NEW NETS:

PLANNING FOR TRANSITION OF INSECTICIDE-TREATED NET (ITN) TYPES THROUGH ROUTINE AND COMMUNITY CHANNELS POST MULTI-PRODUCT CAMPAIGN DISTRIBUTION

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amp | The Alliance for Malaria Prevention

BACKGROUND

To address increasing insecticide resistance, many countries have begun distributing new insecticide-treated net (ITN) types[1] during mass distribution campaigns. As decisions for campaigns are based on the quantity needed, insecticide resistance profile and available funding, national malaria programmes often need to manage multiple ITN types. In order to maximize the impact of the different ITN types, many countries are also transitioning ITNs distributed through continuous distribution (CD) channels[2] to align with ITN types distributed during the mass campaign.

This document is focused on only two continuous distribution channels:

1. Routine health services (antenatal care [ANC] and/or expanded programme for immunization [EPI] and/or distribution to other targeted groups as applicable based on national malaria programme policy)

2. Community-based distribution, which is often implemented through community health workers (CHW) linked to a health facility where ITNs are stored

The exclusive focus on these two channels and not on other types of continuous distribution channels is because of the following commonalities between these channels:

1. ITNs are stored at health facilities

2. Distribution numbers are reported through national health information systems

Additionally, ITNs that remain undistributed from mass campaigns are typically moved into these channels for distribution.

For school-based distribution, where significant quantities of ITNs are distributed to discrete population groups (e.g. specific ages or classes of school-attending children), the ITN type transition may take place independently of decisions related to the campaign, routine or community level distribution channels. Quantification for school-based distribution will have already been carried out and timing set based on the calendar year (not on, for example, mass ITN distribution before the rainy season) for the actual discrete school-based distribution activity.

Decisions around transitioning ITN types in continuous distribution channels must be taken in advance of multi-product ITN campaigns to allow for realistic plans and budgets to be developed. This includes planning reverse logistics and management of multiple ITN types at health facilities and other storage locations to ensure high accountability for all ITNs. It also includes reviewing ITN types distributed through routine and community distribution channels in the same areas as new types of ITNs are being distributed during a mass campaign.

This document accompanies AMP guidance *Planning and operational recommendations for multi-product ITN campaigns*[3] and *Messages on hanging of new types of insecticide-treated nets*[4] which provide additional information around decisions to be taken and steps to be considered when planning for multi-product ITN distribution and for social and behaviour change for newly received ITNs.

1. Note that net type does not refer to brand but to the chemicals which differ from standard pyrethroid-only ITNs previously distributed. See: https://www.who.int/teams/global-malaria-programme/prevention/vector-control/new-types-of-insecticide-treated-nets
2. Continuous distribution channels include routine distribution through health facilities (antenatal, child health, etc.), community distribution (often via community health workers), school-based distribution and private sector supply.
3. https://allianceformalariaprevention.com/wp-content/uploads/2021/11/AMP_Multi-Product_Campaign_Recs_Update_05112021_EN.pdf
4. https://allianceformalariaprevention.com/wp-content/uploads/2022/04/AMP_Messages_new_nets_EN_20220419.pdf

TRANSITIONING TO ALIGNED ITN TYPES THROUGH ALL DISTRIBUTION CHANNELS

The national malaria programme leads the determination on distribution modality, types of ITNs to be distributed and targeted populations. The decision to align ITN types across delivery channels targeting the same population or geographic area will need to be taken early in the planning process, typically associated with funding application cycles of major donor and procurement partners, as well as the timing for resupply of ITNs through different distribution channels.

It is recommended that national malaria programmes work with their technical and financial partners to develop a plan to transition and align the ITN types being distributed through different channels in line with the appropriate insecticide resistance data[5]. The plan should be based on the following considerations and national malaria programmes should add others as applicable:

Consideration	Rationale
The number of functional or planned channels for continuous distribution and the quantity of ITNs required	Based on ITN gap quantification, consumption and forecasting data, national malaria programmes will need to quantify the number of ITNs required for each channel and when they would be needed[6].
Funding available for ITN procurement	At time of publication, the cost of new ITN types is higher than the standard ITNs that most countries have been distributing to date. National malaria programmes will need to look at the feasibility of procuring new ITN types for continuous distribution channels (and for mass campaigns) based on resources available to make the transition vis-à-vis other malaria priorities. National malaria programmes are encouraged, based on insecticide resistance data, to prioritize a full transition from standard ITNs as sufficient resources become available.
Timing of transition	If it is not feasible to make a full transition immediately, consider a slower transition for continuous distribution channels, for example stratifying the timing for changing in certain areas or through certain channels (e.g. transition routine and community distribution channels in high burden areas first or transition routine first nationally and then other operational channels such as community-based distribution, etc.). There is no need to delay a change in ITN type for the mass campaign if the transition through routine and community channels cannot take place immediately.
Funding available for in-country operational costs related to transitioning ITN types	Operational elements should be planned and budgeted for as there may be additional costs associated with the transition. For example, updating/modifying logistics and distribution reporting tools to account for more than one ITN type may require additional training or capacity-building, development of standard operating procedures (SOPs) that can be easily referenced for guidance, or other adaptations.

5. See: https://www.who.int/malaria/vector_control/gpirm_executive_summary_en.pdf
6. https://endmalaria.org/dashboard/programmatic-and-financial-gap-analysis

Consideration	Rationale
Supply chain management and reporting capacity	National malaria programmes will need to consider the strength of the supply chain and whether it is possible to manage multiple types of ITNs based on existing storage, transportation and distribution modalities within the health system. If weaknesses are identified and not easily addressed and/or in order to ensure accountability, a programme may decide to distribute one single ITN type through all CD channels in a region otherwise stratified for different ITN types through mass campaign distribution. Modifications to standard storage reporting forms may need to be made to allow for more than one ITN type to be tracked.
Technical decisions on mixing ITN types	Based on the insecticide resistance profile in each area targeted, national malaria programmes should work with their technical partners to discuss any risks of mixing ITN types across channels (or other vector control) which may lead to antagonistic effects between insecticides deployed in the same area. See Annex 1 for technical information on mixing chlorfenapyr dual active ingredient (AI) and piperonyl butoxide (PBO) ITNs.
Existing stock of ITNs for continuous distribution channels	National malaria programmes will need to base the timing for the transition of ITN types for the routine and community distribution channels on data, including available in-country stock and the quantity of any ITN type in the pipeline for delivery to the country. Where physical inventories of in-country stock and pipeline stock of standard ITNs are sufficient to meet the needs for routine and community distribution channels, the transition of ITN types should be timed with the normal procurement cycle for the next delivery of ITNs.
Timing for procurement and delivery of new ITN types	National malaria programmes may decide to procure new ITN types for routine or community channels at the same time as for mass campaigns or delay procurement or stagger deliveries based on in-country and pipeline stock, particularly if there are constraints on resources or on global supply. Waiting until after the campaign has been completed and the number of leftover ITNs is known is also an option to ensure more accurate quantification.

Existing stock in health facilities or warehouses should be used up before changing to the new ITN type. The new ITN type should be introduced as stocks are depleted, resupplied as part of the standard circuit (such as quarterly for routine or community distribution). National malaria programmes will need to closely monitor the stock in all storage locations where the ITN type will eventually be changed, as well as the pipeline for the arrival of the new ITNs in the country and their subsequent delivery to the level at which they will be distributed.

At no point should there be zero stock for routine or community distribution as coverage of vulnerable pregnant women, young children, and other qualifying community members should continue as a priority. There must be confidence that ITNs will be in stock at all times.

Ideally, the supply of new ITN types for routine and community distribution channels will be aligned with the Ministry of Health's regular resupply timing and circuit for health commodities, not incurring additional incremental cost for transport. The national malaria programme must decide on resupply of nets and quantities to be delivered, based on both consumption data and the timing for delivery of the new ITN type to the health facility level or the storage or pre-positioning site for community-based distribution (if not the health facility). Where necessary, the receiver of the new ITN type in the storage location should be reminded about managing the two types of ITNs until the existing nets in stock are depleted.

CLOSING THE CAMPAIGN AND MANAGEMENT OF REMAINING CAMPAIGN ITNS

The decision about what should be done with leftover campaign ITNs must be taken early in the planning process to avoid any misunderstandings or lack of accountability due to undefined procedures. Training at all levels should include information about what will be done with any ITNs remaining at the end of the distribution period. Whether or not the transition of ITN types will be done immediately after the campaign, the national malaria programme needs to prioritize planning for reverse logistics and management of ITNs of different types. These decisions must be taken at the macroplanning stage to ensure that there is sufficient funding for what is planned, that any remaining ITNs can be securely stored and properly managed and that clear communication is provided regarding ownership of ITNs to district, sub-district and community levels.

At the end of the distribution period, it is critical that the campaign is "closed" and that reconciliation of ITNs received, distributed and remaining, by ITN type, takes place in all locations where ITNs have been stored. Based on decisions taken at the macro level regarding management of remaining campaign ITNs, a plan and budget should be established to ensure that leftover ITNs are accounted for correctly. Typically, remaining campaign ITNs will either be transported back up the supply chain for more centralized storage (district, region or central level) prior to their redeployment or they will be transferred directly into the routine or community distribution system, normally at the nearest health facility to the distribution point. National malaria programmes may set a "minimum" number of leftover ITNs for transport back to more centralized storage, leaving small quantities (pieces or one to two bales) to be moved to the nearest health facility. Decisions on all of these considerations must be taken at the macroplanning stage to ensure that SOPs are developed, clear communication is sent to authorities, training and supervision activities are based on accurate information and that management of leftover ITNs, including their tracking, is done correctly.

At the end of the campaign, in each storage location, a physical inventory of ITNs remaining should take place before ITNs are moved. Logistics data should be verified and compiled for all storage locations in each district and then aggregated for the regional and national levels. Only after the quantity of ITNs remaining in each district is known, as well as where the ITNs are located (distribution points, pre-positioning sites, etc.), should reverse logistics begin. The reverse logistics transport, as per the initial delivery of the ITNs, should be based on a transport plan with pick up/delivery points and circuits defined.

Ensuring that reconciliation takes place at each storage location is part of guaranteeing accountability and it is the responsibility of each store's manager which must be assumed through their signing of the tracking tools in use, including the physical inventory. The remaining campaign ITNs should be able to be tracked, by ITN type, on the standard tracking tools (waybills and stock sheets) from their point of origin (for example, remaining at distribution point stores) to their final destination (for example, district warehouses). This ensures that there is a paper trail that shows the transfer of the remaining campaign ITNs of all types received back into the system for routine, community or other targeted distribution[7].

Where new ITN types will be transferred to health facilities for immediate distribution, the health facility officer-in-charge should be provided with SOPs for management of two types of ITNs and for social and behaviour change (SBC) considerations for explaining why the ITNs are of different types if they are asked. Clear procedures need to be in place (and well communicated) for the management and tracking of ITNs at health facilities or other locations where ITNs are stored, whether they are:

1. New ITN types remaining after the campaign and entering the routine or community distribution supply chain from the reverse logistics process

2. Existing ITNs in storage at the health facilities or other storage locations

The incoming new ITN types must be clearly marked on the stock sheets being used for ITN management, preferably using a different stock sheet from any existing ITNs of a different type. The quantification for tracking tools for the campaign should include tools needed for the transfer of the remaining ITNs at the end of the distribution and their management at their destinations (i.e. waybills, stock sheets, etc.). Where this was not planned and budgeted for in advance of the transfer of remaining ITNs to their storage location, the new ITN type must be clearly mentioned on the stock sheet when the incoming stock is entered. While there are two ITN types in storage, they must be tracked separately in the routine or community distribution system, both for logistics and for programmatic reporting.

Instructions must be provided to individuals managing routine and community distribution channels regarding which nets should be distributed first. In some cases, where campaign nets entering the routine or community channels are unpackaged, a decision may be taken to distribute these nets first to avoid potential damage during storage. Alternatively, a decision may be taken to distribute the existing stock of ITNs first and instructions provided on appropriate storage for the unpackaged ITNs. The instructions provided to managers of routine and continuous distribution channels should be in writing in the form of SOPs (or other document) and, where possible, an orientation or on-the-job training should be provided (either at the same time as the training for the campaign ITN distribution or during supportive supervision and data verification visits/meetings).

7. See the AMP toolkit, Chapter 5, Brief 6: Management of the supply chain. https://allianceformalariaprevention.com/wp-content/uploads/2021/03/AMP-Toolkit-report-2015_Chapter5_EN_LR-1.pdf

LOGISTICS CONSIDERATIONS

Often during mass campaign distribution, ITNs will be stored at health facilities or other storage points at central, regional or district level that have an existing stock of ITNs available for distribution through health facilities or other channels (such as community distribution). Stock managers must be prepared to:

- Manage multiple ITN types in storage during the campaign period, including for the campaign and for routine or community distribution
- Address requests for additional ITNs to fill gaps during the campaign and understand what to do in case of stock-outs of the ITN type being used for the campaign or for routine or community distribution
- Manage remaining ITNs, including reconciliation of ITNs received and remaining from the campaign, physical inventories, reverse logistics with correct tracking for accountability, etc.
- Oversee the transition period of ITN types in the routine or community distribution system
- Identify the additional storage space required for the different ITN types for the campaign at health facilities and other storage levels, particularly where existing stocks of ITNs limit space
- Account for and report separately on all ITN types during and at the end of the campaign, as well as during monthly or other reporting for routine and community distribution channels

See the Standard operating procedures for management of more than one net type for more detail of how nets should be counted and labelled during storage and transport[8].

8. https://allianceformalariaprevention.com/tools-guidance/multi-product-itn-distribution/

SBC CONSIDERATIONS[9]

National malaria programmes, when introducing multiple ITN products into their mass campaigns, must take decisions on what information will be communicated and at which levels. These decisions will be different for each country: some countries may opt for full transparency and communicate about the different ITN types being distributed from national to household levels while others may decide to communicate about different ITN types only to the district level and only to health authorities. These decisions influence the SBC messages communicated by individuals involved in distribution of ITNs through non-campaign channels and all partners engaged in ITN distribution through any channels must work with the national malaria programme to align their SBC activities and messages to decisions that have been taken. When planning for the campaign SBC messages and channels, it will be important for the SBC sub-committee to also consider what is needed for continuous distribution messages since post-distribution budgets are often limited or non-existent.

Many countries have procured different ITN products (brands rather than types) over the past several years, so recipients may not be surprised that a new product is given to them at health facilities and distribution points. Nonetheless, it will be prudent to ensure that those managing routine and community distribution are equipped with sufficient information to respond to questions from ITN recipients about why ITNs from the campaign and other channels may be different. They need to be equipped to answer any other questions that may come up and to communicate the usual key messages about net hanging, care and management.

When undertaking community engagement with community leaders and other local-level influencers for the campaign, these same leaders should be informed about continuous ITN distribution channels that are functional in their areas, whether or not they are changing ITN type, and should be asked to report to the health facility officer-in-charge if they hear of any rumours or mis- or disinformation about the ITNs distributed through any of the channels their community members may be accessing. Health facility staff and community health workers in the areas targeted for the transition of ITN types in routine and community distribution channels should be similarly engaged and encouraged to report back any issues that they encounter during their activities.

9. See also AMP guidance: Messages on hanging of new types of insecticide-treated nets (ITNs). https://allianceformalariaprevention.com/wp-content/uploads/2022/04/AMP_Messages_new_nets_EN_20220419.pdf

ANNEX 1: MIXING ITN TYPES IN CAMPAIGN AND CONTINUOUS DISTRIBUTION CHANNELS[10]

As national malaria programmes increasingly deploy multiple types of ITNs through campaigns and continuous distribution channels, a question has arisen around the potential consequences of deploying pyrethroid-PBO ITNs in the same areas that chlorfenapyr Dual AI nets are being piloted: could exposure to pyrethroid-PBO nets make mosquitoes less susceptible to the chlorfenapyr Dual AI nets? The question stems from the fact that PBO blocks the same metabolic processes in mosquitoes (cytochrome p450 enzymes) that play a role in making chlorfenapyr effective, although the dynamics of p450s activating versus detoxifying chlorfenapyr are yet to be fully described.

The evidence available so far is incomplete and is being assessed by a number of researchers in consultation with the relevant manufacturer. In standard CDC bottle bioassays, exposure to PBO and chlorfenapyr, either simultaneously or sequentially, was inconsistent in showing reduced mosquito mortality compared to chlorfenapyr alone. Also, inconsistent results have been seen when chlorfenapyr and PBO were combined with pyrethroids (as is the case for the nets in question): sequential exposure to alpha-cypermethrin + chlorfenapyr and permethrin + PBO or vice versa did not have consistent impact on mortality. Nevertheless, the laboratory results obtained at Liverpool School of Tropical Medicine (LITE), are important to note and explore further, but the predictive value of standard laboratory assays is not clear; mosquitoes will interact very differently with active ingredients/synergists on two different nets in a household or community, compared to in glass bottles. For pyrethroid-PBO ITN exposure to impact chlorfenapyr Dual AI efficacy, mosquitoes would need to survive their initial encounter with the first net and contact the second net in a relevant time frame. Hut trials have demonstrated a reduced entomological performance of pyrethroid-chlorfenapyr nets in the presence of a pyrethroid-PBO net and pyrethroid-only nets when used in the same household. Reduced performance in the presence of pyrethroid-PBO nets was likely partly due to antagonism between PBO and chlorfenapyr, though other behavioural interactions are thought to have contributed. Overall, the results suggest that prioritizing distribution of pyrethroid-chlorfenapyr nets over other ITN types would maximize vector control impact.

It is important to note two points:

- The worst-case scenario is that some of a chlorfenapyr Dual AI net's potentia additional effectiveness may be impinged, but there is no suggestion that a chlorfenapyr Dual AI ITN would "stop working" or function less well than a pyrethroid-only net.

- There is often strong operational value to simplifying the number of net types in continuous distribution channels to avoid subnational targeting at too fine a scale, particularly during the initial transition when it may be beneficial to first distribute all of the original type of ITN stocks and then begin distribution of the new ITN stocks.

Given the above, and in the absence of clear evidence that will be needed before standardized guidance can be made available, the New Nets Project partners take the following position: **we recognize that there is a *potential* for the presence of a PBO net to impact the effectiveness of a chlorfenapyr Dual AI in a household, but do not consider there to be any need to change operational decisions at this time. There are on-going activities to provide more definitive information and guidance will be updated when completed.**

10. Statement drafted by the New Nets Project (NNP) partners and in consultation with the NNP Steering Committee.

AMP CONTACTS

To join the weekly AMP conference call each Wednesday at 10:00 AM Eastern time (16.00 PM CET) use the following Zoom meeting line:
https://us06web.zoom.us/j/2367777867?pwd=a1lhZk9KQmcxMXNaWnRaN1JCUTQ3dz09

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allianceformalariaprevention@gmail.com

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