Health Facility-Based Distributions of Long-Lasting Insecticidal Nets

A Short Guide Based on Recent Country Experience

Roll Back Malaria

Vector Control Working Group
Continuous Distribution Systems Work Stream

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Recognizing that "in order to maintain uninterrupted Universal Coverage, complementary distribution mechanisms are required to provide a continuous supply of replacement LLINs"[1], the Continuous LLIN Distribution Systems Work Stream of Roll Back Malaria's (RBM) Vector Control Working Group (VCWG) has commissioned the development of a series of documents, including this guide. Document development was led by Mrs Mary Kante in partnership with members of the Work Stream and the NetWorks team. The 2016 addendum was compiled by Angela Acosta and Kate Kolaczinski for the VectorWorks Project.

As described below, this guide aims to collect and document the wealth of knowledge that exists at country level and to provide a means to share experiences, lessons learnt, and best practices among countries. We wish to thank all who contributed the information, resources, and reviews upon which this guide is based, including:

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[1] RBM Vector Control Working Group (VCWG), Continuous Distribution Work Stream. Consensus statement on continuous distribution systems for insecticide treated nets. June 16, 2011. Available at: http://www.rollbackmalaria.org/files/files/partnership/wg/wg_itn/docs/vcwg6report1.pdf.

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FOREWORD

Long-lasting insecticidal nets (LLINs) are among the most powerful and cost-effective interventions for malaria control. This is especially so when they are used at high levels of coverage. LLINs have contributed to significant reductions in malaria morbidity and mortality in recent years. Sustaining high coverage and use of insecticide-treated nets is now a goal of most national malaria control programmes.

Roll Back Malaria (RBM) has emphasized the importance of achieving high levels of coverage though both catch-up strategies, such as periodic mass distribution campaigns, and keep-up strategies, where the focus is on continuous distribution through channels such as health facilities, community initiatives, and the private sector. Through global partnership and financial support, many countries have gained experience in catch-up through campaigns, and much of the recent survival gains among children in Africa can be attributed to these efforts. Fewer countries have been supported in their efforts to sustain high coverage through continuous distribution systems. Models show, however, that continuous distribution systems are crucial for maintaining the high coverage levels achieved by campaigns.

Continuous distribution strategies initially targeted only the most vulnerable populations of under-five children and pregnant women, but now, with the vastly increased resources for malaria control available, goals have shifted to Universal Coverage of the whole population in malaria-endemic areas. The RBM Vector Control Working Group's Work Stream on Continuous Distribution is preparing a series of products to share across countries information on and experience with continuous distribution.

The first document of this series (*A Guide to Concepts and Planning*) presents an overview of concepts and the high-level ingredients for choosing and planning the integration of continuous distribution into routine health systems. That document is intended as a guide to decision-makers and partner stakeholders. It addresses a wide array of mechanisms available for continuous distribution systems and offers guidance for selecting mechanisms that best fit local contexts, as well as tools useful for the calculations and planning needed.

Here, in this second document (the Guide to Health Facility-Based Distribution of LLINs, formerly known as the Country-to-Country Guide for Implementers of LLIN Keep-Up), we provide a practical guide to specific, actual country experiences in continuous distribution systems. Practical details are provided on a variety of distribution channels, organised under the themes of: Norms and Standards; Coordination and Planning; Training; Logistics; Communication; Supervision; and Monitoring and Evaluation. This guide is intended for implementers. A wealth of practical examples and documents as well as tools are extensively referenced and included in an easily searched matrix associated with this report. From the matrix you will have direct access to each document and tool via the RBM VCWG Web site (http://www.rollbackmalaria.org/architecture/working-groups/vcwg).

We hope this guidance will be timely and useful to countries, especially now that the WHO, GFATM, and other global health initiatives are encouraging health system strengthening and integrated approaches for attaining Universal Coverage.

Don de Savigny and Jayne Webster
Former co-chairs, RBM Vector Control Working Group Work Stream on Continuous LLIN Distribution Systems

TABLES

ABBREVIATIONS

AMP	Alliance for Malaria Prevention
ANC	antenatal care
ASF	Association de Santé Familiale
CAR	Central African Republic
CBO	community-based organisations
CD	continuous distribution
CDC	Centers for Disease Control and Prevention
CDR	Centrale de Distribution Régional
CIDA	Canadian International Development Agency
CWC	child welfare clinic
DfID	UK Department for International Development
DHMT	District Health Management Team
DHS	Demographic and Health Survey
DOM	Diocèse des Oeuvres Médicaux
DOMC	Division of Malaria Control
DRC	Democratic Republic of the Congo
ECC	Eglise du Christ au Congo
EPI	Expanded Programme on Immunization
FAQ	frequently asked questions
GFATM	The Global Fund to Fight HIV/AIDS, Tuberculosis and Malaria
GIZ	Deutsche Gesellschaft fur Internationale Zusammenarbeit
HH	household
HMIS	health management information system
HR	human resources
IFRC	International Federation of the Red Cross
IMCI	Integrated Management of Childhood Illness
IPC	interpersonal communication
IPT	intermittent preventive treatment
IRS	indoor residual spraying
ITN	insecticide-treated net
JICA	Japan International Cooperation Agency
JSI	John Snow, Inc
LLIN	Long-lasting Insecticidal net
LSHTM	London School of Hygiene and Tropical Medicine
M&E	monitoring and evaluation
MICS	Multiple Indicator Cluster Survey
MIP	Malaria in pregnancy

MIS	Malaria Indicator Survey
MACEPA	Malaria Control and Evaluation Partner in Africa
MCH	maternal and child health
MDG	Millennium Development Goals
MOH	Ministry of Health
MSH	Management Sciences for Health
MVU	mobile video unit
NGO	non-governmental organisation
NMCC	National Malaria Control Centre
NMCP	National Malaria Control Programme
PLHIVs	people living with HIV
PHC	primary health care
PMI	President's Malaria Initiative
PMTCT	Preventing mother-to-child transmission of HIV
PR	principle recipient
PSI	Population Services International
QA	quality assurance
QC	quality control
RBM	Roll Back Malaria
RH	reproductive health
SANRU	Santé Rurale
SR	sub-recipient
SuNMaP	Support to National Malaria Programme
Swiss TPH	Swiss Tropical and Public Health Institute
TV	television
TWG	Technical Working Group
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
VCR	video cassette recorder
VCWG	Vector Control Working Group
WHO	World Health Organization
WHOPES	WHO Pesticide Evaluation Scheme

1. USING THE GUIDE

1.1 How the guide was developed

The Continuous LLIN Distribution Systems Work Stream of Roll Back Malaria's (RBM) Vector Control Working Group (VCWG) organised a series of meetings with national malaria control programmes (NMCPs) and partners from October 2010 to February 2011 to determine a set of priority actions. One of the priorities that emerged was the need to build a knowledge base on continuous distribution mechanisms. The resulting outputs from those discussions are:

- Case studies from Kenya, Malawi, and Tanzania;
- *Continuous Long-lasting Insecticidal Net Distributions: a Guide to Concepts and Planning,* which is a guide to support strategic planning and choice of the optimal mix of channels to ensure sustained Universal Coverage with LLINs;
- *Country-to-Country Guide for Implementers of LLIN Keep-Up*, this operational guide, which collects the experience, tools, and resources of 14 country programmes.

Funding from the United States Agency for International Development (USAID) NetWorks project supported outreach to NMCPs and partners to conduct interviews and collect resources, tools, and background documents to develop this *Country-to-Country* guide and to build an initial 'toolbox' that NMCPs can use to support development and implementation of routine Long-lasting Insecticidal Nets (LLIN) distribution programmes. The RBM secretariat sent letters to selected NMCP programme managers to inform them of the project and request inputs and then a follow-up letter to share a draft for feedback and inputs.

1.2 Objective of the Country-to-Country Guide

Recognizing that NMCPs play the leading role in introducing LLIN distribution initiatives, the objective of this document is to share practical guidelines that can be used by NMCPs to start, strengthen, or scale up continuous delivery of LLINs through antenatal care (ANC) clinics, the Expanded Programme on Immunization (EPI), and other routine services at public and private health facilities (A note on terms: "health facility-based distribution" is sometimes referred to as "routine distribution").

As many sectors are involved in ensuring the success of LLIN distribution via routine health services, this guide is intended for use by managers of Ministry of Health (MOH) National Malaria Control Programmes, reproductive health (RH), EPI, maternal and child health (MCH), and other programmes and their partners who are developing new routine LLIN distribution programmes or modifying existing programmes.

This guide was developed in part to collect and document the wealth of knowledge that exists at country level as well as to provide a means to share experiences, lessons learnt, and best practices among countries. It can be used as a starting point to obtain the information available to date as well as to further explore information with colleagues in the countries mentioned.

1.3 Tips for using the Country-to-Country Guide

Users of the guide can refer to the Table of Contents above or the Summary of Contents below to find individual sections of interest and for an overview of the full document. In addition, tools and resources are available at the RBM Web site (http://www.rollbackmalaria.org/architecture/working-groups/vcwg) to provide examples of material presented in this guide. Country programmes have provided these resources. We ask that new materials developed be shared with the VCWG Continuous LLIN Distribution Systems Work Stream to make possible further sharing in future updates of the guide and resource materials.

1.4 Summary of contents

Introduction An overview of the **importance of maintaining LLIN coverage** is presented, as well as a brief history of programmes delivering LLINs via ANC and other routine health services, an analysis of **benefits and potential drawbacks** of continuous delivery via routine health services, and **lessons learnt from LLIN campaign implementation**.

Description of LLIN distribution via ANC, EPI, and other routine services Descriptions of **direct and indirect distribution** and examples of **delivery mechanisms** (ANC, EPI, other health services) are provided. Background information is presented regarding **LLIN beneficiary groups,** and circumstances for **targeting LLIN distribution** geographically or by target group are discussed. Details and country examples of systems are included for **registering beneficiaries**, developing **terms of reference,** and **motivating** programme personnel. **Free and highly subsidized delivery** of LLINs are compared. The **personnel** involved in developing and maintaining continuous LLIN delivery via routine health services also are discussed.

Developing norms and standards The **key role of Ministries of Health (MOH),** NMCPs, RH, EPI, and other divisions is presented along with **country examples** of processes and documents to develop programme norms and standards.

Coordination and planning A discussion of the importance of coordination and planning and country examples from **Kenya** and **Malawi** are presented. Development of a **Routine LLIN Delivery Technical Working Group**, criteria for successful coordination mechanisms, and issues that can threaten coordination are discussed. Country examples of **documentation to guide planning and implementation** from **Uganda**, **Mozambique,** and **Senegal** are included.

Training Details and country examples of training **planning**, development of training **materials** and **curricula**, **organisational considerations**, and training **supervision** are presented.

Logistics An overview of **LLIN procurement and forecasting** is presented, as is an in-depth exploration of **LLIN warehousing**, security and accountability, and **LLIN transport**. **Country examples and tools and resources** to support LLIN warehousing and transport are included. Considerations in ensuring **continuous supply of** LLINs also are explored.

Communication An overview of **communication objectives and channels** is presented, and considerations in planning a coordinated communication campaign are explored, **including communication planning, messages, and logos**. **Key steps in producing and disseminating quality**

communication materials are detailed, and country examples of communication initiatives in the **Democratic Republic of Congo (DRC), Rwanda**, and **Kenya** are highlighted.

Supervision The **essential role of the MOH** in managing supervision and organising joint supervision visits, when appropriate, is discussed, and **key tools** to support supervision and follow-up are presented. Country examples from **Mozambique**, **Benin**, and **DRC** are highlighted.

Monitoring and evaluation **Challenges** to collecting timely, accurate data are reviewed, and the advantages and challenges of integrating continuous LLIN distribution data into the national health management information system (HMIS) are explored. Country examples from **Uganda**, **Kenya**, **Senegal**, and **Nigeria** are presented. A brief discussion of LLIN evaluation is also included.

Resources Copies of actual forms, M&E forms, training manuals, supervision checklists and other materials used in the field are provided.

2. INTRODUCTION

2.1 Importance of maintaining coverage

Long-lasting Insecticidal Net (LLIN) delivery via mass campaigns has provided an important opportunity to **scale up** LLIN coverage in a number of countries, moving closer to achieving Universal Coverage. At the same time, continuous distribution approaches are are important to **maintain** coverage levels. Studies in two West African countries, for example, show that household (HH) possession of an insecticide-treated net (ITN) dropped from 64% and 63% to 40% in both countries just 1½ years following a campaign[2], underscoring the importance of continued distribution of LLINs to maintain coverage. Coverage gaps start to appear immediately after mass campaigns due to population growth and net loss. Recognizing this fact, WHO recommends that, "in order to maintain universal coverage, countries should apply a combination of mass free distributions and continuous distributions through multiple channels, in particular antenatal and immunisation services[3]." For this reason, the delivery of LLINs to pregnant women and children through health facilities is a key element of many countries' malaria prevention strategies.

2.2 A brief history

From the beginning of RBM in 1998, the VCWG and its predecessor, the Working Group for Scaling Up Insecticide-treated Netting (WIN) have consistently advocated both 'catch-up' and 'keep-up' strategies[4].

Distribution of ITNs via routine health services began in the 1990s. Among the first documented initiatives was the Ifakara Health Research & Development and Swiss Tropical and Public Health Institute KINET project, which distributed vouchers redeemable for ITNs at a reduced price. KINET was established in rural southern Tanzania in 1996, in the Kilombero and Ulanga districts. It provided vouchers to children under five and pregnant women attending MCH clinics. With these vouchers they could obtain subsidized ITNs at retail shops[5]. The KINET pilot project eventually led to the development of the Tanzania National Voucher Scheme (TNVS), which began distribution of vouchers to pregnant women in 2004[6,7].

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[2] Otten M. "LLIN scale-up and reaching malaria control targets". Slide presentation compiled by WHO GMP for Alliance for Malaria Prevention (AMP) annual meeting, February 2009.

[3] World Health Organization. WHO recommendations for achieving universal coverage with long-lasting insecticidal nets in malaria control September 2013 (revised March 2014).

[4] Roll Back Malaria (RBM), Working Group for Scaling Up Insecticide-treated Netting (WIN). Scaling up insecticide-treated netting programmes in Africa, a strategic framework for coordinated national action. 2nd ed. 2005.

[5] Schellenberg J, Mushi A, Lengeler C. "Mapping models for delivering ITNs through targeted subsidies case study: KINET project, Tanzania". Presented to the RBM May 2003 Lusaka, Zambia workshop, Mapping Models for Targeted ITN Subsidies.

[6] Armstrong Schellenberg JRM, Abdulla S, Minja H, Nathan R, Mukasa O, Marchant T, Mponda H, Kikumbih N, Lyimo E, Manchester T, Tanner M, Lengeler C. "KINET: a social marketing programme of treated nets and net treatment for malaria control in Tanzania, with evaluation of child health and long-term survival." Transactions of the Royal Society of Tropical Medicine and Hygiene, Volume 93, Issue 3, Pages 225-231, May-June 1999.

[7] Hanson K, Marchant T, Nathan R, Mponda H, Jones C, Bruce J, Mshinda H, Armstrong Schellenberg J. "Household ownership and use of insecticide treated nets among target groups after implementation of a national voucher programme in the United

A second project to deliver subsidized ITNs directly to targeted beneficiaries, also in Tanzania, was the Lea Mwana project of Population Service International's (PSI) Social Marketing of ITNs (SMITN) programme, launched in April 1999[8]. This project delivered a uniquely coloured blue ITN directly to beneficiaries in health facilities in four areas of Tanzania—Dodoma, Morogoro, Mtwara, and Dar es Salaam.

Both projects showed promising results in terms of increasing ITN ownership among vulnerable groups and also of the feasibility of implementation. Building on these experiences, Malawi began a pilot project in three districts in 1997 and expanded to the first nationwide antenatal clinic ITN delivery programme in 2002, at a highly subsidized price of US$0.50 for all pregnant women and children under five carrying a valid health passport or antenatal card. Preliminary 2010 Demographic and Health Survey (DHS) results show that net coverage in Malawi reached 67% of households, and 85% of those nets were delivered through ANC and under-five clinics and social marketing[9].

Since then a number of countries (including many that have contributed to this guide) have developed and implemented programmes to deliver LLINs via ANC, Expanded Programme on Immunization (EPI), and other routine health services, which for the purposes of this guide will be called 'routine LLIN distribution'. The scale of implementation varies from a few districts or health zones to nationwide. Subsidies vary from a small portion of programme costs to full subsidies that cover all costs and provide free ITNs to beneficiaries. In the past five years, NMCPs have moved to delivery of WHO Pesticide Evaluation Scheme (WHOPES)-approved LLINs only and to providing free or highly subsidized LLINs.

2.3 Benefits and potential drawbacks of routine LLIN distribution

There are a number of benefits of including LLIN distribution in routine health services[10], including those presented in Table 1. The potential drawbacks of including LLINs in routine health service delivery should also be considered when developing and implementing a routine LLIN distribution programme so that safeguards and other mechanisms to mitigate these can be put in place.

Republic of Tanzania: plausibility study using three annual cross sectional household surveys." British Medical Journal, 339: b2434, 2009.

[8] Hanson K, Jones C. Social marketing of insecticide-treated nets, Tanzania: end of Phase 1 social and economic analysis. Technical assistance to PSI. Final Report, June 2000. London School of Hygiene and Tropical Medicine, for the Malaria Consortium.

[9] RBM Vector Control Working Group (VCWG) Continuous LLIN Distribution Systems Work Stream. Accountable partnership. Lessons in Brief, Malawi's Keys to Success N° 1. Draft, June 2011.

[10] Malmqvist A. Scaling up LLIN delivery through ANCs. Population Services International (PSI), November 2007.

Table 1. Benefits and potential drawbacks of routine LLIN distribution

	Benefits	Drawbacks	
Access	LLIN delivery via ANC and EPI services increases access for two biologically vulnerable groups, pregnant women and children under one.	Storage	Bulky LLINs can sometimes pose a problem if adequate space is not available in health facilities (in the case of direct distribution).
Attendance	While use of health services varies from country to country, routine ANC and EPI coverage is relatively high in many countries, with on average more than 80% of pregnant women attending at least one ANC visit and more than 70% of children having at least three vaccination contacts (DPT3) in the great majority (87%) of countries[11].	Staff movement	Turnover may remove personnel trained in management of the LLIN distribution and leave gaps in knowledge of LLIN distribution and reporting.
Distribution	Working within established national health systems supports LLIN delivery through pre-existing structures with secure storage and trained personnel. In some cases existing structures are supported by additional systems (e.g. via malaria partners, the commercial sector), particularly to ensure warehousing and transport of LLINs from port to regional or district levels.	Stock-outs	Even temporary stock disruptions can lead to frustration of beneficiaries and possibly decreased use of routine health services. Continued support and follow-up to ensure continuous supply are costly but essential.
Education and promotion	Trained health personnel leverage their unique and established consultation opportunity with mothers and caregivers to provide key malaria information and to promote LLIN use. Likewise,	Overburdening the health system	Health staff members are often overworked, underpaid, and working in difficult circumstances. The addition of a new project to existing responsibilities, particularly the reporting requirements, may be seen as

[11] Otten M. (WHO GMP SME). "Routine LLIN distribution, ANC, and EPI visits and malaria control". Slide presentation to AMP annual meeting, February 2009.

	Benefits	Drawbacks	
	from the perspective of health workers and managers, provision of a continuous supply of free or highly subsidized LLINs encourages use of health services.		more of a burden than a benefit, and staff motivation to implement can suffer if adequate measures are not taken to ensure motivation.
		Monitoring and evaluation	Health management information systems (HMIS) are a challenge in many countries. In order to respond to donor requirements, NMCPs and partners have at times had to collect information in parallel with existing HMIS or to provide additional support to HMIS in order to secure complete, correct, and timely reporting. As routine delivery of LLINs requires sustained reporting and timely periodic data management throughout the year, robust reporting and data management systems often need to be put in place and monitored, adding to the burden on health systems.
		Supervision	NMCPs, as technical divisions of their Ministries of Health, often do not have line authority within the health system pyramid. Reproductive Health and Maternal and Child Health Divisions are more likely to be in charge of supervision of ANC and child health services, making coordination among these Ministry of Health (MOH) divisions and a clear division of responsibilities a priority from the outset of programme planning.

2.4 Lessons Learned from LLIN campaign implementation

Since 2002 tens of millions of LLINs have been delivered via mass distribution campaigns led by ministries of health. LLIN distribution campaigns have taken place as a stand-alone activity or in combination with measles or polio vaccinations, vitamin A supplementation, de-worming, and other public health interventions. Communities, health system personnel, religious and political leaders, donors, and partners at all levels have been galvanized to participate in fundraising, planning, coordination, technical support, training, supervision, and monitoring and evaluation for LLIN campaign activities: Their collective experience provides valuable lessons for developing and revitalizing routine LLIN distribution programmes, which highlight the importance of:

- **Planning:** Early planning is crucial. Planning at the macro level provides an estimated budget and allows for early identification of any major gaps in resources or funding. Based on these findings, the country can then develop an advocacy and resource mobilization strategy and begin trying to fill gaps[12]. Additionally, early impetus from the central level to assure the participation of regional, district, and other health system managers in planning operational aspects of campaign roll-out is critical to success.
- **Coordination at all levels:** MOH/NMCPs have established national and technical coordinating committees (see Coordination and Planning, below) to develop campaign planning documents, to set norms and standards for campaign implementation, and to align all partners in support of this national plan. Technical sub-committees also act as working groups to establish more detailed plans and to support implementation. It is important to clearly define roles and responsibilities, including developing written terms of reference, and to establish effective communication channels among partners. Where such channels are not in place, they should be established and validated as early as possible.

  The Alliance for Malaria Prevention (AMP organizes a weekly teleconference to coordinate activities with countries planning or implementing mass campaigns and with a number of working groups providing specific support on logistics, communication, and monitoring and evaluation. Reminders and action items, as well as new or updated key documents, are circulated by e-mail to all participants each week.
- **Training and supervision at all levels:** MOH and partner personnel have invested heavily in cascade trainings of central and peripheral trainers and campaign supervisors as well as hundreds of thousands of community agents involved in implementing household registration, LLIN distribution, and Hang-Up activities. Lessons from training experience show that supervision, reinforcement of adult learning techniques, and use of pre- and post-tests or other culturally appropriate means to ensure comprehension and retention of information are essential to supporting training quality and thus improving campaign implementation.

  The AMP has implemented a number of multi-country trainings on LLIN scale-up, logistics, communication, and M&E to reinforce best practices and for countries to share experiences and lessons learnt.

[12] Alliance for Malaria Prevention (AMP). A toolkit for mass distribution campaigns to increase coverage and use of long-lasting insecticide-treated nets. Toolkit version 2.0, draft of Chapter 3. July 2011.

- **Supply chain management, tracking, and accountability for the LLINs:** Campaign implementers have put in place tools and processes to track movement and storage of LLINs from port to beneficiary, including waybills and stock sheets (see Warehousing and LLIN Storage, below).

- **Technical assistance:** Countries often choose to bring in technical assistance (TA) from another country or from consultants who have worked on a number of campaigns. This TA reinforces the training that some members of the country team have participated in, and it provides a dedicated support person/team at critical junctures, such as developing the campaign plan of action, logistics plans and tools, communication, training and other materials as well as providing implementation support for cascade trainings, microplanning, household registration, distribution, and Hang-Up activities. NMCPs often use TA to provide additional supervision and M&E support.

  Dedicated team: NMCP staff is often busy with numerous issues beyond the LLIN campaign. Therefore, it is important to have a focal-point person who can be dedicated to the campaign and devote a majority of time to following key elements and ensuring progress.

  Accountability: Measures for accountability must be put in place and clearly documented. It is important to cover accountability and record-keeping in personnel training, ensuring that staff can effectively monitor the movement and storage of nets throughout the supply chain[13].

Skills and capacity built in each of the above areas to support successful delivery of LLINs via mass campaigns are also valuable in implementing and supporting continuous delivery of LLINs via routine services. Although sometimes viewed as separate activities, continuous and campaign delivery of LLINs involve a continuum of actions that are mutually reinforcing for both beneficiaries and the health system.

2.5 The importance of continuing routine LLIN distribution during mass campaigns

Shortfalls in funding for mass campaigns has sometimes resulted in the re-allocation of nets from routine LLIN distribution to fill gaps in campaigns[14], causing stock-outs and the suspension of ANC LLIN delivery. Although universal coverage campaigns can, in theory, benefit pregnant women and children, many campaigns can take many months or even years to be fully rolled out across all of the regions or districts in a country, and thus, many pregnant women and children who might otherwise be able to obtain a net through routine health services are unable to do so if they are waiting for a campaign to reach their area. Moreover, LLIN distribution has been observed to increase pregnant women's attendance at ANC clinics. It also sends a powerful message to mothers about the importance of using a net during pregnancy. As a result, it is vital to continue routine LLIN distribution during mass campaigns to ensure that pregnant women are benefiting from the whole range of antenatal services and to encourage them to use nets.

[13] Ibid.

[14] Hill J, Hoyt J, van Eijk M, ter Kuile F, Webseter J and Steketee R. Prioritizing Pregnant Women for Long-Lasting Insecticide-Treated Nets through Antenatal Care Clinics. PLoS Med, 11:9. 2014.

In response to this trend, WHO updated its guidance in 2013 to emphasize the importance of rolling out LLIN distribution through ANC and EPI services and in ensuring these channels are functional throughout the process of planning and implementing a campaign. Specifically, the document states that "in order to maintain universal coverage, countries should apply a combination of mass free distributions and continuous distributions through multiple channels, *in particular antenatal and immunisation services*" (emphasis added). Moreover, "continuous distribution channels should be functional before, during, and after the mass distribution campaigns to avoid any gap in universal access to LLINs[15]."

To balance the need between universal coverage and prioritizing access for pregnant women and children, donors and countries alike need to plan their funding commitments at least 2 years in advance to ensure that there are enough nets for both routine distribution and mass campaigns. In situations where there is still a commodity gap, routine distribution should remain prioritized for many of the reasons outlined in section 2.3 above: pregnant women and children under five are biologically vulnerable to malaria, delivery of LLINs through antenatal care enables women to access nets as early as their first trimester, and promoting health facility-based distribution encourages pregnant women and caregivers to seek ANC and EPI services, ensuring their access to other life-saving services[16].

2.6 The importance of a coherent continuous distribution strategy

Health facility based distribution is the focus of this guide. However it is important that no single continuous distribution channel is planned or operated in isolation. Before detailed design and planning of specific channels is carried out, a national planning process should be undertaken to design an overall continuous distribution strategy. The document "Continuous distribution of LLINs: A guide to concepts and planning", provides guidance on this process.

Designing an overall continuous distribution strategy before moving into the details of planning specific channels is important as there are many opportunities for leverage and co-ordination across different continuous distribution channels.

This issue is particularly pertinent when considering health facilities and the personnel involved; as the same supervisors and operational staff may well be involved in active implementation or support of other non-health facility based channels.

[15] World Health Organization. WHO recommendations for achieving universal coverage with long-lasting insecticidal nets in malaria control September 2013 (revised March 2014).

[16] Hill J, Hoyt J, van Eijk M, ter Kuile F, Webseter J and Steketee R. Prioritizing Pregnant Women for Long-Lasting Insecticide-Treated Nets through Antenatal Care Clinics. PLoS Med, 11:9. 2014.

3. DESCRIPTION OF LLIN DISTRIBUTION VIA ANC, EPI, AND OTHER ROUTINE SERVICES

A number of countries are distributing LLINs to beneficiaries via ANC, EPI, and other routine health services such as MCH, Integrated Management of Childhood Illness (IMCI), and HIV/AIDS testing, care and treatment. Programmes have been developed at the national level, with inputs from implementing and donor partners. They include the following components:

3.1 Delivery mode

Two delivery modes—direct and indirect—are described in detail in *Continuous Long-lasting Insecticidal Net Distributions: a Guide to Concepts and Planning*[17]:

- **Direct distribution**: One or more LLINs are given to the beneficiary directly at the delivery point.
- **Indirect distribution:**
    - Vouchers: The beneficiary can use the voucher only at a commercial outlet for an approved LLIN of their choice. The voucher covers all or part of the cost of the LLIN.
    - Coupons: A coupon system is different from a voucher system in that no financial transaction is ever required. A coupon is given in place of a LLIN, and the LLIN is then collected in exchange for the coupon at a different, specified location. This approach is relatively common during mass campaign distributions of LLINs but rarely used in continuous distribution mechanisms.

In **Tanzania** vouchers were distributed to pregnant women and mothers of infants attending reproductive and child health clinics and vaccination days, as part of the Tanzania National Voucher Scheme (TNVS). Vouchers provided a reduction in the cost of nets, at approximately Tsh 500 for the beneficiary. They were redeemed at shops that participated in the programme. The TNVS distributed approximately 1.5 to 1.6 million vouchers per year, and approximately 80% of vouchers were redeemed for nets[18].

3.2 Delivery Mechanisms

Routine health system mechanisms to deliver LLINs include[19]:

ANC: One or more LLINs are given to pregnant women during their first antenatal care visit.

EPI: One or more LLINs are given to the caregivers of children under one during one of their vaccination visits. Most commonly, LLINs have been delivered with measles vaccination, which is scheduled at age 9 months, or with DTP3 (third dose of diphtheria toxoid, tetanus toxoid, and

[17] RBM VCWG Continuous LLIN Distribution Systems Work Stream. Continuous long-lasting insecticidal net distributions: a guide to concepts and planning. 2011.

[18] Koenker H, Yukich J, Mkindi A. Tanzania keep-up strategy options. July 2011.

[19] RBM VCWG Continuous LLIN Distribution Systems Work Stream. Continuous long-lasting insecticidal net distributions: a guide to concepts and planning. 2011.

pertussis vaccine) at 12–14 weeks of age. In some places LLINs have been delivered at the first contact with EPI. This is particularly appropriate when LLINs have not been delivered at antenatal clinics[20].

Additionally, **other health services** can be used to distribute LLINs, including:

- HIV counselling and testing services
- Services for refugees or other vulnerable populations
- IMCI, nutrition, or MCH clinics that reach children under five or other targeted beneficiaries
- Distribution linked to case management, for example, to patients with a confirmed case of malaria.

3.3 Beneficiaries

NMCPs will make decisions regarding eligible beneficiary groups for a variety of reasons:

Pregnant women: In most cases NMCPs have chosen to provide LLINs to pregnant women at their first ANC visit in order to ensure that the benefits of protection to mother and baby begin as soon as possible in the pregnancy. In some cultures women wait to declare pregnancy and/or go to ANC late in pregnancy (and possibly for only one visit). Where this is the practice, receiving an LLIN at first ANC visit is especially important.

Children: LLINs are often provided at the 9-month measles vaccination. This is to ensure that the new sleeping space will be covered, particularly at a time when infants may no longer be sleeping in the same bed as their mothers. In some cases NMCPs may decide to provide the LLIN earlier in the vaccination schedule to increase uptake in services or in response to cultural norms and sleeping patterns. In some countries NMCPs provide LLINs to children under five who are seen in health facilities for malaria or other diagnostic and curative services.

Routine LLIN distribution is one of many components of the beneficiaries' visit to a health facility (Table 2)[21]. Maintaining continuous supplies of LLINs helps to attract pregnant women and mothers/caregivers to ANC, EPI, and well-child care locations, where they can benefit from all services offered.

If, however, LLIN supplies are sporadic and health facilities experience interruptions in supply, there is a significant risk of discouraging mothers from attending other services. In addition to the negative impact on beneficiaries' health across a number of areas, this increases the burden on health facility staff, who must contend with clients' frustrations. In some cases health facilities have implemented policies to allow mothers to return at a later date to recover LLINs not received at the time of service due to stock-outs. This increases administrative burden on health facility staff, however, and some intended beneficiaries will not return.

[20] World Health Organization. Long-lasting insecticidal nets for malaria prevention. A manual for malaria programme managers, 2007. http://www.who.int/malaria/publications/LLINmanual.pdf. Accessed August 12, 2011.

[21] RBM VCWG Continuous LLIN Distribution Systems Work Stream. Continuous long-lasting insecticidal net distributions: a guide to concepts and planning. 2011.

Table 2. LLIN Beneficiaries

Beneficiary	Mechanism	Other services provided	Rationale
Pregnant women	First ANC visit	Record vital signs Assess pregnancy risks and status Healthy mother, child education Malaria, HIV education HIV counselling and testing (and referral if needed) Intermittent Preventive Treatment (IPT) administration Iron, folic acid, and mebendazole	To ensure coverage of biologically vulnerable pregnant women In some cases pregnant women sleep separately from their husbands and may not be covered by the family's existing LLIN.
Children under one year	Measles vaccination visit, often at 9 months	Vaccination Record child weight Assess health status and provide care Healthy child education Family planning (in some cases) De-worming	Covers new sleeping space at a time when child may be moving out of mother's sleeping area In some cases LLIN is given at first vaccination to increase uptake or because of cultural norms/sleeping patterns.
Children under five years	At IMCI, diagnostic, or curative visit Possibly for children diagnosed with malaria or other childhood illness	Assess health status and provide care Healthy child education De-worming	Provides coverage for a child who may not currently have protection Provides protection for a child who received an LLIN that may be worn out or damaged

3.4 Targeting access

When necessary, NMCPs may choose to implement routine LLIN distribution differently in different geographic areas or for different target groups. When financial resources to support LLIN procurement

and distribution are limited, for example, NMCPs may have to prioritize distribution based on country context or other criteria. In other cases epidemiology, health infrastructure, accessibility, and the economic or other vulnerability of particular populations may influence targeting decisions[22]. For example:

Health facility accessibility: In some cases access to health facilities may be limited or non-existent for some or all intended beneficiaries. In countries with high levels of instability or recently coming out of conflict situations, health facility infrastructure and staffing may be limited to an extent that does not allow beneficiaries to access services at fixed sites. Also, cultural norms or preferences may limit the percentage of women seeking ANC services or vaccination services for their children.

Example: In **Nigeria** DHS results at state level show that the percentage of women receiving antenatal care from a skilled provider varies from 46% in rural areas to 84% in urban areas. Regionally, there are also significant disparities, from 31% in the northwest to 87% in the southeast and southwest[23]. As a result Nigeria's NMCP, with assistance from Support to National Malaria Programmes (SuNMaP), is compiling a synopsis of strategic options for the choice of channels to inform a mixed-approach strategy, with a view to inclusion in national guidelines.

LLIN coverage has evolved differently across countries as a result of financing, logistics challenges, or conflict situations. For example**:**

In **Cameroun** and **Nigeria** recent and large influxes of funding are supporting rapid scale-up of national coverage via mass campaigns.

In **Liberia** smaller inputs of LLINs and logistics funding have over time achieved nearly Universal Coverage but with varying levels of coverage during the process of scaling up.

In **Zambia** multiple partners and funding sources contribute ITNs. Therefore, "not all ITNs provided for malaria control arrive to Zambia in a manner which satisfies all identified gaps at once"[24]. Predicting ITN gaps makes it possible to prioritize how distributions should be managed. Zambia's National Malaria Control Centre (NMCC) leads a process with partners to identify gaps and to prioritize incoming resources geographically based on percentage of unmet need, indoor residual spraying (IRS) coverage, and parasite prevalence. Zambia delivers LLINs via routine ANC and EPI services as well as district-level campaigns.

In other cases NMCPS may choose other mechanisms for targeting beneficiaries. A non-exhaustive list of beneficiaries and a sample of mechanisms is presented in Table 3. NMCPs may make other decisions based on demographics, health infrastructure, health priorities, or other reasons.

[22] A more detailed analysis of other continuous LLIN distribution strategic options (e.g. social marketing, school-based distribution) and guidance on selection of an appropriate mix of strategies is found in: Continuous long-lasting insecticidal net distributions: a guide to concepts and planning. 2011.

[23] Lynch C. Nigeria context, calculations from Nigeria DHS. E-mail, May 2011.

[24] Zambia National Malaria Control Centre (NMCC), 2011 rationale for prioritization of insecticide-treated net (ITN) distributions based on district needs and gaps. Briefing Document, updated 12 January 2011.

Table 3. Targeted LLIN delivery

Beneficiary	Mechanisms	Rationale
Target groups as defined by national policies in specific regions	ANC, EPI, or MCH clinics, where available Advanced[25] or mobile sites in conjunction with other health services	Fixed-site delivery may be an important source of health care in some areas. Where fixed-site delivery is not available, it is important to review other health systems in place with MOH and partners to identify how other services are provided and where synergies may exist to support LLIN delivery. Commercial-sector outlets can be used as points to distribute LLINs in exchange for vouchers.
Economically vulnerable	Nutrition supplementation sites or other outreach services that reach the lowest socio-economic quintile(s)	The poorest populations may have additional constraints that limit their access to existing health services, particularly if there are consultation or service fees and/or costs to obtaining an LLIN. In many settings it is difficult to distinguish between the poorest and poor populations, making this type of targeting operationally difficult.
PLHIVs	HIV counselling and testing centres, HIV care centres	People living with HIV are especially vulnerable to malaria and will suffer more often and more severely from malaria once their immune system starts to decline[26]. It is important to deliver the LLIN to PLHIV in a manner that does not stigmatize them publicly as having received an LLIN *because* they are HIV-positive.
Refugees or other vulnerable populations	Camp clinics or other services provided by government and/or relief agencies	Temporary housing conditions may expose groups to increased malaria risk. Malaria treatment options may be less available, increasing the importance of prevention.

[25] An 'advanced' site is a fixed site, such as community health post, school or church in hard to reach areas that allows trained community health workers or other health personnel to provide services and could be used to deliver LLINs.

[26] WHO, Malaria in HIV/AIDS patients. [Accessed December 18, 2015]; available at http://www.who.int/malaria/areas/high_risk_groups/hiv_aids_patients/en/ .

3.5 Managing the distribution

Health facilities generally have systems in place to register, manage, record visit information, and follow patients seeking ANC, EPI, or other services. These systems vary from country to country and sometimes within a country. As LLIN distribution is one of several components comprising the overall visit, it is important for NMCPs to coordinate with reproductive health (RH), EPI, and other MOH divisions involved in establishing these systems to harmonize procedures and to minimize the burden on health facility personnel. Some common management elements of successful LLIN distribution via routine health services include:

3.5.1 Registering beneficiaries

Registries

Health facilities maintain registries to record and archive patient and consultation information. LLIN delivery to beneficiaries is an important component to be included in registries. It allows supervisors to check the accuracy of results sent to the MOH. It can also allow follow-up with specific beneficiaries to verify if an LLIN was received as recorded, if the LLIN is in use by that beneficiary, the quality of the LLIN after the time since receipt, and numerous other indicators of programme quality and reach also may be collected.

Patient cards

As with patient registries, ANC and EPI or child health cards should also record the beneficiary's receipt of a LLIN. In most cases these registry and health card systems already exist; therefore, it is important for NMCPs and their partners to review the most efficient way to integrate necessary LLIN distribution information into the existing systems. While it is important to include information regarding LLIN distribution that will allow adequate follow-up and supervision, it is also important to prioritize the key information needed and avoid overburdening health facility staff with unnecessary record-keeping.

In some cases card formats have been upgraded to include educational messages for healthy pregnancy and childcare as well as to record beneficiary information. In **Liberia**, for example, the Ministry of Health and Social Welfare, with support from USAID, has developed the Pregnant Woman Health Card:

> The cards include a system for delivering key health messages using local terms, for example, "Baby ma, baby gran ma, give tay tay as soon as the baby is born to make it healthy and not cry too much".
>
> Instructions are provided to health workers to check a box with one line when the message has been delivered, with a second line (making an 'x') when the message has been repeated, and to fill in the square preceding the message when the parents have taken the action.
>
> Other information covered includes:
>
> - Name, address, age, and record number for the pregnant woman

- Key messages on antenatal care, including iron/folic acid, worm and malaria medications, check-ups, tetanus vaccination, importance of resting, avoiding lifting, and nutrition
- Records of tetanus vaccination, history of as many as four previous pregnancies, and LLIN provision and IPT administration for each pregnancy
- Key messages on STI/HIV testing and preventing mother-to-child transmission (PMTCT) of HIV; danger signs in pregnancy, labour, and delivery; mother and newborn care; TB; family planning; and postnatal care.

In some countries registries and ANC or child health cards include a pre-printed section to record LLIN receipt. While this would be ideal at some point in the evolution of an LLIN distribution programme, it is by no means necessary. Given the time involved to discuss with all relevant MOH divisions, validate a decision, and find the resources necessary to design, print, and distribute a new card, this process would likely slow down the implementation of a new programme. In many cases programmes find a simple way to write the information on the card.

In **DRC**, for example, the head nurse writes "LLIN" and the date distributed on the ANC or EPI card and returns it to the clinic, where the information is recorded in a column added to the registry. This is a relatively simple process, not considered burdensome by the staff, and it allows follow-up of relevant information without radically changing the existing system.

In **Senegal** health personnel provide pregnant women free LLIN coupons during the ANC consultation. The coupon can be redeemed at the health facility pharmacy or warehouse. There the stock manager keeps a receipt for each coupon and records the information in a distribution registry, a receipt book, and a registry of stock movements.

3.5.2 Free or highly subsidized LLINs

RBM has established that malaria partners should strive to provide LLINs either for free or highly subsidized to beneficiaries in order to reduce the important barrier that cost can pose to LLIN ownership and use. A recent review of ten impact evaluation studies showed that even small increases in price lead to large drops in uptake of health products and services, including LLINs. In Kenya, for example, bed net sales at ANCs dropped 60% after a price of US$0.60 was imposed for LLINs that previously had been offered free of charge[27].

For a variety of reasons, user fees are sometimes charged for health services, for issuance of health cards, and/or for LLINs received during health visits. The decision whether to charge fees and the level of the fee is made by the Ministry of Health, most likely in collaboration with the Ministry of Finance or Budget, as this involves issues of national budget allocations, national poverty reduction strategies, and national decisions regarding fees levied in public establishments. Likewise, the decision regarding distribution of LLINs free or at highly subsidized rates is made by the MOH and NMCP, who may choose to consult with partners regarding funding and operational issues that may influence the decision[28].

[27] J-Pal Bulletin, Abdul Latif Jameel Poverty Action Lab. The price is wrong: charging small fees dramatically reduces access to important products for the poor. April 2011.

[28] The outline of pros and cons in this guide is therefore meant to highlight issues that may be considered when discussing the issue of LLIN cost to beneficiaries at the national level and not to interfere with country decision-making.

Reports from countries regarding their perceptions of the benefits and drawbacks of charging a small fee for LLINs that is recovered and used by the health system and of free LLIN delivery are summarised in Table 4.

Table 4. Country feedback: Free and highly subsidized LLIN delivery

	Benefits	Drawbacks
Small fee	Health system able to re-invest in providing staff motivation, improving infrastructure, equipment, services	Decreases equity, reduces LLIN ownership for the poor
Free	Beneficiaries appreciate and use free LLINs Increases the use of health services Increases equity; beneficiaries from all SES can own an LLIN.	Health facilities do not benefit from additional resources to improve infrastructure, equipment, education, and other services. Health personnel are given an extra burden in managing LLIN distribution, particularly record-keeping, but are not compensated for additional tasks.

3.5.3 IEC during the consultation

Mothers and caregivers who are gathered at the health facility to receive ANC, EPI, or other health consultations often have to wait for some time to complete all of the steps in the consultation. This is a key opportunity for trained health facility personnel to deliver key malaria messages to these important target groups.

At the same time, health personnel are busy during consultation hours, and the beneficiaries may be easily distracted by passing vendors or conversations with other mothers/caregivers. To ensure that key messages are delivered accurately and in a manner that is easy to understand and remember, it is important to develop informative, interesting, and memorable communication aids to help health personnel deliver the information succinctly, accurately, and convincingly. These materials can include posters, flyers, flip books, skits, or possibly short audio recordings or videos (if electricity and equipment are available); these materials can be entertaining as well as informative.

The communication section below provides further information on education during the consultation.

3.5.4 Personnel involved

Integration of the LLIN distribution programme into existing ANC, EPI, or other health care delivery systems, and coordination with health facility personnel, are important to ensuring support for the introduction of the programme and its on-going implementation. A number of people from various divisions of the MOH and partner organisations are involved in developing and maintaining a functional LLIN delivery system via other health services. The specific posts vary from country to country, but certain sets of tasks are typical.

The lists below include some of the responsibilities that are added to health systems staff when an LLIN distribution programme is integrated into ANC, EPI, or other routine service provision. To help staff

members handle these additional responsibilities, it is important to develop clear terms of reference and to review mechanisms to motivate staff.

Health facility personnel:

Head of Nursing or health facility manager: Securing LLIN bales from pharmacy/medical stores, reconciling LLINs delivered with remaining stocks, distributing LLINs to beneficiaries, marking ANC and child health cards to indicate LLIN receipt, record-keeping, training and supervision of staff during consultation and education sessions, supervision of community health workers and local associations participating in the programme, writing and submitting reports.

Nursing and/or other health staff: Deliver key health messages on malaria as part of group or one-to-one education sessions and incorporating advice on malaria prevention and LLIN use into ANC, EPI, MCH, or other consultations, record-keeping, referrals, assessing LLIN eligibility, writing and submitting reports.

Registry and other administrative staff: Registering new beneficiaries, collecting and recording user fees (if charged), providing receipts, writing and submitting reports, preparing and submitting HMIS reports.

Pharmacy/stores manager: Receiving and issuing stocks of LLINs, ensuring safe storage, managing stock inventories, record-keeping, reporting lost or damaged stocks, requisitioning additional stocks, monitoring stock levels and issuing alerts when stocks fall below levels set, writing and submitting reports.

Health district, regional health managers: Advocacy for sufficient resources; MOH relations; donor and implementing partner relations; coordination and planning; training and supervising health system staff; monitoring registries, receipts, and supply logistics and resolving issues as they arise; planning and conducting health systems assessments and inventories and taking corrective measures; verifying health facility reports and developing and submitting summary reports; developing and signing contracts, monitoring and evaluation.

National-level MOH and partners:

NMCP (with support from donors, implementing partners, national regulatory agencies, central tendering agencies): Providing strategic leadership, normative and technical guidance, and coordination; advocacy; developing strategic and operational plans; assessing needs and developing gap analysis, quantified needs, costed proposals, and costed action/work plans; delegating operational aspects of programme implementation to selected partners and sub-contractors where appropriate (e.g. LLIN procurement, warehousing, supply chain management, training, communication); designing and developing the programme; procuring LLINs; training trainers; management and supervision of programme implementation; report writing; monitoring and evaluation of programme progress.

Partners:

Donors: Reviewing needs assessments, gap analysis, and proposals; strategic planning; advocacy; support of coordination, monitoring, and evaluation of programme progress.

Implementing partners: Participating in programme design and development, in preparing strategic and operational plans, needs assessments, and gap analysis; advocacy; communication activities; ensuring project implementation according to national plans and under NMCP guidance and supervision; report writing and transmission to NMCP and donors; monitoring and evaluation of activities implemented.

Local associations, communities: Education and social mobilization to increase awareness and appreciation of and participation in the programme; participation in needs assessments and programme design and development to insure community needs are taken into consideration; promotion of LLIN use and care.

Commercial sector: May be contracted, through a competitive bidding process, and managed by the MOH to handle LLIN procurement, warehousing, and distribution and to serve as points of redemption for vouchers in some indirect models.

Terms of reference

As multiple actors are involved at multiple levels from across the MOH and partner organisations, it is important to clarify roles and responsibilities for each of the key actors involved. Clear terms of reference (TOR) help to identify and establish who is responsible for each activity and when activities should be conducted. It recognizes the additional effort being requested from each staff person and clearly delineates each person's responsibilities. A written TOR is also a useful tool in training new staff who may be taking on LLIN distribution responsibilities during periods of staff turnover.

If the process in done in a consultative manner with representatives of health staff, managers, donors, and partners and is led by MOH, the process of developing and validating TORs can also serve as a mechanism to solidify each actor's commitment to participating in the programme and to undertaking the mutually agreed responsibilities. Section 10, Resources, provides examples of roles and responsibilities for different levels within the government and partner organizations from Zambia, Uganda and Senegal.

Motivation

Mechanisms to support health staff motivation to implement LLIN distribution are an important component of successful continuous distribution systems.

Examples include:

Monetary incentives: Interviewees cited mechanisms that allow for some form of monetary compensation either directly to staff or in the form of improvements to health facilities or staff support (e.g. tea breaks during staff meetings).

Recognition: High-level MOH recognition of the programme and encouragement to health facility staff may provide professional incentives as well as reinforce the importance of the programme. If user fees are charged for services or health cards, an advocacy strategy with health personnel should explain that higher numbers of clients will increase revenues for the health clinic and staff.

Community participation: Ensuring community awareness of free LLINs at health clinics encourages community members to advocate quality health care and free LLIN provision. It may also reinforce community appreciation and regard for health facility staff.

Professional incentives: The MOH may consider providing additional professional benefits for health staff members who perform well—for example, including performance of the LLIN delivery programme in annual staff reviews or holding contests that identify and recognize excellence.

It is also important to note that **integration** of the LLIN distribution programme into the health system, via integrated training, supervision, monitoring and evaluation, and other activities, will reduce the perception of LLINs as an 'add-on' and the need for additional motivation.

3.6 Developing norms and standards

Building on lessons learnt from decades of public health interventions, all implementing partners should be aligned with the 'Three Ones' principle to support one coordinating mechanism, one national plan, and one M&E system. This unity is vital to implementing LLIN delivery via routine health services, which concerns NMCPs, RH, EPI, IMCI, MCH, primary health care, and other MOH divisions and their partners. MOH leadership at the highest levels is therefore crucial to ensuring success. Another key element is establishing norms and standards for malaria prevention activities, including for the distribution of LLINs via ANC, EPI, and other health services.

Examples of documents establishing clear guidelines include:

- National Malaria Control Policy
- National Malaria Strategic Plan
- National LLIN Guidelines (covering both campaign and routine distribution)
- National Routine LLIN Distribution Guidelines
- Other routine LLIN distribution implementation guidance for training, stock management, reporting, supervision, and other areas (see below).

In developing these national documents, it is important to include national-level stakeholders as well as key actors at provincial, district, and health facility levels, inasmuch as possible. The MOH will take the lead in organising mechanisms that facilitate discussion of key issues, decision-making, and development of national consensus documents with inputs by stakeholders from across the MOH divisions involved, from interested partners in those fields, and from central and peripheral levels. Donors and implementing partners can provide funds or in-kind support such as meeting spaces, staff support, and technical support as requested by the MOH.

In **Benin**, for example, the MOH National Public Health Division sponsored a workshop to establish national directives for routine LLIN distribution. MOH EPI, NMCP, and Family Health divisions were involved as well as departmental directors and health zone coordinators. Numerous NGO implementing partners also participated.

In **Malawi** the NMCP published *Guidelines for the Management of Insecticide-treated Nets/Materials Programme* in June 2002 to "coordinate the efforts of the Government of Malawi and its key stakeholders to effectively utilize their resources in a targeted and uniform fashion to meet the goals agreed in the Abuja Declaration". The guidelines were developed through a series of collaborative meetings and workshops involving the NMCP and its multilateral and bilateral partners, international and local NGO implementing partners, research institutions, and district health officials. Malawi's ITN

guidelines were updated in 2007 to reflect the country's shift from highly subsidized distribution to free distribution, made in late 2006, as well as the move to LLINs[29].

During interviews in May 2011 with more than 20 of the Malawi NMCP's key stakeholders, publication of these national ITN guidelines was cited as "the action or decision most central to creating the transparency and accountability that has allowed Malawi's continuous net distribution partnership to work effectively and harmoniously since it was scaled-up nationally in 2002"[30].

3.7 Linkages with other continuous distribution channels.

As ANC/EPI alone cannot provide new nets to all individuals who need one, the combination of routine LLIN distribution and other channels can help maintain coverage in the absence of mass campaigns. In recent years, school and community-based distribution of nets have been piloted in multiple settings across Sub-Saharan Africa, often concurrently with standard ANC/EPI distribution. In the former, nets are typically issued to selected classes in a region once a year. In the latter, households who need a new net request a coupon from community-based volunteers such as community health workers, religious leaders or other cadres. This coupon can then be exchanged for a net from a pre-determined redemption point.

There are several areas in which health facility-based distribution of LLINs can tie in with school or community-based distribution, creating potential efficiencies. These areas should be considered during the planning process.

- Health facilities can serve as a channel for leftover nets – in Zimbabwe, school officials transported nets left over from the annual school distribution to the nearest health facility. The numbers of nets remaining per school were small (less than a bale) as were the distances travelled. Since health and education officials and the implementing partner were required to visit schools and ensure that the school distribution was completed correctly, supervisors were able to drop off the remaining nets at health facilities en route. In other circumstances head teachers or deputy head teachers dropped off the nets. Health facilities were responsible for recording the additional stock in their stock cards and in issuing the nets to pregnant women and children, as per standard protocol. A recent process evaluation said that the facilities and schools should have used waybills to document the transfer of custody from schools to health facilities.

- Health facilities can serve as a redemption point for nets – In South Sudan, Zanzibar, Nasarawa State, Nigeria and Zimbabwe, households who received a coupon from a community-based volunteer travelled to a health center to redeem it for a net. In these settings, health facilities served as the lowest level of storage hubs for nets. Restocking for nets followed the usual procedures (see 6.6 stock management), except that the number of nets re-ordered was raised to accommodate the number of nets needed for the community channel.

[29] RBM VCWG CD Work Stream. Accountable partnership. Lessons in Brief, Malawi's Keys to Success N° 1. Draft, June 2011.

[30] Ibid.

- Health facility staff can supervise community based volunteers – In many settings, health facility staff already supervise community health workers. In this capacity, they convene community health workers regularly (such as monthly or quarterly), collect data and conduct supervisory visits in the field. In places where community-based distribution is being planned, health facility staff can add questions about LLIN distribution to the standing agenda for their meetings with community health workers, collect coupon stubs, and resupply community volunteers with new coupons. Similarly, they can ensure that community health workers are referring pregnant women and children to the facility and checking in to see if they are using LLINs.

- Existing health information systems can help monitor community-based distribution of nets – In settings where coupons are being exchanged for nets at health facilities, health facilities are documenting the number of nets being issued to community members and submitting it to the HMIS. In Zimbabwe, for instance, the HMIS reporting form has a line for total number of nets, number of nets issued through ANC and number of nets issued through EPI. Though the current form does not have a line for number of nets being issued through community, planners can deduct the number of nets being issued from ANC and EPI from the total number of nets distributed to estimate this number.

- Social and behaviour change communication activities should inform households of all of the ways in which they can obtain a net – When a program is using multiple channels to distribute nets, an integrated SBCC strategy should be used to ensure that households know how they can obtain a net. Families should know who to approach for a new net, and the eligibility criteria. Zanzibar, for example, created a flier showing households all of their options (see 10. Resources).

4. COORDINATION AND PLANNING

As discussed above, it is important to include a broad range of stakeholders from national and peripheral levels in the development of norms and standards and in the planning phases of developing an LLIN distribution policy and strategy. Stakeholders should also be included in gap analyses, programme planning, advocacy planning to fill gaps, and developing annual or other work plans, to ensure coordination and buy-in to specific activities so that deadlines can be met. Discussions regarding the planning of programme evaluation may also benefit from broad participation and possibly integration into other planned national health evaluations (e.g. DHS, Malaria Indicator Survey (MIS)).

While a wide array of stakeholders may be invited to participate throughout the normative and detailed planning stages, it may not be realistic to assume that a large group of professionals, each with multiple other responsibilities, will be able to attend numerous meetings.

It is also important to consider timelines in developing and launching a new programme or revising or scaling up an existing programme. While broad coordination and buy-in are key to the long-term success of the programme, they can be time-consuming and delay implementation. This fact means that advocacy with and support from MOH leaders are important to ensure that decisions can be made and validated within reasonable timeframes.

At certain points in the process, particularly in determining detailed implementation, training, supervision, and monitoring plans and timelines, it will also be important to give responsibility to one or several smaller group(s) of specialists to develop draft plans that can be discussed at periodic larger meetings. In such cases roles and responsibilities must be made clear to stakeholders. The MOH may also want to provide guidance on the frequency of and level of participation in meetings of an overall planning and coordination task force for routine LLIN delivery as well as working groups for logistics and supply chain management, training, communication, and M&E, for example.

In **Kenya** strong partnerships are credited with the on-going success of the country's routine LLIN distribution. Kenya's Division of Malaria Control (DOMC) provides strong leadership and coordinates quarterly Vector Control Technical Working Group meetings, which not only conduct discussion and planning but also "monitor and push progress"[31]. Additionally, "the Kenya DOMC recognized the importance of not going it alone when planning their model. Their health system works better than many in the region; yet DOMC knew that getting LLINs to all health facilities and shops in rural areas, maintaining stocks, and ensuring quality and data flow was outside the capacity of their already overstretched system. The DOMC works with a solid and focused partnership of donors (DfID and USAID) and a dedicated implementing partner (PSI/Kenya) who works closely with the private sector and some grassroots CBOs to ensure success"[32].

The benefits of strong MOH leadership and coordinated partnerships are clear. Kenya invested ten years in developing a strong routine LLIN distribution programme and in leading the partnership needed to support the programme. Now the system functions efficiently, with minimal inputs, leaving the DOMC free to focus on other areas of malaria control[33].

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[31] RBM VCWG CD Work Stream. Making it work: the big picture. Lessons in Brief, Kenya's Keys to Success. Draft August 2011.

[32] Ibid.

[33] Ibid.

Similarly, in **Malawi** the MOH credits strong partnerships with the long-standing success of national ITN distribution. According to Doreen Ali, Malawi's Deputy Director of Preventive Health Services, "Broad partnership has been the key to our success over the years. We have a clear national strategy and clear national ITN guidelines. Our partners helped develop these policies, and so they know them inside and out. They also know our team well. This makes it easy and natural for partners to proactively come forward to help implement, coordinate, and, most importantly, fill gaps when needed"[34].

Strong NMCP leadership and a strong, coordinated partnership in Malawi help to ensure that resources are available to support the national programme when gaps arise. Examples of this include: Japan International Cooperation Agency (JICA) procured 600,000 nets to help meet unanticipated needs during national scale-up; the emergency provision of ITNs and distribution funding by Deutsche Gesellschaft fur Internationale Zusammenarbeit (GIZ) to help make a smooth transition from highly subsidized net distribution to free net distribution; UNICEF's ability to manage emergency procurement of nets when needed; the supply of 'Jumpstart LLINs' by the President's Malaria Initiative (PMI) to help the NMCP accelerate the move from ITNs to LLINs; and the contribution of additional nets for continuous distribution by partners such as the Anglican Church, Plan International, and the Malawi Red Cross[35].

4.1 Coordination mechanisms

Many NMCPs already lead regular malaria task force meetings with stakeholders to discuss planning, advocacy, funding, and other strategic issues and in many cases have smaller technical working groups for malaria case management, prevention, malaria in pregnancy, M&E, etc.

Countries that have implemented mass campaign delivery of LLINs may also have a National Coordinating Committee and working group sub-committees. Terms of reference (TOR) for these groups could be adapted, if needed, to provide for the particular needs of routine LLIN delivery. Membership in the group will also likely need to be augmented to ensure broad participation from RH, EPI, MCH, and other MOH divisions involved (see 10. Resources, for an example of a TOR from Kenya).

4.1.1 Routine LLIN Delivery Technical Working Group

Because LLIN delivery via routine services is an on-going process rather than a time-limited delivery campaign, it is worthwhile for NMCPs to consider forming a specific technical working group (e.g. a Routine LLIN Delivery Technical Working Group (TWG)). The technical working group should be led by the MOH—the NMCP or RH or other division in charge of managing ANC services—and it should develop clear terms of reference. TWG members can include a wide range of implementing partners, donors, technical partners, the private sector, and civil society organisations involved in malaria prevention.

In addition to strategic planning and coordination, the technical working group can focus on:

- Developing training curricula and planning cascade training
- Distribution planning (including warehousing, transport, and other supply chain issues)
- Developing annual activity plans and timelines

[34] RBM VCWG CD Work Stream. Accountable partnership. Lessons in Brief, Malawi's Keys to Success N° 1. Draft, June 2011.

[35] Ibid.

- Troubleshooting problems
- Incorporating feedback from supervision and other site visits into the ongoing planning and project improvement process
- Monitoring and evaluation.

Depending on the number of partners participating and the expertise of group members, this technical working group may work together on all aspects or may further specialize to form sub-committees that move ahead simultaneously on activities. Whatever the structure(s) chosen, it is important for the coordination mechanism to:

- Have clear terms of reference
- Be led by the MOH and/or NMCP
- Document and share decisions made, draft documents for feedback to ensure that all stakeholders can comment and to guard against decisions being called into question later
- Put in place systems for communicating information, meeting times, etc. to ensure that all partners have access to the same information at the same time. For example, an e-mail list managed by the Routine LLIN TWG can be useful to remind stakeholders of meetings and to share meeting minutes and other documents.

4.2 Documentation to guide planning and implementation

As discussed above, a key element in the success of LLIN distribution via routine health services (as with any programme) is to clearly document standards, norms, and validated national guidelines to ensure the harmonization of partners and to guide decision-making. In addition to broad normative guidelines establishing the basic foundation and framework for LLIN distribution via routine health services, a set of more specific, detailed implementation guidelines is also recommended.

In **Uganda**, for example, the MOH, with funding from PMI and technical support from the Stop Malaria Project, has developed a set of three implementation guides for planners, district and health sub district level managers, and practitioners at health facilities for their ANC LLIN distribution system. The guide for planners, for example, provides an overview of ANC LLIN distribution and includes sections on roles and responsibilities, planning and budgeting, supply chain management, training, distribution of LLINs to beneficiaries, record-keeping and reporting, communication, supportive supervision, and M&E. The guides for managers and practitioners draw from this text but are shorter and oriented to the specific information needed at these levels.

In **Mozambique** the MOH, with support from PSI, has developed:

- A one-page chronogram to plan activities for the year, including development of a national distribution plan, development and implementation of a supervision tracking tool, monitoring and supervision, transport and warehousing, production and dissemination of communication materials, and training
- A flow chart of activities and responsible parties, including annual needs planning, distribution planning, approval processes, transport bidding and contracting process, warehouse requisition and dispatching process, and reporting lines.

In **Senegal** the Minister of Health, Director of Health, and NMCP coordinator issued official letters (e.g. Note d'information, Note technique, and Circulaire) to regional and district medical officers, hospital directors, governors, and others regarding LLIN distribution via health services. These letters provided programme updates, programme visit schedules, instructions for correct completion of forms, and other useful information to ensure harmonized implementation of the programme throughout the health system.

4.3 Potential difficulties

Experience in the 14 countries contributing to this report demonstrates that a number of key issues can threaten the success of LLIN distribution via routine health services. They include:

- Uneven funding, leading to gaps in funding to meet national needs for LLINs, logistics, and operations
- Slow disbursement of funds or complex administrative procedures that can delay/reduce funding for LLIN procurement, port clearance, transport, and other logistics and operations
- LLIN stock-outs at health facility, district, or even national levels
- Incorrect or incomplete reporting of results
- Decreased motivation of some health facility staff, who feel overburdened by an additional programme
- Lack of 'ownership' by regional, district, or other health staff, who view LLIN distribution as the activity of the NMCP or a particular donor, and not as part of an integrated health package
- Insufficient motivation on the part of the ANC or EPI implementing divisions to add additional tasks to their ongoing activities; a sense of competition between NMCP and other divisions
- Lack of clarity in budgeting to cover the additional costs of malaria services via existing channels.

Many of these difficulties relate to financing, procurement, and supply management, which are significant areas of focus in this guide. In addition to programme development and annual planning, discussed above, coordination mechanisms should also be used to mobilize a group of committed and engaged stakeholders who can provide support on a continuous basis to review progress, to find solutions when problems arise, and to plan for contingencies to avoid problems before they arise. Advocacy messaging from a range of partners can help build a sense of collaboration and joint purpose among key stakeholders, making some of these issues easier to resolve.

5. TRAINING

As shown by the list of duties for personnel involved, described in the Managing the Distribution section above, a number of specific skills are needed across a broad range of technical and operational skill areas. At the start of a new programme, it is important to train all staff and partners who will be involved in the programme. Given high turnover of staff in some health systems, it is also important to conduct refresher trainings for new staff and periodically to reinforce concepts with existing staff. Information collected during supervision visits is an important indicator for trainers of the areas that need reinforcing or clarification. Programme managers may also decide to conduct on-the-job training during or following supervision visits to reinforce key points and to correct problems early.

5.1 Developing training plans

As mentioned above, the Routine LLIN Delivery Technical Working Group can lead the development of training plans.

5.1.1 Integrated or stand-alone training

The TWG should first take into consideration existing MOH plans for training in malaria in pregnancy (MIP), malaria, MCH, or other broader areas and explore the option of integrating the routine LLIN delivery components into an already scheduled training. Advantages include:

- Lower training costs
- Reduced burden on the health system to organise and commit staff to multiple vertical trainings
- Reinforcement of the LLIN programme as part of the overall health system, rather than a malaria programme added onto health personnel's responsibilities, and
- Integration of messages in the health system.

In some cases the TWG may recommend to the MOH/NMCP or malaria task force that a stand-alone training take place. Reasons for this might include:

- At programme start-up highly specific information needs to be communicated to multiple actors within and outside the health system, which may be too much to include as part of another training.
- If timing of other planned trainings might delay programme start-up beyond acceptable limits for donors or MOH/NMCP priorities.

5.1.2 Identifying trainers

The TWG should request MOH/NMCP recommendations as to the available pool of central-level trainers and guidance regarding the choice of potential trainers from the MOH and partner organisations. Central-level trainers need to have sufficient time available to plan and conduct the training of trainers for regional, district, and peripheral personnel and to supervise the trainings of health facility and partner personnel. Regional- and district-level managers who will be overseeing the programme should be trained as trainers for the health facility and community levels.

5.1.3 Identifying who should be trained and how

All health facility and community-level personnel who will be involved with the programme should be trained. As the tasks for pharmacy/store managers, for example, may differ significantly from those of the nursing staff, which also differ significantly from the tasks and roles of community agents, the TWG may design training modules for each area of responsibility. Depending on resources available, it may be feasible to bring all personnel into one training and provide cross-training for all groups on each area. Or it may be decided to train only the nursing staff on all of the key elements and to task them with further cascade trainings of the other actors. If cascade training is used, then there should be a system to monitor whether the cascade is successfully implemented.

5.1.4 Training organization

The TWG can also make recommendations on operational considerations in planning and organising the training of health personnel, including:

- **Ratio of trainers to trainees and number of hours/days needed for training**: In **Uganda**, for example, the MOH/NMCP has planned for 2½ days to cover the MIP training materials at national and district levels and 3 days at the health sub-district levels. The ideal trainer-to-trainee ratio was determined to be 1:10 at the national level, 1:15 at the area level, and 1:7 at the health sub-district level[36].
- **Training dates and venues:** Once decisions have been made on the above elements, the TWG can also request guidance on available dates and venues and begin to develop chronograms to specify training preparation and roll-out activities that can be validated by the MOH/NMCP and/or malaria task force. It is important to discuss possible dates and venues at larger coordination meetings, preferably with RH, EPI, MCH, and other MOH divisions and partners present, to ensure coordination with other events and trainings planned.
- **Training agenda**: An outline of training sessions, including time allotted for each session, an indication of start and end times, and time for administrative procedures, lunches, and breaks is a basic prerequisite of any training.
- **Refresher trainings:** Over time, staff movement and turnover are likely to reduce the number of trained personnel who understand the routine LLIN distribution system. Eventually, this may reduce programme effectiveness. Managers of routine LLIN distribution programmes should assess turnover frequency and levels to determine how often refresher trainings are needed. These trainings bring together experienced staff trained previously with newer staff to review the programme elements necessary to continued quality in implementation.

5.2 Developing training materials

Trainers are often pulled from a number of MOH divisions and partner organisations. In preparing any training, it is important to develop documents to guide the training process, to reinforce consistency across the diverse pool of trainers, and to inform trainees of topics that will be covered.

[36] **Uganda.** Routine distribution of long-lasting insecticidal nets through ANC. Implementation guide for national planners. Table 7, Overview of the training cascade. Draft, May 2011.

5.2.1 Training manual

A written training manual helps to ensure that key messages and instructions regarding how the programme should be managed, supervised, monitored, and evaluated are communicated correctly, consistently, and according to MOH and NMCP policies and decisions. Routine LLIN distribution components may be covered in larger MIP or malaria training manuals. For example:

- In **Uganda** the Malaria in Pregnancy Refresher Training Guide includes a specific section focused on LLIN distribution as well as a section on IPTp and LLIN communication. Other sections on record-keeping and reporting, logistics and supply chain, and supportive supervision include information relevant to continuous LLIN distribution and other components of the programme.
- In **DRC** the Technical Guide for malaria prevention and case management training includes a specific section on LLINs, quantifying LLIN needs for routine ANC and EPI distribution, and recording LLIN information.

5.2.2 Training curricula

While the training manual helps to ensure a foundation of key information, a training curriculum reinforces the delivery of that information in a consistent and high-quality manner. Training modules can be developed incorporating each of the key elements from the training manual. Development of training modules helps training planners to think through each step of the training, to plan for materials needed, and to guide trainers on techniques for delivering information that reinforce comprehension and retention. A written module can be developed for each training session identified in the training agenda. **DRC**, for example, developed a set of modules for their training of household registration agents. Modules may contain the following information:

- Learning objectives
- Length of the full session, as well as estimated time needed for each component of the session (e.g. introduction, lecture, Q&A, practical exercise, discussion)
- Materials needed during the session (e.g. flip chart paper, handouts, markers)
- Preparation needed in advance (e.g. development of PowerPoint slides or handouts for group exercises or discussions).

Adult learning techniques: Some trainers may naturally be able to present material from the manual in an interesting manner, whereas others may choose only to read from the text or to deliver material in a way that may not reinforce comprehension and retention of key information. Introducing and reinforcing various adult learning techniques into the training modules will help to ensure that trainers are providing a variety of active-learning opportunities and checking trainees' level of understanding during each training session. **Uganda**'s MIP Refresher Training Guide includes a useful section summarizing adult learning and presenting various adult learning methods that can be used in designing training curricula.

5.2.3 Training materials

A number of tools and supporting materials are often needed to reinforce key information and ensure a comfortable and conducive environment for learning. These may include:

- Handouts or job aids to provide take-home messages that participants can keep for future reference
- Pre-prepared slides in PowerPoint or other software (if electricity and projectors will be reliably available) or posters written in advance on flip chart paper or a chalk board to display key information
- Samples of LLINs, reporting forms, ANC or health cards, and other materials that will be used to implement the programme
- Stationery and other materials: pens, notebooks, markers, chalk, projector, power cords and adaptors.

It is helpful for training organisers to prepare a **list of training materials,** including the number of each item needed per training. The **Uganda** MIP refresher training guide, for example, includes a list of training materials needed for each training course[37].

In order to ensure that the training will start on time and sessions will not be delayed for lack of materials, it is essential for trainers and support staff to verify that all training materials are available *before* the start of the training. Materials should be stored in a secure location near to or in the training venue to avoid delays on the morning of the training. In addition, trainers should check the adequacy of the training room, chairs, tables, working electricity, toilet facilities, and other infrastructure before the start of the training. Budget and resource availability may limit certain materials. Training organizers are encouraged to find low-cost alternatives appropriate to the context. For example, in **Cameroon**, the Governor in one region contacted the education authorities to make high school classrooms available after the end of the school year for training of regional and district health personnel.

5.2.4 Management tools

In addition to the technical content, a number of organisational issues need to be considered in planning and conducting training.

MOH training directives: Training mobilizes a large number of MOH staff and often requires significant resources. A letter or other document from the MOH that provides detailed instructions and directives will help organisers to clarify a number of implementation issues. The issues will vary depending on the country, donor, and implementing partner; they may include personnel issues, financial reporting requirements, timelines, and objectives, for example.

Instructions for trainers and training will help ensure that all materials are prepared and on hand to allow the training to begin on time. Such instruction may cover:

- Training materials that need to be purchased or procured from training organisers (e.g. notebooks, pens, handouts)
- Training venue confirmation and set-up of chairs, tables, projectors, flip chart paper, and other materials
- Confirmation of arrangements for lunch and tea breaks.

[37] Uganda MOH/NMCP, USAID/PMI Stop Malaria Project. Table 4: Materials Needed for Training Courses. In: Malaria in pregnancy refresher training guide. Draft, 2011.

A training administrative checklist will provide an itemized list of materials and items to verify in advance of and during the training. It will help with timely preparation in advance of the training and to guide administrative procedures and follow-up for report preparation and other administrative needs during the training. This checklist might cover:

- Templates and forms: To support accurate and complete reporting of training results, financial transactions, participants' lists, and other administrative information, it is helpful to prepare templates or other forms that trainers and support staff can fill in. Wide participation in reviewing the templates is helpful to ensure inclusion of all necessary information, including levels of signatures and reporting requirements.
- Registration table to record participants' contact information
- Per diem table and receipt forms to record signatures and key information required by donors and auditors
- A training report form to collect required information from each trainer and/or support person after the training.

5.3 Training supervision

Well-organised training requires significant investments of time and resources. Hundreds of people are mobilized to come together for a short period of time, and a number of learning objectives are set to be achieved. To ensure the quality of each training and the achievement of the training objectives, it is important to include a supervision component. The MOH should lead training supervision and, where appropriate, integrate partners involved in routine LLIN distribution in supporting it.

Tools to support supervision can include:

- A training supervision plan: For example, supervisors of the central- and district-level trainings can be drawn from the MOH or partner staff pools. These central-level trainers can then supervise their district counterparts during trainings at the health facility level. District trainers can supervise the trainings of community-level actors.
- A schedule for deployment of supervisors and debriefings
- A plan for communicating problems as they arise and mechanisms for responding to problems
- A supervision checklist with a pre-determined set of criteria to be assessed and report on
- A supervision response team to review reports and to troubleshoot problems as they arise.

5.4 Reminder of the role health facility personnel may play in supporting other continuous distribution channels: training

Most countries have involved health facility personnel heavily in the training for other continuous distribution channels. Community based distributions and school based distributions have all opted for this approach, even where health facilities were not part of the final design for the channel (e.g. the community based design in Madagascar). Health facility personnel have the important advantage of bringing skills and experience in the issues specific to malaria and its prevention which are important for

all personnel involved in a distribution to be aware of. Furthermore, in many countries health facility distribution of LLINs has been in place for some time, meaning health facility based personnel – and their supervisors within the health system – have practical experience and insights into the challenges and opportunities for continuous LLIN distribution. The involvement of these personnel in the training for other continuous distribution channels will help ensure these lessons are not lost.

6. LOGISTICS

The logistics components—effectively procuring, storing, transporting, and tracking LLINs from port of entry to beneficiaries—are key elements that can determine the success of a routine LLIN delivery programme. Logistics can be defined as "the science of planning, organising and managing activities that provide goods or services"[38]. As with any science, logistics provides a systematic approach to build and organise knowledge that helps planners plan the most effective way to store and deliver LLINs on a continuous basis to beneficiaries, given existing infrastructure, human, and material resources.

Logisticians are trained personnel with experience in ensuring effective management and movement of goods. If a logistician is available within the MOH or a partner agency supporting the MOH, or if resources are available to recruit a logistician to support the routine LLIN programme, this would be helpful, particularly in the planning phases and start-up of the programme. If a trained logistician is not available, the MOH/NMCP and partners in the routine LLIN TWG may consider choosing a programme support staff member who could be trained in logistics or recruiting a short-term logistics consultant who can help to build the programme during a time-limited TA assignment. For example, the logistician can support the development of LLIN transport and warehousing guidelines and development of tools and systems for planning and management of LLIN storage, transport, and tracking.

The logistics of ensuring continuous supply of LLINs to support continuous distribution can build, in part, on existing supply chains for medicines and other supplies to health facilities. Given the bulk of LLINs, additional planning will need to take place to accommodate the transport, warehousing, handling, and distribution of LLINs. It is also possible to consider contracting private-sector logistics handlers, which requires a competitive bidding process and close supervision by MOH authorities to ensure that specific, measurable objectives are established and met.

6.1 LLIN procurement and forecasting

While order volumes will be lower than for mass campaigns aimed at achieving Universal Coverage, LLINs for continuous distribution will be procured on an on-going basis for the life of the programme. It is critical, therefore, to establish sound practices from the outset that follow national and donor procedures, maximize LLIN quality and quantity, minimize costs, and ensure timely delivery.

An important consideration in procurement for continuous delivery channels, for example, is phasing LLIN arrivals. When the NMCP is quantifying LLIN needs, according to established targets and objectives, decisions will be made regarding numbers of LLINs needed at national, district, and health facility levels for given periods of time, including buffer stocks. The LLIN procurement and ordering process can work with manufacturers to plan periodic shipping allotments (e.g. quarterly, semi-annually, annually) to phase arrivals. This can help to reduce the overall need for warehousing space at each level. Adequate transport systems must be always available to ensure dispatching, however.

Additionally, coordinating LLIN procurement from multiple sources often presents the challenges of working with different suppliers, administrative systems, timelines, and delivery contracts. If it is possible for LLIN procurement to be pooled and managed by one agency, this could streamline LLIN

[38] http://www.logisticsworld.com/logistics.htm

arrivals into the country. However, this may not be feasible, depending on the administrative systems of each LLIN source agency and/or the capacity of an in-country agency or partner to manage procurement.

Numerous resources have been developed to guide and support best practices in procurement of goods and services, including LLINs. The AMP Toolkit, version 2.0, includes a chapter on procurement that provides an excellent overview and includes useful lists of resources, as excerpted below.

The objectives of good LLIN procurement are to[39]:

- Procure the right nets, in the right quantities, at the lowest possible purchase price, that meet the required specifications and evaluation criteria for the intended population
- Select reliable suppliers of quality products (WHOPES-recommended)
- Ensure fair market competition respecting public procurement principles
- Ensure ethical conduct in the procurement process
- Ensure timely delivery and notification
- Ensure the lowest possible total cost while maintaining quality.

Good practice in LLIN procurement ensures the following[40]:

- Procurement is in accord with donor policy; donors will have their own timelines;
- Regulations and procedures are followed;
- Procurement is consistent with reliable forecasts of quantities needed and timing;
- Procurement is in bulk to ensure economies of scale;
- The bidding process is competitive and transparent;
- Funding is available at the right time through good financial management;
- Pre- or post-shipment quality assurance and quality control (QA/QC) mechanisms are in place.

Estimating quantities of LLINs needed to achieve and maintain targeted coverage levels at national and peripheral levels will be an on-going process and will involve discussions and decisions regarding LLINs for routine delivery channels via health facilities, other continuous delivery mechanisms, and mass campaigns. Forecasting an adequate number of LLINs to meet beneficiaries' demand and procurement in accordance with these forecasts—for both LLIN quantities and timing—helps to assure continuous supply. Forecast amounts are used as the basis for competitive bids as well as for microplanning within the health system or via commercial distributors to plan specific stock allotments from the central to peripheral levels.

Continuous Long-lasting Insecticidal Net Distributions: a Guide to Concepts and Planning provides a step-by-step guide to support the analysis and choice of the optimal mix of strategies. Additionally, the NetCALC tool, provided as a companion to the guide, supports forecasting of LLIN needs for each of the

[39] AMP Toolkit, version 2.0, Chapter 4, draft downloaded from www.allianceformalariaprevention.org, August 15, 2011.

[40] Ibid.

distribution strategies chosen. NetCALC is an Excel-based tool, developed by the USAID NetWorks project. It is designed to help "planners calculate the number of LLINs they need to reach and maintain ownership targets, and then allows planners to try out different strategy mixes, selecting different continuous distribution mechanisms to determine which combination of approaches will deliver sufficient LLINs"[41].

Following decision-making at national level and procurement of LLIN allotments, planners will need to determine the geographic allocation of LLIN numbers based on available population and/or health facility data. Once programme implementation has been started, continued monitoring of LLIN stock levels at each facility will be necessary to determine uptake rates and ensure that new consignments are sent as LLIN stock levels fall below alert levels that are established to spark the re-supply process. (The monitoring and evaluation section below discusses this process and associated challenges in further detail.)

In **Kenya**, for example, a commodity gap analysis is conducted each year, which allows donors to allocate resources. Estimates are based on population figures, as established in Kenya's National Malaria Strategy (based on both epidemiology and the at-risk cohort). Population data come from census reports and yearly estimates from the Kenya National Bureau of Statistics. District Health Management Teams (DHMTs) are provided with proposed numbers for their feedback. Additionally, the DOMC builds in a 10% buffer stock and ensures that the central warehouse always has six months of stock available and that regional warehouses have 2–3 months of stock available[42,43].

In **Rwanda** community health workers (CHWs) assess the number of LLINs in every household (there are four CHWs per village). The data then are compiled at the health facility, sent to the district, and from the district to the NMCP. CHWs also monitor whether LLINs in households need replacement.

6.2 Warehousing and LLIN storage

6.2.1 LLIN characteristics

From a logistics point of view, LLINs are not a difficult commodity to handle. LLIN bales are generally well packed, they can be lifted without machines, and LLINs are not perishable.

One important disadvantage, however, is the large ***volume*** of LLIN bales[44]. Storing LLINs requires significant warehouse space. Also, moving LLINs back and forth among shipping containers, warehouses, and vehicles is time-consuming; labour costs for moving and organising LLIN bales need to be budgeted, as does the cost of supervision to ensure accurate counting of bales in movement (e.g. by having two pointers to count bale movements for each truckload which are checked against stocksheets and waybills) intended to detect any leakage during storage or transit. Private-sector LLIN handlers or

[41] RBM VCWG CD Work Stream, Continuous long-lasting insecticidal net distributions: a guide to concepts and planning. Draft, July 2011.

[42] Musuva A (PSI/Kenya). "Forecasting and distribution". Slide presentation.

[43] Kolaczinski K. Summary report, continuous LLIN distribution exchange and study visit, Kenya, June 12–18, 2011.

[44] Mole D, Daudrumez A (Alliance for Malaria Prevention). "Introduction to LLIN logistics". Presented to the Malaria Prevention LLIN Logistics Training, Nairobi, Kenya, September 7–10, 2009.

malaria partners with sufficient logistics experience may be engaged, through a competitive process, to handle LLIN warehousing and associated activities.

6.2.2 National and peripheral levels

Once LLINs have been cleared from customs, they will need to be transported to available storage facilities. To avoid unnecessary port charges for LLINs stored beyond customs clearance dates, it is important to plan in advance to ensure that warehouse space is available. Countries have found various solutions for storing LLINs once they clear customs.

National level

The volume of LLINs will be greatest at the national level, before the quantity of LLINs procured has been divided into regional or district-level shipments. Options for finding storage space include the following:

- **Central medical store:** In Rwanda, for example, the central medical store, the Medical Procurement and Distribution–Rwanda Biomedical Centre (RBC) (formerly CAMERWA) is the sole national procurement agency and medical store in charge of procuring all medical commodities and essential drugs in the country, including LLINs, as well as their storage and distribution to the district level. LLINs are stored at the national level in their warehouses; in cases of supplier or partner delay or change in LLIN delivery date, or when quantities arriving exceed available space in their warehouses, the agency rents extra space for a few months. Usually, before any LLINs arrival, the central medical store receives LLIN distribution plans developed by the NMCP according to programme plans and targets.
- **Partner organisations:** During campaign delivery of LLINs, countries have found partner agencies willing to provide temporary warehouse space. In the **CAR**, for example, the World Food Programme stored LLINs at the national level and, in collaboration with UNICEF, organised shipments to the prefecture and sub-prefecture levels. For routine delivery, it may be more complicated to ensure storage with the same partner for multiple arrivals over extended periods of time, even if the quantities are smaller, compared to storage during campaigns. This is an issue that can be explored further in national coordination meetings.
- **Rented warehouse space:** When other options are not available, countries should plan and budget to rent warehouse space. It is important to follow national standard procedures for procuring warehouse space and to establish clear contracts that ensure secure, clean, and well-managed warehouse space.
- **Procuring containers for LLIN storage and transport:** A lesson learnt from implementing mass campaign delivery of LLINs is that it is possible to order shipping containers that can be delivered all the way to the final distribution point. These containers can serve a double purpose: They provide secure storage for LLINs until the point at which it is necessary to open them, and they reduce the burden of moving LLINs from container to warehouse to vehicles. At national level an open area large enough to store the containers is still needed. Also, equipment for moving containers is needed to transfer containers (rather than LLIN bales) from port to storage area to vehicles. If roll on/off vehicles are not available and a crane is out of the question, this could be costly.

- **Direct delivery to the district level:** When procuring LLINs, it is also possible to request that the manufacturer or procurement agent deliver LLINs directly to regional or district levels, bypassing the need for central storage. In other cases partner organisations may be able to support in-country delivery to peripheral levels. In Mozambique, for example, PMI procures LLINs through John Snow, Inc (JSI), and the NMCP works with PSI to transport the LLINs from the port directly to PSI regional warehouses where they are stored. From there PSI meets provincial requirements by shipping to MOH provincial warehouses at the start of each quarter.

District-level warehouses need to have the capacity to store quarterly, semi-annual, or annual consignments of LLINs for many health facilities. Storage time may be short, but volumes may be high. The MOH warehouse space available may or may not be sufficient at the district level. If is not, then planners will need to look for warehouse space that can be rented or else look into one of the above options for storage alternative at the district level.

In **Rwanda**, for example, the NMCP worked to minimize the time that LLINs spent at the district level to avoid overburdening the district-level stores, which are needed for many other health products. To avoid stock-outs, an effective stock monitoring system, operated in collaboration with Medical Procurement and Distribution–RBC, uses delivery notes to track LLINs distributed from central to district level. Since 2006 the NMCP has developed LLIN distribution plans for all health centres that bypass the district level except for LLINs to be distributed at the hospital level.

In **Malawi**, as described in *Lessons in Brief N°2: Logistics, Logistics, Logistics*, Malawi's NMCP and PSI/Malawi "established a network of four warehouses: a main warehouse in the south of the country designed to receive all incoming nets, a central region warehouse, a northern region warehouse, and one depot warehouse located in the high demand areas along the shores of Lake Malawi. The main warehouse has a dedicated area that can receive and hold up to 600,000 baled LLINs…. The three regional warehouses can hold an additional 160,000 LLINs ready for delivery to clinics. This warehouse network allows the NMCP to hold four to six months of stock for continuous distribution purposes in-country at any time. When and if needed, the NMCP has easy access to additional temporary warehouse space. Each warehouse is fully insured and has a dedicated warehouse manager responsible for the security of the product"[45].

In **Uganda** the *Implementation Guide for National Planners* recommends that health sub-districts be able to store up to four months' supply of LLINs, as the next quarterly consignment for health facilities is received in the third month of the quarter preceding their delivery to health facilities.

Health facility level

To ensure a continuous supply of LLINs, it is important always to have sufficient stocks on hand at all levels and to order additional stocks when reserves fall below a threshold (see 6.6 Stock Management). With indirect distribution, commercial-sector distributors and vendors may handle LLIN stocks and manage their storage. With direct distribution and in some indirect distribution models (e.g. where vouchers are redeemed at health facilities, pharmacies, or stores), LLINs are stored at the health facility level. In many cases the space allotted for storage of medicines and other supplies will not be sufficient for LLINs, given the volumes of bales and number of bales needed. If so, health facilities find additional

[45] RBM VCWG CD Work Stream. Logistics, logistics, logistics. Lessons in Brief, Malawi's Keys to Success N° 2. Draft, July 2011.

space, perhaps in an unused office or other closed, locked room. In **DRC**, for example, the Ngaba health zone central reference hospital set aside a room specifically to warehouse LLINs.

6.2.3 Assessing warehouse capacity and quality

Once LLIN numbers are determined, it is possible to calculate space needs and set quality requirements at each level where LLINs will be stored. An assessment of available storage space and quality should then be conducted and compared with needs. Where gaps exist, the NMCP and partners can work with health facilities and district managers to identify alternative storage options.

In **Nigeria**, for example, SuNMaP and other RBM partners are working with JSI and the NMCP to revise the national logistics information management system for commodity management. As part of a SuNMaP pilot project to deliver LLINs via ANC services, JSI led an assessment of existing storage capacity. The assessment found that some state stores did not have sufficient capacity, with existing space dedicated to drug management rather than other health-related commodities. Given that storage capacity is less than what is needed even for the pilot project, partners realized that storage will be a significant issue that needs attention in preparation for taking the project to scale. As a result, SuNMaP has temporarily provided additional storage for the current stocks of LLINs, with a view to having the state include these facilities in operational plans for next year. RBM partners are working closely with the NMCP to develop a national plan that includes provisions for additional storage.

6.2.4 Storage capacity

LLIN bale volumes vary based on the type (polyester or polyethylene), the number of LLINs per bale, the manufacturer's process for compacting bales, and other factors. To determine warehousing space needed, it is necessary to collect information on the following[46]:

- LLIN volume in cubic metres
- Stacking height at the warehouse. LLINs can be stacked as high as 2–3m[47] without damage to the lower levels. However, a number of conditions should be considered when calculating maximum stacking height, including:
    - Ceiling height
    - Presence of fans or other obstructions
    - Facilities for stacking, and safety
    - Floor space needed to store LLIN bales, ensure walking areas for LLIN bale organisation, and movement of equipment if needed/available. LLIN bales may be stacked against a wall if there are no leaks.

A storage plan[48] is a useful tool in planning warehouse space needed for expected LLINs. This is a simple table, which can be made by hand or in Excel, with columns indicating the location, number of LLINs,

[46] This section adapts material from Uganda's Routine distribution of long-lasting insecticidal nets through ANC: Implementation guide for planners, Section Four.

[47] Mole D (Alliance for Malaria Prevention). Correspondence, September 4, 2011.

[48] Mole D, Daudrumez A (Alliance for Malaria Prevention). "How to use the storage plan". Presented to LLIN Logistics Training, Nairobi, Kenya, September 7–10, 2009.

number of bales, volume, storage area needed, and storage floor space needed. Table 6 in Uganda's Implementation Guide for National Planners provides a template for health sub-districts to record available storage capacity at the health facility level and to compare it with storage volume needed.

Storage conditions[49]

Other considerations when selecting storage facilities for LLINs include:

Location and accessibility: LLIN warehouses need to allow access to the vehicles that will transport LLINs in and out. Vehicle size will vary from large semi-sized 25–30 ton trucks to small 7–8 ton trucks.

Conditions: Warehouses must be in reasonably good condition:

- Clean: Even if already clean, they should be cleaned again before storing LLINs.
- No leaks
- No dirt floors
- No rats
- Not have been used to store toxic substances (e.g. fuel, engine oil, etc.)
- Secure: locking doors, secured windows
- Fire fighting equipment installed and serviceable.

In **Benin** the NMCP's partner Management Sciences for Health (MSH) conducted an overall assessment of storage capacity and quality across a number of health areas, including LLINs for malaria prevention. Recommendations from this assessment were used to inform a request for funding from the GFATM to improve storage quality.

In **Rwanda** the NMCP, with the support of partners such as PSI, the MOH Pharmacy Task Force, Medical Procurement and Distribution–RBC, and the Rwanda National Police, had been collecting data from health facilities on a number of projects and so had information on available storage capacity and quality. Where there were gaps, the NMCP worked with the health facilities to negotiate for alternative storage areas in empty offices or meeting rooms located either at the health facility or an administrative office in their catchment area (e.g. district office, sector office, schools, police station) with the support of local authorities. Medical Procurement and Distribution–RBC being the authorized central store, arrangements have been made to expand storage capacity, including renting of additional warehouses with the support of GFATM.

In **DRC** the GFATM principle recipient in charge of LLIN procurement, warehousing, and transport, Association de Santé Familiale/PSI, developed a warehouse evaluation checklist that provincial teams could use in each of the health districts to document the size and quality of warehouse space as well as contact information and the price from warehouse owners. This information was then entered into a table to evaluate and compare offers in the selection process.

[49] Ibid.

6.2.5 Accountability and measures to reduce leakage

LLINs represent a significant financial investment in a country's malaria control efforts. Governments and donor agencies that have contributed to the purchase of LLINs require strict controls and auditable accounts to confirm that each LLIN has reached an intended beneficiary. NMCPs and partners in charge of LLIN procurement, warehousing, and transport must ensure that standard operating procedures are followed in a number of areas.

The Routine LLIN Delivery TWG should consider developing specific protocols and operational guidelines regarding the management of net warehousing/storage and safety. These can be part of an overall Routine LLIN Delivery Operational Guide or in a stand-alone document for partners involved in storing LLINs.

In **Malawi**, for example, the transparency and accountability built into the continuous distribution partnership are credited with playing "an important part in the country's ability to successfully compete for GFATM financing and to create a sustainable culture of net use"[50]. Specific internal control measures include:

- Monthly physical stock counts
- A monthly reconciliation process, based on audited monthly physical stock counts, that ensures that distribution figures in the management information system match inventory records and that these figures reconcile fully with the physical stock count's month-end stock balance[51].

In **Rwanda** the NMCP has developed unique packaging for LLINs distributed via ANC, EPI, and boarding school programmes to clearly identify approved distribution channels. The packaging is distinctive to Rwanda, with messages in Kinyarwanda to discourage leakage across borders.

In **Ghana** the NMCP broadly disseminates information on the LLIN distribution programme and enlists the support of authorities at many levels to monitor adherence to programme principles.

In **Senegal** monthly physical inventories are recommended, and any instances of physical stock 5% less or more than recorded levels will be investigated and appropriate actions taken.

In **Kenya** the DOMC avoids leakage in a number of ways:

- The government coat of arms is visible on the packaging for all free LLINs, with a statement that the LLIN is for free delivery.
- Free LLINs are available in blue, whereas LLINs in the social marketing sector are green.
- Internal auditing is done by PSI, which checks stock and distribution records when their field officer visits to deliver new LLIN stocks to health facilities; the District Medical Officer of Health (DMOH) conducts regular supervision visits as well.
- The DHMT is responsible for following up on reports of leakage and disciplinary action is taken if any staff member is found to be involved in theft.

[50] RBM VCWG CD Work Stream. Accountable partnership. Lessons in Brief, Malawi's Keys to Success N° 1. Draft, June 2011.

[51] RBM VCWG CD Work Stream. Logistics, logistics, logistics. Lessons in Brief, Malawi's Keys to Success N° 2. Draft. July 2011.

- Health facilities have a security budget, and the MOH bought containers to provide sufficient LLIN storage space.
- A recognition award programme is in place for districts that includes LLIN distribution numbers and accountability performance[52].

In **Tanzania**, fraud in the National Voucher Scheme resulted in the closure of that program in 2014. ANC and EPI distribution re-commenced two years later after significant changes were made in the design. These changes included:

- Tracking the number of ITNs issued with the number of expected pregnant women and measles-eligible children. In the last 6 months of TNVS, the numbers of vouchers redeemed were almost double the number of eligible infants.
- Under the TNVS, data on the program rested with the implementer. In the new ANC-EPI program, district officials, medical stores and implementing partners can monitor the program. District officials will compile quarterly tracking reports. These reports will be jointly reviewed and discussed by health and administrative officials. Health facilities that are flagged will be scheduled for visits during routine supervision by district officials, the medical stores Logistics Management Unit, and by the implementing partner.
- Much of the time, health officials merely serve as technical advisors with little power to hire or fire or allocate resources. By involving the District Executive Directors, the Regional Administrative Secretary and the PMO-RALG, the new program is designed to ensure that the arms of government responsible for holding government staff accountable and responsible for resources are actively involved in monitoring fraud.

Accountability for LLINs at all levels is essential to program sustainability. Without proper accountability, program costs may be unnecessarily inflated and issues with fraud may result in loss of trust and financial support.

LLIN Insurance

To protect against theft, damage, fire, and other unforeseen adverse events, it is important to budget for insurance to cover LLINs while in maritime transit and from port of entry to beneficiary. Donor agencies are increasingly requiring insurance as part of grant management involving LLIN transport and warehousing. Manufacturers and procurement agents should include LLIN insurance in their quotations to cover maritime and overland travel to point of delivery. It may be possible to require insurance coverage in the tendering process for LLIN warehousing and transport, if coverage can be verified.

NMCPs and partners in charge of LLIN storage and transport should conduct a transparent process to procure insurance for the LLINs to the farthest point of shipment possible. National laws governing the contracting of insurance should be consulted, and an assessment should be made of insurance companies available at the national level as well as international reinsurance options. Requests for insurance quotations should specify coverage needed (e.g. fire, water damage, political violence, theft)

[52] Kolaczinski K. Summary report, continuous LLIN distribution exchange and study visit, Kenya, June 12–18, 2011.

and should include details about protective measures in place (e.g. fire extinguishers, security). Warehouse and transport contracts should also specify the liability of the warehouse owner/agent and transport companies if LLINs are lost, damaged, or destroyed.

Warehouse security

Storage facilities must have locking doors (or chains and padlocks) and consideration should be given to the possible need to have the facilities guarded day and night. If so, guards will need to be hired[53].

In **Rwanda** the central medical store is equipped with a security and fire alarm system. District and health facility warehouses are protected by local security teams and the defence forces, as well as community leaders, with the support of local authorities.

An official letter or verbal address by MOH authorities can be an important mechanism to encourage all actors involved in routine LLIN delivery to ensure secure storage, shipment, and delivery of LLINs to beneficiaries.

6.2.6 Warehouse management and inventory controls

A well-designed and properly implemented tracking system should act as a deterrent to LLIN leakage, since it will rapidly identify where leakage has happened and who is responsible. Tracking tools will show the names and signatures of people involved at each step of the supply chain where responsibility for the LLINs is passed from one entity to another. Standard warehouse procedures must be used, with a warehouse inventory management system[54].

Experienced warehouse managers should be responsible for each warehouse and should use stock sheets and waybills to ensure that the inventory system contains up-to-date information[55].

Warehouse management tools include:

- **Stock sheets**[56] are a combination of a standard warehouse journal or ledger and a warehouse stock card. They serve two purposes: (1) to chronologically record quantities of LLINs received into and issued out of the warehouse; and (2) to keep the balance sheet of LLINs in the warehouse.
- **Waybills**[57] are issued by the sender and indicate the nature and quantity of commodities being shipped. Warehouse managers must issue a separate waybill for each destination (drop-off point). Thus, each vehicle departing with consignments will carry as many waybills as there are drop-off points.

Transport and warehouse contracts should clearly indicate that payment for services will not be provided until all signed waybills have been received and verified. A person or a team should be

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[53] AMP Toolkit, version 2.0, Chapter 5, Logistics, draft version downloaded fromhttp://allianceformalariaprevention.com/, August 23, 2011.

[54] Ibid.

[55] Ibid.

[56] Mole D, Daudrumez A (Alliance for Malaria Prevention). “How to use and fill out the stock sheet”. Presented to LLIN Logistics Training, Nairobi, Kenya, September 7–10, 2009.

[57] Ibid.

assigned to verify all waybills and stock cards before authorizing payments, and periodic controls should be conducted to audit accuracy. Detailed instructions for completing a sample stock sheet and waybill are presented in the Logistics Toolkit from AMP.

In **Uganda** standard HMIS stock cards are used in warehouses, and waybills have been developed to track LLIN consignments at and between national, health sub–district, and health facility levels. Figure 1 in the *Implementation Guide for National Planners* provides a flow chart detailing which document is used at each level.

In **DRC** the Eglise du Christ au Congo (ECC)/Sanru developed a stock card (fiche de stock) and waybill (bordereau de livraison) for pharmacy managers. Stock cards are available for each malaria commodity, and a separate card is kept for LLINs received and dispatched.

Inventory controls

Periodic checks of physical inventory against stock sheets and waybills should be conducted by programme staff or, if possible, an independent audit team. At the start of a programme, inventories may be conducted more frequently in order to catch problems early and put in place additional control measures if needed and/or to inform the design of training and support to warehouse managers and other personnel in charge of handling LLINs.

The Routine LLIN Delivery Guidelines can include the following in the operational guidelines for warehousing:

- Clear TORs for each person responsible for handling LLINs and descriptions of procedures for handing over responsibility for LLINs, accounting for LLIN movements, and documenting any discrepancies at the point of possible loss.
- Measures to be taken should actual LLIN numbers not correspond with reported information. To prevent continued reporting discrepancies or actual losses, it is essential for guidelines to establish who is responsible when for each LLIN and to specify professional consequences if any losses occur.
- A minimum threshold of LLIN stock, at which point warehouse managers should be instructed to re-order or requisition additional stock.

In **Uganda** an HMIS Stock Book form is filled in monthly, using information from the stock cards and a physical count of available stocks.

In **DRC** supervision visits by ECC/Sanru and each of its sub-recipients verify stock cards and waybills and provide support to pharmacy managers if improvements are needed. Sub-recipients also conduct periodic checks of monthly reports from health facilities against physical stock levels in the warehouse. To reinforce pharmacy managers' capacity, the NMCP is planning a training of pharmacy managers in Year 2 of the grant.

In one country a partner noted that to date they have not had reports of LLINs lost; in the past there were some cases of medicines lost, however. In that case the partner worked closely with local health authorities, who conducted an investigation. The authority in charge asked the responsible party to reimburse the cost of the lost medicine and requested a temporary suspension. The partner noted the

importance of close collaboration of implementing partners with the MOH, as the activities are taking place in MOH facilities and are under MOH management.

In **Rwanda** district health officers for each health centre conduct monthly stock control exercises. The central NMCP team and the Provincial Director of Health conduct quarterly checks of the district warehouses. A letter and directives from the NMCP regarding LLIN stock management were sent to each health facility to reinforce LLIN stock management principles and to clarify consequences in the case of lost LLINs. The NMCP has developed LLIN stock cards as well as a beneficiary register, which includes information from the beneficiaries' national ID cards and will allow for tracking LLIN distribution. In the HMIS LLIN stock numbers are collected every month along with numbers distributed to each target group. This information also helps to catch discrepancies in LLIN inventorying.

6.3 LLIN transport

Ensuring timely and cost-effective transport of LLIN from central to health facility levels presents a number of financial and operational challenges. In some cases, as in **Senegal**, the national and regional pharmacies (Centrale d'Achat) will manage procurement, warehousing, and transport of LLINs following existing systems for supplying essential medicines. In other cases, because of the volume of LLINs, it may not be possible to include them in periodic shipments of medicines and other medical supplies, and therefore LLINs may not necessarily benefit from existing MOH and partner mechanisms to ensure continuous supplies of health products in facilities.

As for warehousing, the Routine LLIN Delivery TWG should consider developing specific protocols and operational guidelines regarding LLIN transport and covering the management of net distribution vehicles and safety. These can be part of an overall Routine LLIN Delivery Operational Guide or a stand-alone document for partners involved in transporting LLINs.

6.3.1 Transport planning

LLIN transport costs can easily become inflated. Planners must be aware of and closely follow the details involved in calculating distances, vehicle capacity, and fuel needs, as well as salary and/or per diem requirements for transporters, conveyors, and LLIN handlers. A 'hands off' approach to LLIN transport could result in unnecessary expenditures.

Borrowing from lessons learnt in LLIN mass campaign logistics, it is helpful to develop a **Preliminary Transport Plan**[58]—a table that calculates key information, such as weight, volume, and cost, for LLIN transport to each delivery point. The first step is to establish a **Logistics Parameters Table** to provide the basic information needed to calculate transport requirements and costs.

Logistics Parameters Table

Information in the table may include the following:

- Number of LLINs per bale

[58] Mole D, Daudrumez A (Alliance for Malaria Prevention). "How to use the preliminary transport plan". Presented to LLIN Logistics Training, Nairobi, Kenya, September 7–10, 2009.

- Weight of one bale
- Volume of one bale
- Dimensions of one bale
- Number of bales per 20-foot or 40-foot container
- Dimensions of available transport vehicles
- Actual loading capacity of vehicles.

Preliminary Transport Plan

Information included for each delivery point may include:

- Name of delivery point
- Number of LLINs needed
- Number of bales
- Weight
- Number of small, medium, and large transport vehicles (vehicles used to transport LLINs can be placed in three categories—small: 7–8 tons; medium: 10–15 tons; and large (semi size}: 25–30 tons[59])
- Distance (km) each vehicle will travel
- Fuel costs per km
- Other costs per load (vehicle rental costs; transporter, conveyor, and LLIN handler costs; vehicle maintenance or 'wear and tear' fees)
- Total fuel and other costs per load
- Total transport costs per delivery point
- Estimated time to deliver the consignment.

The LLIN logistician and/or the Routine LLIN TWG should develop the Logistics Parameters Table and Preliminary Transport Plan and present them to the larger Malaria Task Force. Ideally, the detailed tables, including formulas and hypotheses, should be shared in advance of the meeting to allow partners to formulate questions regarding distance, fuel cost, rental, and other costs before the transport plan is finished. This meeting can serve to review and correct assumptions and to allow malaria or other health partners to position available resources if, for example, they can contribute vehicles, fuel, or other resources.

[59] Mole D, Daudrumez A (Alliance for Malaria Prevention). "Introduction to LLIN logistics". Presented to the Malaria Prevention LLIN Logistics Training, Nairobi, Kenya, September 7–10, 2009.

6.3.2 Identifying and supervising transport

LLIN transport responsibilities may be handled directly by the MOH/NMCP or subcontracted to partner or logistics organisations that manage the contracting and supervision of transporters, conveyors, and LLIN handlers.

Waybills[60]

As described above, a separate waybill must be prepared for each consignment of LLINs to each delivery point. When the shipment is received, the consignee must verify that the quantity received is the same as the quantity indicated on the waybill before signing and must keep a copy for his/her records. Any discrepancy must be documented and reported. Waybills need to provide multiple colour-coded copies that are each kept by the sender (from point of origin), the consignee, and the transporter, with a final completed copy returned to the sender.

As with warehousing, it is essential to put in place control measures such as those described above to ensure transparency of procedures and accountability for every LLIN received from a donor or government.

In **Malawi**, for example, the NMCP and PSI have put in place a number of controls. As described in the *Lessons in Brief N°2: Logistics, Logistics, Logistics*, the control measures in place during transport of LLINs include:

- Nets are loaded onto a vehicle in the presence of both the warehouse clerk and the vehicle driver. The vehicle driver and the clerk must sign off to show mutual agreement on the quantity loaded, as well as the transfer of responsibility for the nets from the clerk to the driver.
- When nets are loaded in delivery vehicles, which act as large 'mobile warehouses', in addition to the mutual sign-off by the warehouse clerk and the driver, a serialized security seal is placed on the cargo door of the vehicle once it has been closed and locked. This seal must then be verified as intact/unbroken when the vehicle arrives at its destination.
- The LLIN distribution teams serving remote clinics are allowed to request no more than 1,000 LLINs at a time for loading into their 4X4 delivery vehicles. Teams are required to fully reconcile each requisition of 1,000 nets before they can make a new requisition.
- At the health facility additional controls are in place. For example, LLIN delivery teams are required to physically verify the remaining level of stock and ensure that it matches the stock bin card maintained by the nursing staff. Also, distribution teams use serialized delivery notes to record each delivery. Nurses must also record the transaction with serialized goods received notes. Both the PSI distribution agent and the nurse sign the forms. Deliveries are also recorded on the clinic's stock bin cards, with the entry for the incoming stock signed by both parties.
- When distributing the nets to beneficiaries, nurses are required to document the issuance of the net in a serialized LLIN client register booklet. For each net issued, nurses record the name and physical address of the recipient. Nurses then indicate on the patient's health passport that he or she has received a net.

[60] Mole D, Daudrumez A (Alliance for Malaria Prevention). "How to use and fill out the waybill". Presented to LLIN Logistics Training, Nairobi, Kenya, September 7–10, 2009.

6.3.3 Identifying vehicles, transporters

In developing a transport plan for LLINs for routine delivery, it is important first to assess the availability of vehicles from the MOH/NMCP or malaria or other health partners. Where gaps exist, it will be necessary to identify, through a competitive process, private transporters available.

MOH, NMCP, or partner vehicles

Using available MOH/NMCP or partner vehicles raises a number of issues:

Availability: An important factor in the success of routine LLIN delivery is ensuring a continuous supply (see below). Therefore, vehicles used to transport LLINs need to be available at key points throughout the year. If vehicles to be used for LLIN delivery are also used for other purposes, it is important to develop a clearly documented planning calendar to reserve use of the vehicles during expected times of need. In case of unexpected LLIN stock-outs, it will also be necessary to have vehicles available to re-stock LLINs quickly.

Repairs: Vehicles may need repairs. If resources are available to cover repair and maintenance costs, this may be cheaper than contracting transporters or renting vehicles. Routine vehicle maintenance should also be budgeted. If vehicles break down during transport of LLINs, it is important also to have a contingency plan to replace the vehicle and ensure timely arrival of LLINs.

Drivers: If drivers are also available from the organisation supplying the vehicle, then it will not be necessary to recruit or manage the associated human resource issues (e.g. contracting, hiring, managing payroll, firing, annual reviews). The driver's salary and/or per diem may need to be covered by programme resources and should be included in the budgeting. If drivers are not available, it will be necessary to undertake a recruitment, hiring, and contract process and to determine which organisation will manage these aspects as well as the on-going personnel tasks.

Conveyors: Conveyors are the people who load and unload the LLINs, provide LLIN security during transit, and complete the waybills and other paperwork between storage and drop-off points. In most cases conveyors need to be recruited, hired (usually on a temporary basis), and managed by the organisations engaged to ensure LLIN transport.

Insurance: As with drivers, vehicle insurance may already be provided by the organisation supplying the vehicles, or it may need to be procured separately. It is important to review the insurance policy, ensuring that it is up-to-date and that all necessary paperwork is available in the vehicle in case of controls on the road. It may be necessary to discuss the specifics of LLIN transport with the insurance company to make sure they are aware of the nature and value of the cargo to be transported. It may be possible to insure loss or damage to the LLINs while in transit with the vehicle insurance company.

Fuel: It is most likely that fuel costs for LLIN transport will not be covered by the organisation offering use of its vehicles, so fuel costs should be included in the LLIN transport budget.

Contracting: This may not be necessary or possible in the case of donated use of vehicles. Still, developing some kind of memorandum of understanding or contract to clarify in writing the above and other issues is advisable. It may help mitigate confusion and misunderstandings that could interfere with programme effectiveness over time.

User fees: It is generally understood that, if MOH, NMCP, or partner vehicles are available to transport LLINs, the use of these vehicles will not be charged to the programme budget. If user fees are to be charged to the routine LLIN programme, then the vehicles should be subject to the transparent procurement process, and vehicle condition, cost, and other considerations affecting use of the vehicles should be factored into the procurement process before the programme commits to using these vehicles.

Paperwork: Even though the MOH, NMCP, or recognized malaria partners may be supplying use of their vehicles, it is likely that additional paperwork specific to the transport of LLINs will be needed. Additional paperwork may include an LLIN transport contract, waybill, and letters authorizing LLIN transport, if needed to allow passage on the roads.

Contracting vehicles for LLIN delivery

It is unlikely that a sufficient number of vehicles will be available from the MOH or partner organisations to cover all LLIN transport needs. When renting vehicles or contracting with transport companies to deliver LLINs, the following issues should be considered:

Procurement process: Rental of vehicles, payment of drivers, insurance, and fuel represent important parts of LLIN logistic and overall routine LLIN delivery programme budgets. Given the large sums of money involved, it is important to ensure that recognized standard procurement procedures are followed to identify and choose vehicles or transport companies.

Physical evaluation of fleet: Experience from mass campaign delivery of LLINs has underscored the importance of conducting a physical evaluation of individual vehicles and the fleet of vehicles proposed by individuals or transport companies. It is important to determine if vehicles proposed by transporters in the bidding process are owned by the transporter or if the transporter expects to contract for the vehicles separately. If the transporter expects to subcontract vehicles, it is advisable to conduct a physical evaluation of those vehicles and to include details in the contract (license plate numbers, make and model of the vehicle, etc.), identifying exactly which vehicles will be available and under what conditions.

Establishing transport contracts: It is essential to establish clear, actionable contracts that protect the routine LLIN programme and ensure timely delivery of LLIN consignments. The transport company may provide its own contract, which should be carefully reviewed and edited to ensure that the timely transport of consignments, meeting MOH standards, is ensured. Important issues to clarify in transport contracts include:

- Who will be responsible for paying for vehicle maintenance?
- Who employs the driver, the conveyor, and the LLIN handlers?
- Who is responsible for ensuring that drivers' licenses are up-to-date and that drivers have maintained clean driving records?
- Who pays the per diem of the driver, conveyer, and LLIN handler and when?
- What are the TORs of each person involved in transport?
- What is the paperwork (e.g. waybills, goods received notes) that needs to be completed before payment is made?

- Which costs will be paid in advance, and what percentage of the overall contract, to allow the transporter to operate?
- Who pays for fuel and when?
- If the vehicle breaks down, who is responsible for finding a replacement vehicle to ensure timely arrival of the LLINs?
- Who insures the vehicle, and are the LLINs covered for loss or damage under the transport insurance policy?
- What is the action plan in case of a road accident or emergency?
- Who is responsible for paying fees assessed during transit?
- Who pays for telephone calls to receive updates from the transport team and troubleshoot problems as they arise?

Paperwork: As mentioned above, it is essential to determine the paperwork necessary to allow vehicles carrying LLINs to pass freely on all roads.

6.3.4 Covering transport costs

Interviews yielded two approaches to covering the cost of transporting LLINs to health facilities.

Option 1: The Routine LLIN programme pays

With this option the donor agency and/or the NMCP or other implementing partner contracted to oversee LLIN transport covers all costs of LLIN transport from port of entry to health facility.

Advantages of this option are that LLIN delivery is ensured to the point of delivery to the beneficiaries. Partners who have opted for this approach report fewer stock-outs and more control over the continuous availability of LLINs.

The primary disadvantage of this option is that covering all LLIN transport costs is not sustainable without donor or government support. However, when these partners are in charge of the entire LLIN transport chain, the MOH structures are less involved in ensuring the functioning of the programme and do not feel responsible or take ownership.

Option 2: Health facilities pay

With this option the routine LLIN programme often provides for LLIN transport to a certain peripheral point (e.g. regional, district). Health facilities are then expected to organise and cover the costs of further LLIN transport. In some cases community groups provide support to transport the LLINs.

Advantages of this option are that health facilities and communities can become more fully engaged in the routine LLIN delivery programme and undertake an approach that will be more sustainable in the medium- to long-term. This reduces costs to the programme and increases buy-in from communities and health facilities.

The primary disadvantage is that health facilities and/or communities may not have sufficient means to transport LLINs. Because of the volume of LLINs, it is often not possible to include sufficient quantities in

shipments with other medicines or medical supplies. During busy harvest seasons, for example, community members may not be available to provide LLIN transport. This can significantly delay the re-supply of LLINs to health facilities, particularly those that are hardest to reach.

6.3.5 Country examples

In **Mozambique** PSI has recruited logistics assistants who work with the provincial health offices to create, manage, and supervise distribution systems. PSI also supplies fuel for MOH vehicles to transport LLINs from central warehouses to the provinces and sometimes to the district level.

In **Nigeria** SuNMaP managed the first tranche of LLIN distribution through a subcontract with Chan Medipharm, an ecumenical drug supply organisation. A state support team has been monitoring experiences and lessons learnt to assess how the transport went and how to plan for the next consignments. Based on ANC attendance records for the previous year, SunMap provided LLIN stocks to state central storage sites to cover needs for one year.

In **Mali** routinely distributed LLIN are carried mainly by 40-ton trailer transports. In the North 10-ton, 10-wheel transports are used.

In **Rwanda** NMCP vehicles, PSI programme vehicles, and mainly the Rwanda National Police were used for most LLIN distribution, amounting to more than 5.6 million LLINs, with only occasional need to rent vehicles. The Rwanda National Police have been involved in LLIN transportation since 2009. The NMCP covered the costs of transport to health facilities.

In **Uganda** donors will help to transport LLINs to the sub-district level, possibly by arranging with manufacturers at the procurement stage for direct delivery. Discussions are underway with the MOH to ensure transportation from the sub-district to health facilities.

In **Kenya** the DOMC works with PSI to handle delivery of LLINs to health facilities. In addition to logistics PSI also supports malaria communication activities and is an active member of the Vector Control TWG to support planning, coordination, training, supervision, and monitoring of routine LLIN distribution activities.

In **Senegal** the MOH/NMCP has a signed an agreement with the national supply pharmacy (Pharmacie Nationale d'Approvisionnement, or PNA) regarding management of malaria products, paying a fee for services provided. When the volume of LLINs is large, the PNA may choose to contract additional private transporters to deliver LLINs to districts. From the district level LLINs follow the same system as other essential medicines. Districts place orders with the regional supply pharmacy, health facilities place orders with the district, and community 'health huts' (cases de santé) can receive LLINs when health facility personnel come to the health huts to supervise or for other reasons, or in some cases by placing an order.

In **Malawi** the NMCP and PSI use a fleet of six dedicated Land Cruisers and three bulk delivery transports to reach each of the more than 600 participating public health facilities across Malawi's 28 districts once or twice per month. According to *Lessons in Brief N°2. Logistics, Logistics, Logistics*, each Land Cruiser has a capacity of 1,000 LLINs and is used to visit the more remote clinics. The three bulk delivery transports, with loading capacities ranging from 7,000 to 12,000 LLINs each, are assigned to regions to deliver to high-volume facilities and those on tarmac roads, and to act as mobile warehouses for the smaller 4x4 Land Cruisers. In addition to being nimble and responsive, Malawi's continuous distribution

fleet configuration was developed to minimize risk of commodity theft or loss. As mentioned, distribution teams are able to request and load no more than 1,000 nets at a time, which they must fully reconcile before requisitioning any additional nets. These teams can then reload their vehicles either at a PSI regional warehouse or from one of the mobile warehouses at a coordinated meeting point in the area. All of Malawi's LLIN delivery vehicles are equipped with vehicle tracking and monitoring devices to help ensure efficient and secure fleet operations.

In **DRC** ECC/Sanru orders LLIN stocks to cover a full year and sends LLIN consignments to each health zone in its programme area on a semi-annual basis. ECC/Sanru covers all LLIN transport costs to the health facility level. Sanru provides an LLIN quantity key showing the agreed-to numbers that each health facility is to receive. All health facilities in the health zone receive consignments, as long as they send in completed programme reports on time.

Association de Santé Familiale (ASF)/PSI had a two-tiered system:

For urban health zones, health centres sent a requisition to the health zone. Once the requisition was approved, a health centre staff member came to ASF to obtain the LLINs. The facility covered costs of transport to the health facility. In urban zones distances and transport costs were generally not a limiting factor for health facilities.

For rural health zones, once the requisition request was approved, ASF contracted with a local transporter to take the LLINs to the rural health zone and paid for transport from the health zone to the health facilities. Transport costs were established with health zones at the start of the programme, based on distance.

MSH/DRC has a contract with regional central tendering agencies, the Centrales de Distribution Régional (CDR), for the distribution of all health products. The CDRs distribute to the health zone level, and the health zones ensure delivery to health centres and health posts. MSH maintains a separate security stock to manage stock-outs or other incidental needs. To support the delivery of LLINs from health zones to health facilities, MSH provincial teams work closely with the health zone. In some cases health facility personnel take LLINs with them after finishing the monthly monitoring meeting at the health zone offices. In other cases communities send bicyclists or other transport to fetch LLINs. Provincial MSH teams also transport LLINs during their field and supervision missions.

6.4 Ensuring continuous supply

Fundamental to the success of routine LLIN distribution is that **LLINs are consistently available to every qualifying beneficiary**. Interviews with key informants yielded similar responses in a number of countries, indicating that once an LLIN distribution programme has been established via ANC, EPI, and/or other routine services, community members are soon aware of the programme and strongly encourage potential beneficiaries to attend services and receive their LLINs or vouchers.

When LLIN distribution is interrupted due to stock-outs or inconsistent management of the programme, communities may grow disillusioned and no longer promote the programme. Potential beneficiaries who do not receive LLINs become frustrated and may lose confidence in the system. They also may demand to receive their LLIN at a later date, which increases the administrative burden on health facility

staff, who may need to identify which women have and have not received LLINs and then fill gaps from stock-out periods when new consignments of LLINs arrive.

6.5 Sufficient supply

When the national quantification of LLINs needed for routine delivery is done, it is essential to cover the full extent of LLINs needed to meet the beneficiaries' demand. As one interviewee noted, "It is crucial that there be sufficient quantities of LLINs at national and provincial levels. If there are sufficient quantities of LLINs for routine, and a partner supporting the transport needs, then there should not be stock-outs".

Existing financing may be insufficient to cover all of the need, which presents a funding and LLIN gap. Countries should then include covering these gaps in upcoming funding proposals. One key informant noted that, although LLINs from other sources were not sufficient to cover needs for routine distribution, only LLINs for campaigns were included in the country's GFATM application, which continued to limit the success of their programme, as health facilities experienced frequent stock-outs.

6.5.1 National advocacy and decision-making

In the event of an identified gap, in-country partners should be mobilized to understand the extent of the gap and review possible solutions, both to manage the limited number of LLIN available and to advocate actions to fill the gap. While not ideal, NMCPs may temporarily need to limit beneficiary groups, geographical areas, or make other difficult choices regarding their routine LLIN distribution programme until sufficient funds can be mobilized to cover all groups consistently.

6.5.2 International advocacy

Experience in mass campaigns shows that it is important to alert international partners to existing funding gaps. During weekly AMP calls, for example, one of the issues often discussed is countries' LLIN gaps and how to fill them.

International partners have begun to mobilize advocacy efforts with donors to include sufficient funds for continuous distribution channels as well as for mass campaigns. In addition to the GFATM, World Bank, USAID/PMI, DfID, and other global donors that provide funding, other institutional donors have had much success in mobilizing funds from private individuals, churches, and other community organisations in their home countries. To date, most of those funds have been mobilized to buy LLINs to fill gaps or to cover operational costs to transport LLINs.

6.6 Stock management procedures

6.6.1 Periodic resupply and security stocks

Most routine LLIN distribution programmes have established a system of periodic resupply of LLINs on a quarterly, semi-annual, or annual basis. Many programmes also keep a security stock of LLINs at the national or regional/district level that can be used to resupply health facilities that have stock-outs between planned resupply consignments. In planning the periodicity of consignments and levels of security stock, routine LLIN distribution managers need to consider available storage area at each level and transport availability.

6.6.2 Monitoring stock levels

To avoid stock-outs, it is essential to keep accurate track of LLIN stock levels at national, district, and health facility levels. Thus, managers of routine LLIN programmes need monthly or quarterly updates from LLIN stock inventories and ANC, EPI, or other registries indicating LLINs distributed by every health facility. A data manager to help input reported information into a spreadsheet, a database, or other manageable MIS may be needed.

Stock management is a challenge across many areas of health product management, including pharmaceuticals. For example, because of the relatively short shelf-life of artemisinin-based combination therapies (ACT), it is essential to maintain efficient and accurate systems that ensure product availability and minimize expired stocks. A promising pilot study using short message service (SMS) technology, called 'SMS for Life', took place in three rural districts of Tanzania in 2009–2010. Via mobile phones, SMS, and electronic mapping technology, ACT stock counts were sent from health facilities to district management teams each week. Evaluation showed that stock data were provided in 95% of cases, with a 7.5% error rate but almost all errors corrected via re-messaging[61].

In **DRC**, for example, ECC/DOM collects a monthly supplemental HMIS report and stock level report from each health facility at monthly monitoring meetings at the health zone level. The reports include the number of LLINs distributed and remaining stock levels. Numbers are based on information recorded in the ANC and EPI registries, which include a column for LLIN distribution, and the stock sheets. This information is then compiled into a database and analyzed. The health zones also establish an LLIN distribution report and calculate a monthly average rate of consumption of LLINs, which helps them to manage stock allocations and plan consignments.

In **Kenya** the DOMC has established a 'no stock-out' objective, and their primary logistics implementing partner, PSI, achieves this by generous buffer stock allowances and frequent field visits to each health facility. PSI/Kenya stores LLINs at its central warehouse and contracts the delivery service company DHL to deliver LLINs to regional warehouses. PSI rents nine lorries from DHL to move LLINs from regional warehouses to health facilities, ensuring that each health facility is visited at least once per quarter. Each vehicle carries a DHL and a PSI staff person, and a GPS tracking system enables managers to monitor truck usage[62].

In **Uganda** Table 3 (Example of a quarterly consignment quantification once the distribution mechanism is running) of the *Implementation Guide for Planners* provides an example of a quarterly planning process that takes into account existing LLINs in each health facility and expected ANC attendance in the next quarter. This information guides continual reassessment of LLIN needs in each health facility.

In **Senegal** a minimum of one month's stock of LLINs has been set as the alert level, signalling the need for health facilities, districts, and regional pharmacies to re-order before stocks fall too low. At the national level, the alert level is set at six to eight months of stock on hand. Additional security stocks will be kept on hand at regional and district levels in order to respond rapidly to stock-outs.

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[61] Barrington J, Wereko-Brobby O, Ward P, Mwafongo W, Kungulwe S. SMS for Life: a pilot project to improve anti-malarial drug supply management in rural Tanzania using standard technology. Malaria Journal, 9:298. 2010.

[62] Kolaczinski K. Summary report, continuous LLIN distribution exchange and study visit, June 12–18, 2011.

In **Malawi** the NMCP established a maximum stock level quantity for participating clinics based on the clinic's population catchment area. LLIN distribution teams visits clinic frequently and verify distribution records and remaining stock levels. "Based on this verification, they are empowered to 'top up' the clinic's stock level to this pre-set maximum. Setting maximum supply levels for each clinic also allows the NMCP to work with local clinic staff to identify a secure storage location for the agreed number of nets"[63].

A key informant in one country noted that their system does not have a forecasting mechanism enabling the provincial health system to reorder before any critical point is reached and has no centrally coordinated distribution system. Thus, LLIN deliveries are dependent on individual requests, which often arrive only after LLINs are already out of stock.

6.6.3 Threshold for ordering new nets

To assist health facility staff, in particular LLIN storage managers, the Routine LLIN Delivery TWG should recommend a minimum LLIN stock threshold for each health facility, district, and national level warehouse. These thresholds need to take into consideration (1) available storage area at each level, (2) periodicity of national-level consignments, and (3) time needed to requisition and transport LLINs to replenish stocks.

6.6.4 Procedures for requisitioning LLIN stocks and handling stock-outs

The operational guide(s) for routine LLIN distribution should provide clear instructions for health personnel at each level regarding:

- Who is responsible for signalling when LLIN stocks fall below recommended thresholds
- Who is responsible for reporting low LLIN stock levels to the next higher level
- Who is responsible for responding to reports of low LLIN stock levels
- The procedures to follow in the case of a low LLIN stock alert

Routine LLIN distribution managers should consider developing a form, to be filled out by LLIN stock managers, that clearly indicates how to signal that LLIN stocks are low and how to requisition LLIN resupply. Where paper forms may move too slowly, managers can put in place a system enabling LLIN stock managers to call or text information to a central or district focal point that can manage LLIN resupply. In this case a budget may need to be set aside to reimburse managers for the costs of using the telephone or other forms of communication (e.g. health facility radios, e-mail). A key informant in one country noted that, once LLINs are delivered to health facilities, there is no clear procedure in place to order additional stock or to alert the district or central level of stock-outs. "This is an important problem. At times, the health centre calls the NMCP to try to find a solution, but there is not a formal system in place to resupply LLINs".

In 2014, the NetWorks project carried out an assessment of health facility distribution in four countries: Kenya, Malawi, Rwanda, and Mali. Results showed that the system for re-order and re-supply of LLINs

[63] RBM VCWG CD Work Stream. Logistics, logistics, logistics. Lessons in Brief, Malawi's Keys to Success N° 2. Draft, July 2011.

varies across countries.[64] In **Kenya**, the sub-county (sub-national) level places orders for nets from the national level on behalf of facilities, based on the sub-county quantification and distribution plan. In **Mali**, facilities place requests with the district based on consumption and anticipated need, and districts in turn place orders with the national level. The national level then "corrects/edits" the orders received based on availability and national quantifications of supplies to the district. The district then adjusts the facility requests and supplies the facility with available LLINs. In both **Malawi** and **Rwanda** the national level plans the distribution and supplies facilities based on the national distribution plan.

In all four countries there was an interest in developing and/or strengthening a system whereby facilities can place orders for more LLINs, based on stock levels and need, along with any other commodity[65]. In **Kenya**, the LLIN system is slowly transitioning to one in which lower levels submit orders based on need and has been rolled out and implemented down to the sub-county (sub-national level) so far. In **Malawi** and **Mali**, at the national level there is a current distrust in the facilities' ability to consistently and accurately order supplies for restock, mostly because this is a task that has not previously been the responsibility of health facilities.

The systems for addressing stock-outs across were less clearly defined and developed than the systems for routine distribution[66]. In **Rwanda**, stock cards are used to track stock-outs. When a facility experiences a stock-out, the facility reports to the district where the stock-out is entered in the electronic information system so that it can be addressed by the national level. In **Malawi**, most facilities reported waiting for more supplies of stocks rather than actively seeking re-stock during stock-outs. Many facilities in Malawi use an informal stock sharing system with facilities nearby when there were stock-outs of LLINs. In **Kenya**, most facilities reported having stock-outs of no more than one week before re-supply, with a maximum wait of three to four weeks. Facilities would call the PS-Kenya and sub-national malaria focal person directly to report stock-outs. In **Mali**, facilities reported generally only experiencing stock outs when there was a stock-out at the district level as well.

Each of the four countries visited by the assessment team resupplied LLINs at different frequencies[67]. In **Rwanda**, facilities receive a supply of LLINs once per year. **Mali** provides stock to facilities twice per year. Health facilities in **Malawi** are restocked quarterly, while **Kenya** supplies facilities on a monthly basis.

6.7 Considerations in Year One

Country experiences have shown that in the first year of the programme there may be out-of–the-ordinary demands on the system. Therefore, it is recommended that programme managers review initial

[64] Theiss-Nyland, K. LLIN continuous distribution through antenatal care and immunization services: A four-country rapid assessment report. NetWorks Project. August 2014.

[65] Ibid.

[66] Ibid.

[67] Ibid.

quantifications with caution in planning for subsequent years, as the first year of the programme may show higher or lower than average demand.

In cases where the beneficiary population includes all children under five seen in health facilities, the entire target population (e.g. pregnant women and children under ages 1, 2, 3, 4, and 5) will be eligible for an LLIN at the programme's debut. Microquantification will have to anticipate this 'backlog' of demand. The novelty of the programme can also inflate demand. Assuming the majority of the target population is reached in Year 1, in subsequent years only pregnant women and newborns will be eligible, and LLIN demand will stabilize[68].

In **Kenya**, for example, the challenge was met by delivering a bit more than double the expected 'pull' of LLINs in the first quarter and then replenishing the quantity of LLINs delivered in the first quarter in the second quarter shipment. It was assumed that the stock delivered in the second quarter would be enough to cover the facility for two quarters (the second and third). Once LLIN demand stabilized over the third and fourth quarters, supply was simply topped up to meet that number plus a 30% buffer stock. The buffer is used if LLIN demand is greater than average and also to cover the facility if the distribution vehicle is delayed by as much as one month[69].

In **Nigeria**, in contrast, SuNMaP has noted that uptake has been below expectations, and so they are working with the state support team to conduct assessments of the underlying reasons (e.g. are health workers following protocols? Do beneficiaries already have campaign LLINs? Are there possible seasonal variations? Is health facility accessibility an issue?).

6.8 Country examples

In **DRC** UNICEF keeps LLINs at provincial warehouses and then dispatches to districts as needed/requested. UNICEF responds to requests/needs by working with the provincial health office and health districts, who review monthly reports coming from health centre supervisors. A portion on the monthly report records commodity needs. There is also a requisition form. Also, the UNICEF staff conducts supervision visits with the provincial health authorities and collects information/needs in supervision reports. Health zones also have action plans in which they can express their needs.

ECC/Sanru orders LLINs for one year, based on the quantification of need done by the NMCP, and provides its sub-recipients with a 6-month supply to cover needs estimated for each zone of intervention. If additional stocks are needed, the sub-recipient can contact ECC/Sanru to request more.

In **Nigeria** SuNMaP provided LLIN stocks to cover needs for one year to state central storage sites, based on ANC attendance records for the previous year. Health facilities are using the national M&E tools recently revised to record LLIN distributions and stock levels.

In **Rwanda,** with the support of the NMCP, districts hold microplanning meetings with health centres to improve quantification for LLIN needs assessment. Then the NMCP organises meetings with all districts in order to get data for each district hospital catchment area according to target group and type of LLINs (conical or rectangular). Once the quantification is completed with all districts, the NMCP develops the

[68] AMP Toolkit, version 2.0, *Sustaining Gains* chapter. Draft from Elena Olivi, PSI.

[69] Ibid.

national quantification and sends it to each health facility and district. A one-day workshop is then organised to readjust the numbers that should be procured, taking into account health facility consumption data, quantities ordered, and the stock on hand. This is done on average twice per year.

6.9 Reminder of the role health facility personnel may play in supporting other continuous distribution channels: logistics

Countries have given health facilities and their personnel important logistics roles in several other continuous distributions channels. This is seen in particularly in community-based and school based distributions where health facilities have filled the following logistics roles in different settings:

Community based distribution

- Providing insights and data to help at micro planning stages.
- Redemption points – holding the LLINs feeding to the community based system, and being the point where community beneficiaries come to redeem coupons for LLINs.
- Distribution hubs – acting to supply lower level community based LLIN redemption points.
- Providing support in the review of appropriate storage points at community level.
- Providing training and support supervision to community distribution agents on good stock management and record keeping.
- Holding and resupplying materials such as forms and coupons.

School based distribution

- Providing insights and data to help at micro planning stages.
- Distribution hubs – acting to supply schools within their catchment area prior to the distribution.
- Providing support in the review of appropriate storage facilities in schools.
- Providing training and support supervision on good stock management and record keeping.
- Reverse logistics – retrieving surplus LLINs after school based distributions have been completed, with these nets usually being then used to complement the stocks for health facility based distribution.

7. COMMUNICATION

7.1 Objectives and channels

There are three principle communication activities[70] to ensure the success of routine LLIN distribution, each with its own objective:

Advocacy activities seek to influence public-policy and resource allocation decisions; they are carried out on multiple levels:

International: As mentioned above, the malaria task force or Routine LLIN Distribution TWG may choose to engage partners and counterparts at an international level, inform them of programme progress, request financial or technical support, or organise exchange visits with other countries.

National: At a national level, it is important to ensure support for routine LLIN distribution from key political and health leaders. National stakeholders can be called on to promote the programme during public appearances or meetings, to resolve coordination issues among the diverse group of stakeholders involved, to provide leadership in closing financial or other gaps, and to ensure that implementers at every level are aware that their actions are closely monitored, their successes will be noticed, and potential cases of fraud or mismanagement will be dealt with.

Peripheral: At regional, district, and local levels, it is important to ensure buy-in from administrative and health authorities. While national-level advocacy should help in this regard, authorities at all levels should be informed of the programme and given opportunities to provide feedback.

Social mobilization activities in a routine LLIN distribution programme aim to ensure that all eligible beneficiaries are aware of and are participating in the programme. These activities can include both mass media and interpersonal communication activities (see below). Messages can reinforce beneficiaries' knowledge of how, when, and where to obtain an LLIN.

Behaviour change communication activities in a routine LLIN distribution programme should reinforce key messages regarding malaria prevention, the effectiveness of LLINs, biological risk factors, the importance of and 'how-to' tips for hanging the LLIN correctly and promptly, using LLINs every night, and giving priority to vulnerable groups where LLINs are not available in sufficient numbers to cover the whole household.

A number of **channels** are used to deliver the key messages of these three types of communication activities:

Mass media channels include television, radio, certain print media (e.g. billboards, newspapers), and newer technology (e.g. SMS, Internet). Choice of media channels should take into consideration access of the population to the medium—radio versus TV, for example–and literacy levels. Many print materials can emphasize photos and graphics rather than text, especially for areas where literacy levels are low.

[70] Adapted from the AMP Toolkit version 2.0. Draft downloaded from www.allianceformalariaprevention.com, June 13, 2011.

Interpersonal communication (IPC) in routine LLIN distribution programmes transmits key messages directly from a person/group to beneficiaries.

During the ANC, EPI, or other health consultation, health personnel, trained community agents, or trained partner organisation staff can conduct educational sessions that communicate key messages, answer questions and concerns, dispel myths, and encourage LLIN use and care directly with beneficiaries.

In communities key messages may be directed at larger gatherings of community members (e.g. village meetings, market days) or to beneficiaries and their families during house-to-house visits or other occasions (e.g. if a beneficiary visits a community health worker for sick child care).

To support the delivery of key messages during IPC, print or other media may be used. For example, health personnel may use a job aid or flip chart book to illustrate key points and to remind themselves of key messages to deliver. Community or partner agents may use mobile video units to display short films or may develop a song or drama to convey messages.

Training is essential to ensuring consistency and effectiveness of messaging during IPC. IPC agents can be trained in malaria basics, key messages to be delivered, responding to frequently asked questions, effective communication techniques, diverse communication methods, and adult-learning techniques (e.g. storytelling, 'teach back').

7.2 Communication planning

As with programme planning, communication activities to support routine LLIN distribution need to be coordinated to ensure that all partners and implementers are conveying harmonized messages and are pooling resources effectively to maximize impact. The malaria task force may have a communication working group, or the Routine LLIN Distribution TWG may form one. The group mandated to coordinate communication should oversee and make recommendations to the larger malaria task force in the following areas:

Developing a communication plan: This may be a stand-alone plan for routine LLIN distribution but more likely will be an overall communication plan for malaria prevention or, more broadly, malaria control. The process should be led by the NMCP and/or the MOH communication division, with support from communication focal points from implementing and donor partners. A number of trainings have been conducted to support communication planning for mass LLIN distribution campaigns, and the same principles apply to routine distribution[71]. A key aspect of developing the communication plan is to identify target audiences, key messages, communication channels, and tools/materials to be developed and disseminated. A spreadsheet or other table or matrix is a useful format for capturing details by target/beneficiary group and/or region. **Cameroun**, for example, included a table of activities, time

[71] AMP Toolkit, version 2.0, Chapter 6, provides a list of key sections that can be included in a communication plan. (In place of "campaign" in the AMP list, you can substitute "programme" to make the list more generally applicable.)

periods, target groups, geographical coverage, frequency of dissemination, and other information in the synthesis of their communication plan for their 2011 LLIN campaign[72].

Coordinated messaging: The MOH/NMCP should take the lead in developing the key messages that all partners and implementers of routine LLIN distribution should communicate.

Partners can support the MOH/NMCP to pre-test the messages to ensure that beneficiaries across the country, across socio-economic groups, and in both urban and rural areas understand and appreciate the message (see pre-testing, below).

The communication chapter of the AMP Toolkit (version 2.0) includes *General Guidelines for Effective Messaging,* which offers a number of useful recommendations applicable to routine LLIN distribution as well as to campaign distribution[73].

Managing logos: Donors and implementing partners often want to include their logos or verbal references to their organisations in communication materials. This aspect of developing communication materials, while seemingly small, can take significant time and possibly delay completion of communication materials. In some cases there are national guidelines governing use of logos. If not, it is important for the programme coordinating institution (the MOH, NMCP, or routine distribution group) to develop a policy that governs use of logos. If donors' and partners' logos are to be used, partners should supply print-ready materials to the communication coordination group and should avoid using multiple logos for the same partner (e.g. partner organisation logo, project name logo, regional branch logo, etc.). Whatever the decision at the country level, all partners need to follow the decisions made for all communication materials produced.

Coordinating resources: In the past, implementing partners often developed similar communication materials (e.g. posters, flip chart books) and then produced and disseminate them in their programmatic zone of intervention. Not only does this increase the risk of diffusing messages that are not harmonized, but it also increases costs and reduces efficiency. During the communication planning process, the NMCP can express overall needs for the country, which partners can contribute to producing. If one partner produces a poster and another partner produces a radio spot, which all partners can use and disseminate in their intervention zones, then beneficiaries throughout the country benefit from this coordinated use of resources. Where multiple partners are present in the same geographic zone and at the national level, careful planning needs to take place to ensure that messages, channels, and activities do not needlessly overlap.

In **Benin**, for example, the NMCP has established a National Malaria Communication Working Group (Groupe Technique de Travail en Communication), with support from PMI, which receives routine technical assistance from a number of PMI implementing partners. The group is responsible for reviewing the technical content of all IEC/BCC messages pertaining to malaria. It held its first meeting in December 2008 and is scheduled to meet on a quarterly basis. Members of the group include the NMCP, USAID/PMI, Research Triangle Institute, University Research Co./Projet Intégré de Santé Familiale

[72] National Malaria Control Programme (NMCP), Cameroun. Synthèse du Plan de Communication pour la Campagne Nationale de Distribution Gratuite des MILDA en couverture universelle., 2011

[73] AMP Toolkit, version 2.0, Chapter 6. Draft downloaded from www.allianceformalariaprevention.com, June 13, 2011.

(URC/PISAF), Africare, Catholic Relief Services, PSI, the World Bank, WHO, UNICEF, and the Peace Corps[74].

7.3 Production and dissemination of materials

Once communication planning has determined which communication materials are needed to support communication objectives and convey the key messages, the process of developing, pre-testing, and disseminating materials and tools can begin. Both private creative agencies and partner organisations can provide technical support and/or develop materials for pre-testing and review. In some countries the number of agencies or partners may be limited or non-existent. In many of these cases, the decision is made to outsource production to a neighbouring country or possibly to train someone in country in basic design or production skills.

Key steps in the process to develop communication materials include:

Developing a creative brief: A creative brief provides an outline of the intended audience, the communication objective, key message(s), and other features of a communication campaign. "Its main purpose is to serve as set of instructions for a creative agency or artist who will produce the material. A creative brief is both a product and a process. The process is a step-by-step approach to deciding what the message will be. The product is a short document (two to four pages) that captures these decisions"[75,76].

Choosing and contracting an agency: As with any procurement process, the choice of a designer, photographer, or creative agency needs to follow standard procurement procedures. Steps involved in this process include the following:

- Publish a tender or request for bids, including a request for sample drafts of artwork, storyboards, scripts, or other material to demonstrate creative ideas, references from other customers, CVs of staff who will support your project, and sample finished artwork from other recent projects;
- Develop a list of criteria to judge bids/proposals;
- Supply the creative brief to interested and/or eligible parties;
- Respond to questions from any interested/eligible candidates in such a way that all candidates have access to the question(s) and response(s);
- Review and score the bids/proposals;
- Meet with all or a selected sub-set of bidders to Inform all candidates of the final decision;
- Develop and sign a contract with the winning agency. It is important to ensure that the contract includes sufficient language to ensure that the supplier will provide a good-quality finished

[74] President's Malaria Initiative (PMI). Malaria operational plan, Benin, FY2011.

[75] Ibid.

[76] The creative brief process and product are presented in further detail in the AMP Toolkit (Version 2.0), Chapter 6 and a creative brief template in Annex 6d.

product within the available budget and on the schedule needed. Some contractual issues to consider include:

- Details regarding billing procedures and timelines to supply and revise ideas based on feedback from pre-test results and stakeholder reviews
- Deadlines and penalties for late submissions
- If materials or props are needed (e.g. to depict a setting in a poster photo), whose responsibility is it to furnish and pay for the materials?
- Who is responsible for hiring spokespersons or voice talent for radio spots?
- If actors or models are used (e.g. to show a typical family using an LLIN), ensure that each adult signs a waiver or authorization allowing future use of their image. For children under 18, ensure that both parents give written permission.

Before the release of communication materials, it is essential to carefully review and edit the materials with two key audiences, beneficiaries and stakeholders:

Pre-testing materials with beneficiaries: Print materials, verbal messages, images on a television screen can be interpreted in many ways. An image of an arrow, for example, that to urban, educated populations indicates directionality, may appear as an umbrella or a spear to someone in a rural area who has not been to school. The pre-testing process helps to ensure that the intended audiences understand and appreciate key messages, pictures, and other visual or verbal cues. Pre-testing is usually a qualitative process. It can be outsourced to research agencies or conducted by partners with experience in this function[77].

Reviewing and validating materials with key stakeholders: Communication focal points will want to review draft materials with malaria technical experts and routine LLIN distribution stakeholders. This will help to ensure both the accuracy in the materials and the buy-in of partners who may be funding or using the materials. The MOH/NMCP should provide sign-off before any communication material is considered final. An official process to request approval may already be established; otherwise, information can be requested regarding the best approach to reviewing and validating communication materials.

Production of materials: Final creative materials often need further production. For example, a radio spot produced in French may need to be translated into regional languages and recorded on compact discs (CDs). A poster or flyer will need to be printed in multiple copies. Print houses and other suppliers will need to be chosen and contracted, and production should be carefully followed to ensure quality and accuracy. Contracts should include a specifications list or table to detail every aspect of production including paper quality, paper finish, colours used (e.g. Pantone), and sound/image quality. Careful and in-person follow-up of production will ensure that:

- The final and correct copy of materials has been submitted for production (e.g. several hundred copies of a poster with a typographical error is an expensive mistake).
- Samples sent before final production are the same as final materials submitted.

[77] AMP Toolkit, version 2.0, Appendix 6c, provides further details on pre-testing.

- Printed copies reflect the true colours, paper quality, or paper finish requested. The presence of a communication technician can ensure that the final product is as requested.
- Edited versions of radio or TV materials have not added or omitted any material since final approval.

Dissemination of materials: In addition to careful planning and follow-up of production, communication planning should carefully describe who will receive each material, in what quantities, and how each should be used (e.g. displayed in the health facility, distributed to beneficiaries, broadcast in the intended areas, etc.). Airing of radio and TV advertisements or shows requires additional planning and contracting with national or regional broadcasting stations. Community radio stations are often a more economical alternative to national stations, and many have high listenership among the target audience.

7.4 Country examples

In **DRC** the NMCP developed a flip chart book to be used in health facilities and by community agents to promote malaria prevention, prompt case management, IPT, and other key malaria messages. The NMCP makes the artwork available, and partners pay for reproducing and disseminating the flip chart book in their intervention zones.

ASF/PSI supported the MOH/NMCP to develop *Maman Séréna* branded materials to promote the highly subsidized LLINs available in health facilities. These materials included a small flyer to be given to beneficiaries, a large sticker to highlight the availability of LLINs in the health facility, and a colourful poster to hang in health facilities and high-traffic public areas (e.g. markets) to promote use of the LLINs and to announce their availability in health facilities.

In **Rwanda** the MOH/NMCP developed several strategies to promote BCC/IEC messages to improve LLIN use and avoid leakage of LLINs to different channels. Community outreach programmes featured dramas presented by local NGOs. Documentaries and videos (from eight NGOs) are shown to clients in ANC and EPI clinics (as many health centres in Rwanda have a TV and a VCR or DVD player) as well as in the market or other public places in the evening. The spots were also used by mobile video units during public education sessions in markets, schools, and other high-traffic areas.

To ensure the uptake of health services, the NMCP and partners conducted community education sessions designed to motivate beneficiaries to seek services. NGOs including PSI, URUNANA Development Programme, Rwanda Development Organisation, and others had a team of eight educator/mobilisers, each of whom had the objective to visit two health centres per day. Health education IPC sessions were conducted in the mornings at the health facilities, and home visits, in the afternoons. Community health workers were trained by the NMCP, with the support of the community health desk and local NGOs, to raise awareness in the community of the use of LLINs and of quarterly household visits for LLIN monitoring.

In **Kenya** PSI used qualitative methods to improve understanding of the audience's motivations for and barriers to LLIN use. This included the development of two archetypal target audience members, 'Majani' and 'Jacinta', and an in-depth analysis of 'a day in the life' of each, which led to the development of communication and behavioural objectives and activities to meet those objectives.

In **Senegal** community agents are encouraged to visit each household in their zone at least once per trimester as part of an integrated home health visit to discuss a range of topics related to malaria control, including the correct and systematic use of LLINs. To support this initiative, a guide has been prepared to establish a general calendar of visits, give instructions on preparing for the home visits, list questions to ask during the visit, and describe the roles and responsibilities of each of the actors involved in the initiative.

7.5 Evaluating the impact of communication activities

While evaluation is discussed more generally below, it is worth noting the importance of evaluating communication activities along with other elements of a routine LLIN distribution programme. Donors and other partners are increasingly looking for evidence of the effectiveness of budgets allocated to communication activities and for a better understanding of which activities provide more impact in which settings. By measuring and comparing behaviour and exposure to messages, by channel, it may be possible to determine which messages and/or channels were most effective at encouraging or changing behaviours[78].

7.6 Reminder of the role health facilitiy personnel may play in supporting other continuous distribution channels: communication

Health facility personnel often have good access to a large proportion of the population through the range of activities, both facility based and outreach. This access should be leveraged to support all LLIN distribution activities. Health facility staff should be requested to communicate information about other sources of LLINs to their clients on an on-going basis. More specific communication messages and activities may be requested of health facility staff at certain times, such as when school based distributions are being undertaken.

[78] AMP, Toolkit Version 2.0, Chapter 6.

8. SUPERVISION

8.1 Coordination

As with training, supervision may be organised jointly among central and peripheral levels of the NMCP, RH, EPI, MCH, or other MOH divisions involved, with the help and support of implementing partners, donor agencies, or even other visitors whom supervisors can accompany on travel to facilities.

It is essential to emphasize that routine LLIN distribution takes place within MOH structures. Therefore, supervision falls within the MOH mandate. While partner agencies can support the process and participate in joint supervision with their MOH or NMCP colleagues, the lead supervisory person or team should be from the MOH.

Integrated supervision allows regional- or district-level MOH staff to conduct periodic visits across a number of health areas. Advantages to this approach include reductions in the burden on health facility staff by avoiding multiple single-issue visits. This approach can also reduce supervision costs, as partners can often share vehicles and other resources. When multiple issues are addressed during supervision, however, it is possible for certain issues to take priority, and the large number of topics to be covered may limit how thoroughly issues specific to the routine LLIN distribution programme can be addressed.

The MOH and NMCP likely have procedures in place regarding who can supervise whom, the process for supervision and reporting, and planning periodic supervision visits. Therefore, the malaria task force and/or the Routine LLIN Distribution TWG should develop an approach to planning both joint and specific supervision visits, building on available information regarding programme implementation and working with other stakeholders at the central level and with provincial, regional, and district stakeholders to plan and coordinate supervision visits with other planned visits.

Where the programme has been running smoothly and problems have not been raised, it is likely that joint supervision visits will suffice. Where problems have been flagged in advance (e.g. verbal or written reports, inconsistencies noted in reports, higher or lower than expected outputs), it may be necessary to organise a supervision visit specifically to address those issues.

Also, if refresher training is needed to review or reinforce information, or to provide updated programme information, a specific visit may be needed, or additional time following joint supervision should be scheduled.

Where community agents or local associations play an important role in the routine LLIN distribution programme, supervisors may also want to plan additional time to review their activities and reports and provide feedback. Ideally, community agents are linked with and supervised by health personnel, who can provide feedback on their activities and point out any problems.

8.2 Tools

A **supervision checklist** will help supervisors to approach the supervision visit systematically and to review point by point each of the areas under review. The checklist can take the form of a simple set of questions or a table providing space to note observations, actions taken, and recommendations. For

example, **Senegal** has developed supervision checklists for LLIN transport, logistics, distribution to beneficiaries, financial management, and record-keeping that rate specific aspects of each area on a scale of 0 to 3 points and provide space for comments.

A **supervision report template** can provide a summary of key points covered in the supervision checklist and include space for the supervisor to summarize the local strengths and weaknesses of the routine LLIN Distribution programme, actions taken by the supervisor during the visit to correct weaknesses, and recommendations for any additional follow-up needed. The report template should provide areas for the supervisor to note his/her name, contact information, date of the visit, names and titles of staff visited, and a signature. Signatures of district-, regional-, or central-level health personnel may also be included to confirm that the supervision visit took place.

8.3 Follow-up

Supervision reports are often completed and filed, but procedures to review and follow up on problems or recommendations are often not clear. The operational guideline(s) for the routine LLIN distribution programme should include a clear process for analysing supervision reports, following up on recommendations, documenting corrective actions taken during and after the supervision visit, and the results.

A key constraint to NMCP supervision of the routine LLIN distribution programme in health facilities is that the technical NMCP division generally does not have line authority over health personnel at any level. Additionally, regional or district NMCPs often do not have operating budgets that enable them to conduct supervision visits. Advice or corrective action therefore depends on the relationship that the NMCP has established with authorities at each level of the health system.

A key informant for one country noted that, although directives were in place, it was possible for reports to not be submitted or to be falsified, and there was no system to address concerns about missing or falsified reports or about performance problems.

It is important that the Malaria Task Force and/or Routine LLIN Distribution TWG conduct information and advocacy visits with the Minister of Health, Director of Health Services, and other key MOH authorities at central and peripheral levels to discuss the programme and to clarify roles and responsibilities in managing and overseeing the programme, to allocate resources needed, and to establish protocols in case of problems.

8.4 Country examples

In **Mozambique** PSI is planning to support each provincial health department with a supervision budget based on population size and other criteria. Funds can be used for fuel, cars, and per diems and will allow the department to conduct supervision visits to the field.

In **Benin** PSI and the NMCP supervise LLIN delivery to health facilities. There is an agent in charge of LLINs at the NMCP who can intervene in case of any problems with logistics. If any problems do occur, PSI and the health zone representative document it and send the report to the NMCP.

In **DRC** implementing partners can make monitoring visits to health facilities; supervision is led by the MOH, however. ECC/DOM works closely with provincial health authorities to organise, and sometimes to finance, joint supervision visits led by the MOH. They have developed a monitoring plan whereby provincial focal points visit each health zone every month or quarter. For each visit there are TOR, a specific checklist, and a report. ANC and EPI registries are verified, and LLIN stocks and stock sheets are physically checked.

8.5 Reminder of the role health facility personnel may play in supporting other continuous distribution channels: supervision

Ministry of Health personnel at central, regional and district levels, as well as health facility based personnel, have an important role to play in supporting the supervision of a range of other continuous distribution channels. School and community based distribution in particular will benefit from the experience and skill of health facility based personnel and staff at all levels of the health system will likely be called upon to support these systems.

This support may take the form of support supervision visits during the preparation for and implementation of school based distribution, and on-going support supervision of community based distribution agents. The design of community based distribution channels varies but many pilots of benefited from linking the community based distribution closely to the health facility network, with health facility staff playing a critical role in supervising the community agents as well as in the areas of training, supply and resupplying of materials and acting as redemption points for LLINs.

9. MONITORING AND EVALUATION

9.1 Collecting information and reporting on programme progress

Collection of accurate information on indicators of programme progress is a key element of managing and improving programme quality. Most often, it is also required by donor agencies.

Challenges: Interviewees generally felt that the distribution of the LLIN itself, and even the notation of the distribution on the health cards and in the registries, was not difficult. However, recording, synthesis, analysis, and reporting of information to the HMIS and, in parallel, the NMCP and/or partner organisations is causing problems in many countries and across many organisations and partners.

One partner interviewed, for example, was in the process of sending supervisors to numerous health facilities in their project area to provide support in completing and sending reports that were due to the donor agency.

Another partner interviewed stated that they had to cancel a sub-contract with another agency at the start of the project because that agency was not able to deliver reports on time.

National HMIS

Advantages: HMIS are established in many countries to capture essential health information. Establishing a reporting mechanism to capture routine LLIN delivery information as one part of the national HMIS reinforces the principle of one national M&E system. It also reduces the reporting burden on health facility staff members, who have one standard set of forms to complete, and it reinforces MOH supervision and reporting lines.

Challenges: In a number of cases, interviewees reported difficulties in obtaining complete and accurate information for all health facilities via the national HMIS.

Parallel reporting structures: Several countries have put in place parallel reporting structures, reporting directly to the NMCP as well as through the HMIS. This approach may increase the speed, completeness, and/or accuracy of data received by malaria programme management. However, multiple parallel reporting mechanisms weigh down health facility staff with more reporting requirements and do not support the principles of one national M&E mechanism. This approach may also increase the perception among health facility staff that reporting on LLIN distribution is an added burden rather than an integral part of their work.

The way forward: NMCPs and their partners will need to work closely with MOH leadership to review the potential of the HMIS to collect routine data on LLIN delivery via health services. This review requires a national-level dialogue, led by the MOH and including the NMCP, RH, EPI, MCH, and other divisions involved in overall planning as well as the MOH division in charge of the HMIS. During these discussions, it is important to review the level of functionality of the current system, options for including routine LLIN distribution information in the existing HMIS, and the possibility of establishing temporary parallel structures while working to strengthen the national HMIS. Donor agencies and other partners should be present to inform and learn from the discussion; the final decision should be made by the MOH, however.

Important questions to be answered during this analysis are:

- What is the current level of reporting from health facilities to the national level?
- What is the level of accuracy of reporting received?
- What is the delay in receiving information from the HMIS that can be supplied to programme managers, donors, and other partners?
- Are reporting lines clear in determining who receives malaria information and who is able to supervise the quality, completeness, accuracy, and promptness of malaria information?
- Is it possible to adapt standard HMIS forms? Who will pay for reproduction and dissemination of the new forms? What schedule is feasible for implement new forms?
- Are activities underway to strengthen the HMIS? Who are the partners involved in this process? What are their recommendations?

9.2 Country examples

In **Uganda** the MOH/NMCP, adapted current HMIS forms to include LLIN distribution via health facilities (ANC distribution). ANC distribution data can thus be collated and compared at the health facility, district, and national levels. Instructions on using the forms to record and summarise data are included in the MIP training manual and implementation guides at all levels. Useful elements include:

- A table listing the HMIS form names and numbers, the person responsible for completing them, periodicity, and the action(s) to be taken (Table 9, Section 8, LLINs Through ANC: Implementation Guide for National Planners);
- Further details of each HMIS form and directions for its completion, as well as a practical exercise in record-keeping and reporting (Session 8, MIP Refresher Training Guide);
- A table listing monitoring indicators for LLIN distribution through ANC and data sources (Table 11, Section 11, LLINs Through ANC: Implementation Guide for National Planners).

In **DRC** the MOH/NMCP, with support from ECC/Sanru, has developed a two-page form that supplements the HMIS. This is a quarterly report that summarises information collected in monthly reports received at the health zone level.

In **Kenya** numbers on LLINs distributed to beneficiaries are collected in two ways: (1) In the HMIS system, numbers of LLINs distributed through ANC or EPI are compiled from the ANC and EPI registers and reported on the monthly HMIS forms. (2) The 'Net pack register' is an LLIN-specific register in the health facilities, where staff record all LLINs given out, separately from the ANC and EPI registers. The data from these 'Net pack' registers are collected by PSI at the same time that they deliver LLINs. Whilst HMIS data quality continues to improve, it is the latter, parallel, dataset that is currently used to inform planning and stock flow.

In **Senegal**, in addition to completing data collection forms at each LLIN distribution point, district management teams are advised to develop monthly reporting charts, posted in health facilities, showing the number of pregnant women expected and seen in consultation and the number of LLINs distributed as well as graphs comparing expected and actual numbers of LLINs distributed to beneficiaries.

In **Nigeria** RapidSMS technology was used during the 2009 mass campaign in Kano State to track LLIN movement from state to Local Government Area and distribution points. LLIN coupons were tracked during distribution, warehouse managers reported incoming and outgoing supplies, and distribution team leaders submitted LLIN numbers each day.

RapidSMS is a free, open-source framework for dynamic data collection, logistics coordination, and communication, leveraging basic short message service (SMS) mobile phone technology[79]. Similarly, EpiSurveyor (also known as Magpi) is a secure mobile data solution that allows users to design mobile forms for data collection, then fill them out on common mobile phones, either using an application on the phone or standard SMS messages, and then to upload data for analyze in real- time[80].

While SMS technology was used in a campaign setting in Nigeria, it is worthwhile for countries to explore the feasibility of using the same or similar technology to support routine collection of data for HMIS, which can include continuous delivery of LLINs.

In one country a key informant noted that the NMCP is not mandated to collect LLIN numbers from health centres, and therefore LLIN stock levels and numbers of LLINs distributed are not available. The NMCP is undertaking an advocacy strategy with health authorities to improve reporting; however, this remains an important problem.

9.3 Evaluation

A key challenge of evaluating the performance of routine LLIN delivery is that, in ideal circumstances, countries will use multiple delivery channels for LLINs, including mass campaign distributions as well as various continuous delivery channels. Thus, it may be difficult to evaluate separately the impact of routine LLIN delivery via routine health services.

When conducting national or regional malaria or health surveys (e.g. MIS, DHS, Multiple Indicator Cluster Survey (MICS)), it will be important to include indicators that can determine if beneficiaries have received LLINs from routine services, for example:

% of pregnant women attending ANC who received an LLIN at ANC
% of children attending EPI who received an LLIN at the EPI clinic

From 2014 onward, the DHS and MIS will include a question in the core module that will collect data on the source of nets found in households. This will enable countries to track the proportion of nets that are being obtained through various channels, including health facilities, and thus, help assess the extent to which each channel is contributing to universal coverage.

[79] http://www.rapidsms.org/ Accessed May 31, 2011.

[80] http://home.magpi.com/
/ Accessed August 12, 2011.

9.4 Reminder of the role health facility personnel may play in supporting other continuous distribution channels: monitoring and evaluation

In school and community based distribution in particular, health facility based staff may play a role in collating and reporting data back up to districts. District staff therefore also often have a role to play in reporting of monitoring data.

Where health facility personnel are closely involved in supervision, the monitoring role should flow from this, with health facility staff actively reviewing experiences and data and using the findings to inform the support supervision activities.

10. RESOURCES

Background

- WHO recommendations for achieving universal coverage with long-lasting insecticidal nets in malaria control September 2013 (http://www.who.int/malaria/publications/atoz/who_recommendations_universal_coverage_llins.pdf)

Other guides to support continuous distribution planning and implementation

- RBM VCWG Continuous LLIN Distribution Systems Work Stream. Continuous long-lasting insecticidal net distributions: a guide to concepts and planning. 2011School-based distribution of LLINs: a short guide based on recent country experience. NetWorks, 2014; updated by VectorWorks 2016. (http://www.vector-works.org/resources/5-continuous-long-lasting-insecticidal-net-distributions-a-guide-to-concepts-and-planning/)
- Community-based distribution of ITNs: a short guide based on recent experience. VectorWorks 2016 (http://www.vector-works.org/resources/community-based-insecticide-treated-nets-distribution-guide/0)
- School-based distribution of LLINs: a short guide based on recent country experience (http://www.vector-works.org/resources/school-based-distribution-of-llins-a-short-guide-based-on-recent-country-experience/)
- Preventing, identifying and mitigating fraud, theft and diversion of insecticide treated nets. VectorWorks, 2016

Norms, Standards and TORs

- Zambia: *Guidelines on the Distribution and Utilization of Insecticide-Treated Nets for Malaria Prevention and Control*, MOH/NMCP, November 2008.
- Uganda: *Routine Distribution of Long-lasting Insecticidal Nets through ANC, Implementation Guide for National Planners*, MOH/NMCP Table 1, contains a detailed listing of roles and responsibilities at each level.
- Senegal: The *Guide Méthodologique Distribution de Routine*, MOH/PNLP, draft May 2011, includes a table of detailed roles and responsibilities at each level.Kenya: *National Malaria Strategy 2009-2017, "Towards a Malaria-free Kenya*," MOH/NMCP, Annex L, contains a of Terms of reference for vector control and other DOMC Technical Working Groups
- Tanzania: Chronogram for the roll-out of health facility-based distribution in two regions, Johns Hopkins Center for Communication Programs, VectorWorks Project, 2015.

Training

- Uganda: *Malaria in Pregnancy Refresher Training Guide*. MOH/NMCP, 2011.
- Ghana: Health Facility Distribution of Long-Lasting Insecticide-Treated Nets (LLINs) in Ghana Training Manual, MOH/NMCP 2013

Logistics

- Uganda: HMIS forms 015 (stock card) and 083 (stock book), in Annex to *Uganda's Routine Distribution of Long-lasting Insecticidal Nets through ANC: Implementation Guide for Planners,* MOH/NMCP, 2011.
- AMP: Toolkit 2.0
- AMP: How to use and fill out the stock sheet, and sample stock sheet
- AMP: How to use the storage plan, and sample storage plan
- AMP: How to use and fill out the waybill, and sample waybill
- AMP: How to use the preliminary transport plan
- AMP: How to use the positioning plan
- AMP: How to use the preliminary transport plan
- AMP: Sample plans for positioning, storage, transport
- AMP: Sample transport contracts

Communication

- Senegal: Annex 2 « Fiche Technique pour la Visite à Domicile », *Guide Méthodologique Distribution de Routine.* MOH/PNLP, May 2011.
- Kenya: 'Mbu Nje! Sisi Ndani!', posters
- Kenya: 'Uzazi Kamili', poster
- Tanzania (Zanzibar): How it works poster

Supervision

- Senegal: Annex 4, « Grille de Supervision », *Guide Méthodologique Distribution de Routine.* Draft, May 2011.

- Liberia: Supportive supervision of continuous distribution of LLINs in Liberia : County-level monthly ANC/institutional delivery supervisory checklist and reporting form, MOH/NMCP, 2015

Monitoring and Evaluation

- Uganda: *Routine Distribution of Long-lasting Insecticidal Nets through ANC, Implementation Guide for National Planners*. (Section 8: Record-keeping and Reporting). MOH/NMCP, May 2011
- Uganda*: Malaria in Pregnancy Refresher Training Guide* (Session 8: Record-keeping and Reporting). MOH/NMCP, 2011.
- DRC: *Formulaire III: Rapport Mensuel Complémentaire au SNIS*.
- Kenya: Child Welfare Clinic (CWC) register (page 45 in the *Health Sector Indicator and Standard Operating Procedures Manual for Health Workers May 2008*)
- Demographic and Health Survey Core Household Module, question 135, source of net

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