup> February 2020**

#### **Purpose:**

- Engage and seek advice from Geneva-based partners on the VCHE initiative;
- Update and discuss progress on the two elements of the mission statement, to make better use of existing vector control tools; and facilitate the development and deployment of new tools.
- Review the draft “Call to Action” for Vector Control in Humanitarian Emergencies

#### **Agenda:**

- Present the VCHE group and objectives.
- Debrief on Washington meeting and elements for follow-up.
- Presentation of key lessons learned in some major interventions in 2019
- Review “Call to Action” for Vector Control in Humanitarian Emergencies

#### **Participants:**

UNHCR	RBM	London School of TMH
WHO	IVCC	ICRC
UNICEF	IFRC	MSF
MSF/B	Solidarities	MENTOR Initiative

## Vector Control in Humanitarian Emergencies Workshop on 5 February 2020

### How can Vector Control partners work with UN and other sector partners in a more cohesive way?

#### Introduction by UNICEF Health:

The aim of the RBM VCHE initiative as stated in the two elements of the mission statement are to make better use of existing tools and to facilitate the development of new tools. To accomplish this, the group aims to bridge NGOs and implementing partners not just with UN organizations but with the private sector and product development partnerships. There have been two general meetings (referenced above), the second one included several private sector partners involved in the development and manufacture of vector control tools. The meeting report includes several recommendations to address specific challenges.

Vectors are not just a health issue but a WASH and Shelter issue as well. The VCHE meeting needs to be used to communicate with academic institutes, other WASH/Health/Shelter partners and UN agencies that have flexibility in their procurement such as UNICEF and also UNITAID, which is increasing their investment in operational research.

The work discussed here will be fed into the 2020 revision of Malaria Control in Humanitarian Emergencies handbook, now being developed by UNICEF, WHO and other partners.

#### Discussion I: Vector Control technical capacities and cross-cluster/sector<sup>3</sup> coordination

This meeting should be used as means to share information and experience in new tools and how this can be adapted to emergency situations. A central part of this is Operational Research and the data it produces, needed for improving and integrating interventions. Several of the partners present have strengths in monitoring, evaluation and operational research needed to underpin these interventions.

Operational research for vector control tools in “stable” communities needs to be adapted for the emergency setting. Often, vector control programs, are implemented by the WASH sector, as was done in the Cambodian camps along the Thai/Cambodia border and as also seen in various documents e.g, in SPHERE (standard 4.1)<sup>4</sup>. We need renewed input and coordination among these partners.

From the WASH perspective, vector control has not been as great a priority in recent years. There is sometimes confusion on where Vector Control should sit among the sectors. If it is not done by WASH other sectors may pick it up, which could cause confusion, or that it falls between the cracks, but in theory it is clear. UNICEF is now working in locations where vector control is not just about malaria but for rodent control, sandfly control, etc. Within the WASH cluster, vector control is rarely raised rather the focus is on water supply, quality, etc.

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<sup>3</sup> Note on terminology: “cluster” is often used in addressing Internally Displaced Person situations, whereas “sector” is more often used for Refugee situations. See: <https://www.humanitarianresponse.info/en/about-clusters/what-is-the-cluster-approach>

<sup>4</sup> <https://spherestandards.org/handbook-2018/>

WASH officers are also not usually up to date with the latest vector control methods and strategy and there is little clarity on the role of WASH in vector control.

Many organizations do not have enough technical resources to integrate vector control into emergency interventions for WASH. On a related note, while some organizations do LLIN distributions, there is a major gap in technical support and resources for more specialized vector control activities. Another WASH Cluster partner said they did not have the technical expertise in vector control and LLIN distributions are usually carried out by Shelter/NFI sector. A third said they had lost a long-term perspective on malaria control and usually works with other in-country organizations that have technical expertise (for example MSF in Venezuela). It is also a matter of knowledge. WASH is a very wide field, no WASH officer is a hydrologist, a hydrogeologist, biologist, mechanical engineer, civil engineer, behavioral scientist, public health specialist all at the same time. And even if you have one of the relevant professions (public health or biology), you may not have specialized in vector control. Even if we get microbiologist, it does not mean that they are specialists in vector control. However, since this is the case with most specialized knowledge in WASH. Often organizations consider WASH staff as generalists and then try to make available specialized knowledge through different arrangements. But for vector control and WASH-related NTDs, this is currently not the case.

Within WHO, there is an NTD WASH toolkit available online<sup>5</sup>. It's mainly focused on trachoma although it is currently being edited to include more NTDs. WHO is strengthening the partnership between NTD and WASH sectors and is aiming to develop better toolkits according to the needs of NGO partners.

As an example, dengue is increasing at a rapid rate and will continue to spread due to climate change and urbanization.<sup>6</sup> Surveillance systems, including epidemiological and entomological monitoring, are being established across the African region particularly East Africa and Southern Africa.

Likewise, UNICEF guidelines (in French) on malaria vector control and WASH for West and Central Africa offices, is an online resource open for other partners to use<sup>7</sup>.

In the Eastern Mediterranean region there has been a resurgence in malaria outbreaks and leishmaniasis outbreaks due to climate change, insecurity, increased migration and weakened health systems.<sup>8</sup> There is confusion over universal coverage of core interventions for refugees or migrating populations if these are not included in the national plans. We also need to include natural disasters in this discussion. There are sometimes issues of coordinated responses when there is a functioning health system (e.g. Mozambique during Cyclone Idai in 2019).

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<sup>5</sup> [https://www.who.int/neglected\\_diseases/news/toolkit-water-sanitation-hygiene/en/](https://www.who.int/neglected_diseases/news/toolkit-water-sanitation-hygiene/en/)

<sup>6</sup> Messina JP, Brady OJ, Golding N, et al. The current and future global distribution and population at risk of dengue. *Nat Microbiol.* 2019;4(9):1508–1515. doi:10.1038/s41564-019-0476-8

<sup>7</sup>

[https://www.humanitarianresponse.info/sites/www.humanitarianresponse.info/files/documents/files/guidance\\_t echnique lutte antivectorielle contre le paludisme - wash wcar\\_group - fr 2017.04.07.pdf](https://www.humanitarianresponse.info/sites/www.humanitarianresponse.info/files/documents/files/guidance_t echnique lutte antivectorielle contre le paludisme - wash wcar_group - fr 2017.04.07.pdf)

<sup>8</sup> <http://www.emro.who.int/annual-report/2018/communicable-diseases.html>

Expecting people to read a full handbook in emergency humanitarian responses is not feasible, there needs to be vector experts in the field to work with the coordinators. For example, the Dutch Surge Support for water has a good system for ensuring experts are on the ground.<sup>9</sup>

Others agreed that that expecting a high standard of vector control expertise in their WASH operations in camps is asking too much; there should be a level of expertise that can be recruited.

WHO can recruit experts when needed but prefer to train people in-country on basic vector control needs. Some organizations have the Human Resource capacity for large-scale interventions such as metal gauze over tanks, however they don't have the vector control expert that would recognize these water tanks as a larval habitat for *Aedes* vectors site, and a major cause of, dengue outbreaks. When there is an emergency, there needs to be a vector control expert in the country collaborating with all the implementing partners to ensure that all interventions reduce potential for vector borne disease transmission. Guidelines are simply not enough in this context. There needs to be a standardized method of recruiting vector control experts.

MENTOR has provided technical training for IFRC, IOM, UNICEF and other partners. There is a major problem with conjoining vector control into the emergency response cluster system: Health, WASH, Shelter, Education. The donor system usually funds projects that neatly fall under one cluster rather than cross-cutting (like vector control) and therefore has stalled collaboration across sectors.

#### **Action Points: Technical Capacity**

- We need to acknowledge the challenge of silos that often happen the Cluster System and meet the challenge of addressing vector control across clusters.
- Organizations that lead procurement of standardized humanitarian materials need to reassess and adapt the supply based on vector control needs. This requires examination of internal guidelines and specifications for procured materials (mainly within shelter cluster). When the standard supplies / guidelines are redesigned, the emergency package of materials being distributed to beneficiaries will then have a baseline for vector control.
- The level of basic technical competence for vector control needs to be defined by those organizations who perceive a gap, so that the necessary technical support can be provided
- UNICEF suggested to leverage its own internal inter-sectoral discussions and use agency contact points in breaking down silos; and WHO suggested to work across the departments within WHO and implement a small meeting to address this problem. WHO is working on MOU with UNICEF for emergency response, which includes vector control.

#### **Discussion II: Focus on vector control interventions through the WASH Clusters.**

UNHCR WASH provides collapsible jerry cans and buckets, both with lids. While UNHCR WASH is not particularly strong on vector and Neglected Tropical Disease control they have specifications for water points to improved drainage to avoid creation of mosquito larval habitats. However, the creation of mosquito larval habitats may not be seen as a priority for those on the ground building emergency water points.

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<sup>9</sup> According to their website <https://dutchdevelopmentresults.nl/theme/humanitarian-aid> they send experts on 33 missions through the DSS in 2018

Although it may appear that discussion of containers is too narrowly focused, simple redesigns can significantly impact not just malaria but a number of other vector-borne diseases. It's important to review and begin discussions on what incremental changes can quickly be made to these containers. Others agreed that the focus on container design is essential during a dengue outbreak because of the specificity of *Aedes* larval habitats which are containers (not ground water) and include water storage containers as well as 'non-essential' containers such as rain-filled automobile tires. The WASH Cluster agreed that this is an example where experts with technical knowledge of water storage containers and mosquito larval habitats is required.

UNHCR WASH then provided slides on guidelines for drainage systems at water points and different types of standard water storage containers

In discussion following it was noted that the T90 and T70 are perfect habitats sites for *Aedes*. Eggs can remain dried for up to a year. A single entry point (not a tap) that may appear to be an exit point can allow a mosquito (*Aedes* but sometimes *Anopheles*) to fly in and deposit eggs. Unless you physically get in the tank and scrub, the tank is, by design, a perfect place to for larvae to proliferate, causing explosion in mosquito populations. Knowledge of this is needed in the WASH cluster to lobby manufacturers on creating more low-risk tanks. Even if holes are small, a common problem is that the lids are taken off to check water levels and not replaced – that opens up the top for mosquitoes to enter and populations grow significantly. Examples were provided from Sudan where the open clay pots for water storage (Zir) are perfect habitats for *Aedes*, they also often leak with the ground water providing larval habitats for *Anopheles*. Important in this discussion are the social and anthropological aspects of domestic water storage to understand how and where to focus prevention strategies.

Site selection and surface water management in and around the camp is also critical. It's not just the tanks but also the actual environment of camps. Local authorities often choose sites for refugees and IDPs that are undesirable, may be swampy or flood-prone and at risk for high mosquito populations. While there is a need to politically lobby for better camp locations using environmental experts, it is recognized that decisions for camp locations are politically motivated. Lobbying should be a priority although we should be prepared that this may ultimately have no effect on the final decision.

#### **Action Points: WASH**

- The re-design of humanitarian materials needs to be assessed and manufacturers is worth exploring. UNHCR will begin reassessing these specifications. This includes all designs provides on the UNHCR website.<sup>10</sup> These online resources are used by other partners so this will have a wider effect than just internally UNHCR.
- The group should plan a separate meeting specifically for revising large water container specifications and other materials (no need for smaller containers as these are already supplied with lids). This will also open up opportunity to talk with manufacturers on, for example, T90 and T70 redesign.

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<sup>10</sup> <https://wash.unhcr.org/wash-technical-designs/>

#### Discussion IV: Focus on Vector Control Interventions through the Shelter Cluster:

UNHCR provided a summary of the current strategy on shelter design and vector control although it is agreed this is not usually seen as a priority due to the lack of clear guidance from vector control specialists. There are large gaps between the public health, site planners and WASH. The Shelter focus is usually on engineering rather than vector control. A summary of Core Relief Items from UNHCR was provided:

Long Lasting Insecticidal Nets (LLINs) must follow WHO specifications and suppliers must be approved by WHO.<sup>11</sup> Every year 700,000 – 1 million are purchased by UNHCR (not including local purchase).  
Shelters.<sup>12</sup> Transitional shelter all doors and openings and ventilation are closed with netting – but not treated netting. No agency gives tents with treated netting even if there are specifications. Studies in Tanzania show treated netting at openings doesn't kill the mosquitoes and is 20% extra cost with no guarantee that it will prevent malaria. They encourage sealing everything from the top to bottom to avoid rodents and mosquitoes entering the net although this has difficulties.

Domestic water container – designed with UNICEF + UNHCR specifications. Some agencies, such as OXFAM, have adapted them to be fully sealed. UNHCR is in the process of providing the new food container as part of the kitchen set.

Plastic sheeting: All tents are built with hooks for LLINs and solar lights. 40 million square metres of plastic sheeting are distributed every year. There are questions whether it is possible to treat the plastic that would result in durable solution for killing mosquitoes. It would be very expensive to uniformly treat all plastic sheeting with a UV-protected insecticide and so it is not added to the specifications for plastic sheeting.

It was noted that treated plastic sheeting and standards were developed in conjunction with UNHCR in 2000 and tested in Sierra Leone.<sup>13</sup> Suppliers didn't purchase this in bulk because the blockage came from WHO certification. This is no longer commercially available today. Plastic sheeting is however in the handbook for vector control in humanitarian emergencies.<sup>14</sup> Now however the pyrethroid insecticide used to treat the plastic sheeting will no longer be as effective because of rising insecticide resistance.

Some of these core relief items are adaptable. There are tools in pipeline such as the solar lights that can be adapted to emanate spatial repellents such as the volatile pyrethroids transfluthrin or metofluthrin; there are spritz treatments of several vector control products that may be applied to plastic sheeting; and there has been considerable work on electrostatic netting in "eave tubes" treated

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<sup>11</sup> <https://www.who.int/pq-vector-control/prequalified-lists/en/>

<sup>12</sup>

<https://cms.emergency.unhcr.org/documents/11982/57181/Shelter+Design+Catalogue+January+2016/a891fdb2-4ef9-42d9-bf0f-c12002b3652e>

<sup>13</sup> Burns M, Rowland M, N'Guessan R, et al. Insecticide-treated plastic sheeting for emergency malaria prevention and shelter among displaced populations: an observational cohort study in a refugee setting in Sierra Leone. *Am J Trop Med Hyg.* 2012;87(2):242–250. doi:10.4269/ajtmh.2012.11-0744

<sup>14</sup> <https://www.who.int/malaria/publications/atoz/9789241548656/en/>

with insecticides and entomopathogenic fungi that could possibly be adapted for tents. There is a planned Unitaid-supported project on the use of spatial repellents for temporary shelters in Mali.<sup>15</sup>

UNHCR is trying to coordinate better across the sectors and are now revising the handbook on vector control in humanitarianism which will be an important tool for guiding our decision makers based on evidence. They are working on better ways of communicating this evidence to UNHCR and more operational research to build on the evidence base.

The Global Outbreak and Response Network (GOARN) has a system for epidemiologists in emergencies but there should be something similar for vectors.<sup>16</sup> Usually UNHCR uses local Ministry of Health vector experts as they have better understanding of local environment. It was suggested we put together a concept note which includes what this working group would like to see and what needs to be considered, similar with other sectors from UN agencies so that we can form some concrete actions.

#### **Action Points: Shelter**

- UNHCR can make vector control tools part of the core relief items but there needs to be proof from vector control specialists that it works and can be produced at a cost-effective rate.
- There is need for clearer communication on the importance of vector control on health and a fundamental shift in the way camps are assessed and designed to accommodate for vector control.
- The UNHCR Public Health coordinator should be the linkage between vector control agencies and other UNHCR sectors. As suggested, there could be a concept note which includes what this working group would like to see and what needs to be considered for concrete actions with other non-health sectors.

#### **Discussion V: A call to action**

Mentor made a presentation on the draft call to action as recommended by the September 2019 meeting at UN Foundation in Washington DC:

- There is a huge variety of outbreak vector-borne outbreak diseases in humanitarian emergencies including diarrhea. The range of vectors, behaviors, breeding habitats is vast so we are not just focusing on malaria.
- Emergencies is a major contributing factor for the global increase in malaria cases – (as illustrated in a heat map). Conflict, natural disasters and displacement are rapidly increasing and we need to adapt quickly.
- Partial progress has been made in vector control tools; these have been shown to have a greater impact on disease burden than simply reacting by diagnosis and treatment alone
- All the tools presented are not totally novel and have been proven to be effective – however the procurement and communication of this recommendation by WHO to other sectors was lacking at the time.
- New technologies in the pipeline: spatial repellents, treated blankets, treated curtains, attractive toxic sugar baits.

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<sup>15</sup> <https://unitaid.org/news-blog/unitaid-launches-new-grants-for-innovative-vector-control-adding-to-its-robust-malaria-portfolio/#en>

<sup>16</sup> [https://www.who.int/ihr/alert\\_and\\_response/outbreak-network/en/](https://www.who.int/ihr/alert_and_response/outbreak-network/en/)

- These tools do not yet have endorsement by WHO for donors/procurers to use for mass campaigns.
- Our call to action is to change the environment that people are living so that the source of disease is reduced and to ensure that we bring together everyone across the sectors. This ensures improved health is an improved outcome of these changes.

### **Discussion:**

It was noted that manufacturer's need a built-in market and guarantee of long-term commitment to buy novel tools in order to invest in their development and production. When insecticide treated plastic sheeting was tested; there was a lack of communication between the two sectors to ensure this was rolled out on a large scale. There was also an obstacle because funding channels are vertical to only sectors.

If recommendations, such as insecticide treated plastic sheeting, is included in the table for specification, UNHCR will strive to ensure this is part of the shelter design. UNHCR is currently revising a new shelter aimed at reducing carbon footprint. If there are recommendations on vector control to add to this design then UNHCR will consider these immediately.

Manufacturers of treated blankets are showing the same frustration as the treated plastic sheeting as they need a fast track / exemption pathway by WHO so that they can be added to UNHCR catalogue bought in bulk. Portable nets used for nomadic populations is a WHO instigated tool with WHO (2000-2002) which as yet is still not improved. Manufacturers need the assurance that their product can get fast approval on safety for development of new tools. Spatial repellents are another tool with possibilities – cheap, lightweight and deployable. Ultimately, we would like to get to a point where these tools can be fully deployed in emergency context without having to get a vector expert on the ground.

These tools need to be advertised from suppliers to agencies in other sectors (UN + NGOs), for example the Life Straw manufacturers do a lot of marketing to possible suppliers. This lack of marketing has come about because of the silos that exist between vector control and other sectors.

Vector control agencies will take that message back to the manufacturers to encourage them for direct marketing and reaching out to agencies. We have the resources and expertise to create a catalogue of tools not yet prequalified that can be used in emergency settings.

The reason for no prequalification of permethrin treated blankets is because it is not a novel insecticide and the Vector Control Advisory Group thought it would not be effective because of resistance<sup>17</sup> however WHO can prequalify the traditional one.

### **Action Points: Call to Action**

- The group should push for the fast track development of tools that are most likely to pass the approval system or piloting at scale as quickly as possible.
- The call to action will include addressing policy-makers at the highest level; it will also be published, advocating for a rapid roll out of either modifications to current specifications or

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<sup>17</sup> <https://apps.who.int/iris/bitstream/handle/10665/255824/WHO-HTM-NTD-VEM-2017.02-eng.pdf>

novel tools. This would make a significant difference to vector-borne diseases that are rapidly growing.

- We should collate the rationale and key points to advocate action by policy makers and implementing agencies to follow and commit to work together for pilot approaches and rapid assessment and endorsement of novel tools by WHO.
- The time scale to finalize this call to action should be within a month. There are opportunities, including the June Kigali summit on malaria and neglected tropical diseases, where there can be advocacy for these recommendations.

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