



Case study

Burundi: *The National Integrated Malaria Control Programme launches new pilot of continuous insecticide treated net (ITN) distribution through community channels to overcome disruptions due to COVID-19 and malaria epidemic risks*

Key enabling factors for maintaining ITN access in Burundi during the COVID-19 pandemic

- ITN use in Burundi has remained high over time and is consistent throughout the year.
- To maintain household access to ITNs, the *Programme National Intégré de Lutte Contre le Paludisme* (PNILP, National Integrated Malaria Control Programme) has developed an approach that allows identification of households with ITN gaps through physical wear and tear, other ITN loss or new sleeping spaces. This continuous ITN distribution through community channels approach is included in the current National Malaria Strategic Plan 2018—2023 and will be piloted in 2021.
- Existing well-organized and effective community health agent (CHA) groups and provincial verification and validation committees providing activity oversight are in place in Burundi and will be used to pilot the new continuous ITN distribution through community channels.



These effective systems already in place, with the backing of performance-based financing, provide supportive systems for the introduction of the new approach in Burundi.

- Development by the Ministry of Health of messages integrating malaria and COVID-19, which were broadcast nationally and locally, supported initiatives to reassure the population regarding security measures in place and encouraged the population to continue to seek ANC, immunization and other preventive services.

Achievements

- In the face of recurring malaria epidemics, Burundi has overcome numerous operational challenges to implement four national ITN campaigns and ITN distribution through both routine antenatal care (ANC) and immunization services, achieving a high level of ITN coverage, which was recognized by the World Health Organization (WHO) in the 2019 World Malaria Report as “indicative of a rapid and efficient response to increasing cases”.
- To overcome concerns of insecticide resistance, Burundi has secured funding to procure and introduce ITNs with the synergist piperonyl butoxide (PBO)¹ in four districts (out of a total of 47 health districts) of the northern province in Burundi² during the 2019 ITN mass distribution campaign. The PNILP continued PBO ITN distribution in 2020 in those four districts via routine ANC and immunization services.

Lessons learned and recommendations

- Ministry of Health (MOH) Directorates including the PNILP do not have control over international supply chains or timelines for ITN arrivals in country. COVID-19 has underscored the importance of keeping buffer stocks of ITNs at central level for ITN distribution through routine health services. ITN orders must be placed well in advance and coordinated with all donors across campaign and continuous channels to avoid stock-outs.
- With effective COVID-19 testing, individual and institutional hygiene security measures (e.g. masks, hand sanitizer and handwashing stations), and physical distancing in place, key malaria activities can continue.

Context

With an estimated population of over 11.5 million³, malaria remains a significant problem in Burundi. According to the National Malaria Strategic Plan, malaria is the leading cause of illness and death in Burundi. Eight of Burundi’s 18 provinces, home to 56 per cent of the population, are at risk of malaria epidemics⁴. Burundi is not among the ten highest burden countries in Africa but experienced a 51 per cent increase in malaria cases from 2015—2018, the highest of any country in WHO’s Central Africa Region⁵.

¹ The PBO synergist acts on metabolic enzymes within the mosquito that “detoxify or sequester insecticide” and should therefore have an increased killing effect on mosquitoes. Source: WHO, Global Malaria Programme (2017) Conditions for the deployment of mosquito nets treated with a pyrethroid and piperonyl butoxide.

² PNILP, Rapport provisoire de la campagne de masse de la distribution des MILDAs, 2019.

³ The World Bank Data, Population total-Burundi. Retrieved 23 November 2020, from <https://data.worldbank.org/indicator/SP.POP.TOTL?locations=BI>

⁴ République du Burundi, Ministère de la Santé Publique et de la Lutte contre le SIDA (MSPLS, 2018). Plan Stratégique National de Lutte Contre le Paludisme 2018—2023.

⁵ World Health Organization (WHO) (2019). World Malaria Report 2019.

Approximately 80 per cent of epidemics in Burundi occur in marshy areas used for rice cultivation and/or abandoned fishponds. Burundi has seen a number of malaria epidemics, with the most lethal in 2001 and 2002⁶. In March 2017, Burundi's MOH declared a malaria epidemic, following increases in cases from 2.6 million in 2012 to 5.3 million in 2015 to 8.2 million in 2016⁷. Again in 2019, nearly six million cases of malaria were reported, affecting more than half of the population of Burundi, with more than 1,800 deaths⁸.

Figure 1 shows malaria vector susceptibility to insecticides in Burundi. To address insecticide resistance, since 2019, with funding from the Global Fund and the United States President's Malaria Initiative (PMI), the PNILP introduced ITNs with the PBO synergist in four districts of the Kirundo province during the 2019 ITN mass distribution campaign. Following the campaign, the PNILP has continued distribution of PBO ITNs in these four districts via routine ANC and immunization services. For the campaign in 2022, PBO ITNs will again be distributed in the four districts of Kirundo, with an addition of the Interceptor G2⁹ ITNs in additional districts.

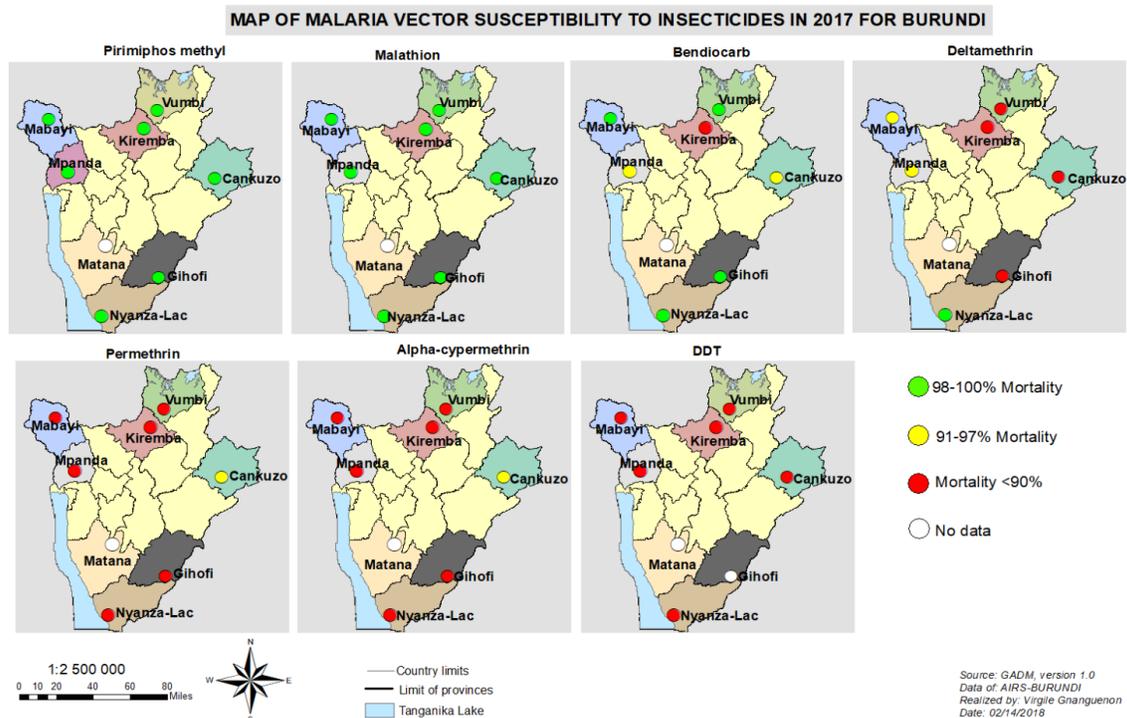


Figure 1. Map of malaria vector susceptibility to insecticides in 2017 for Burundi

To date (early December 2020) only 735 cases of COVID-19 and one COVID-19 related death have been reported in Burundi¹⁰. Following initial hesitation of the previous President to

⁶ République du Burundi, Ministère de la Santé Publique et de la Lutte contre le SIDA (2018).

⁷ PMI Burundi MOP FY2018.

⁸ Centers for Disease Control and Prevention (CDC) (2019). Malaria in Burundi. Retrieved on 23 November 2020, from <https://wwwnc.cdc.gov/travel/notices/watch/malaria-burundi>

⁹ Interceptor G2 is an ITN developed by BASF with a combination of Alpha-cypermethrin and chlorfenapyr

¹⁰ <https://www.worldometers.info/coronavirus/country/burundi/>

acknowledge the pandemic, in July 2020, Burundi's new President declared COVID-19 "the worst enemy of Burundi" and put in place national preventive measures and expanded testing¹¹.

Effects of COVID-19 on maintaining access to ITNs

While the number of COVID-19 related cases and deaths are far below those of malaria in Burundi, COVID-19 has had an effect on ITN distribution in the country.



The COVID-19 pandemic has caused significant delays in international arrivals of ITNs, and an expected shipment of 446,000 ITNs did not arrive on time. During the 2019 mass ITN distribution campaign, ITN stocks set aside for routine distribution had to be used to cover household ITN needs fully, as these were underestimated. Additionally, regular quarterly distributions of ITNs and other health supplies from the central to district levels were disrupted from March to June 2020 as fear of COVID-19 slowed internal movement. When COVID-19 testing

became available outside Bujumbura in July, internal transport opened up and stock disturbances were limited to approximately three months only. Additionally, while health facilities remained open in 2020, some people were hesitant to seek care or attend routine preventive services for fear of catching COVID-19 while away from home. PNILP and malaria partner movement within the country was also put on hold during this second quarter of 2020 until testing became more widely available.

In general, the quantity of ITNs distributed in 2020 has decreased compared to the previous year. The proportion of pregnant women seen for a first antenatal care (ANC) visit and receiving an ITN declined from 83 per cent in 2019 to 72 per cent in the first six months of 2020. For children receiving their first measles vaccination at nine months, the proportion receiving an ITN declined from 88 per cent in 2019 to 76 per cent in the first six months of 2020.

ITN distribution in Burundi

To achieve the national goal of zero malaria deaths by 2023, the PNILP National Malaria Strategic Plan includes an objective to "Ensure and maintain universal household coverage of ITNs and achieve at least 80 per cent use rate in the general population by 2023"¹². More than 36 million ITNs have been delivered to Burundi from 2004 until September 2020.

Priority activities to achieve this objective include ITN distribution via:

¹¹ Kaneza, E.W. (2020) 'Burundi starts taking COVID-19 seriously, expands screening'. Washington Post, July 6, 2020. Retrieved 23 November 2020, from https://www.washingtonpost.com/world/africa/burundi-starts-taking-covid-19-seriously-begins-screening/2020/07/06/efa90312-bfb4-11ea-8908-68a2b9eae9e0_story.html

¹² République du Burundi, Ministère de la Santé Publique et de la Lutte contre le SIDA (2018).

- Mass campaigns since 2011 to provide one ITN for every two people
- Routine health services since 2005 to pregnant women at their first ANC and children at their first measles vaccination, which in Burundi is recommended at nine months
- Outreach to orphanages, boarding schools, prisons, and other vulnerable groups or those who need one ITN per person due to sleeping patterns

The PNILP has developed an operational implementation guide for the national ITN distribution strategy through routine health services. In 2021, the PNILP will shift eligibility for ITN distribution during routine immunization services to the second measles vaccination, which in Burundi is recommended at 18 months, as this corresponds more closely to the age at which children move to their own separate sleeping space.

Burundi's 2016–2017 Demographic and Health Survey (DHS) reported 46 per cent of households possessing an ITN¹³. Following DHS data collection in early 2017, Burundi conducted a national mass distribution ITN campaign which showed in a 2017 post-campaign survey that 95 per cent of households possessed at least one ITN, and 77 per cent of households possessed at least one ITN for every two people for universal ITN coverage. During the next campaign just two years later, in 2019, Burundi also increased the cap for the maximum number of ITNs that households could receive from four to six, as part of the national household registration. ITN use in Burundi has remained high over time and is consistent throughout the year¹⁴.



ITN continuous distribution through the community channel in Burundi

To maintain household access to ITNs, the PNILP developed an approach that allows identification of households with ITN gaps due to physical wear and tear, other ITN loss, or new sleeping spaces created following births or population movement. This continuous ITN distribution through community channels is included in the current National Malaria Strategic Plan 2018–2023.

The objective of the continuous ITN distribution strategy through community channels is to achieve and maintain universal ITN coverage through correct and consistent use by at least 80 per cent of the population. Continuous ITN distribution in combination with ITN mass campaign

¹³ Ministère à la Présidence chargé de la Bonne Gouvernance et du Plan [Burundi] (MPBGP), Ministère de la Santé Publique et de la Lutte contre le Sida [Burundi] (MSPLS), Institut de Statistiques et d'Études Économiques du Burundi (ISTEEBU), et ICF. 2017. Troisième Enquête Démographique et de Santé (EDS). Bujumbura, Burundi : ISTEEBU, MSPLS, et ICF.

¹⁴ PMI (2020). ITN Access and Use Report, Burundi. Retrieved 23 November 2020, from <https://breakthroughactionandresearch.org/resources/itn-use-and-access-report/burundi/>

and routine distribution through health services is expected to achieve and maintain 93—100 per cent coverage and allow a better response to recurrent epidemics¹⁵. In addition, it should cover certain remote populations who may be difficult to reach during campaigns.

It is widely recognized that coverage with effective ITNs declines over time as new sleeping spaces are created with births, population movement, physical damage to existing ITNs or chemical breakdowns of the insecticide during use. As noted in the new national strategy for continuous ITN distribution through community channels in Burundi, “although household coverage with [ITNs] reaches 95 per cent after mass distributions, the results of demographic health surveys (DHS 2016—2017) show that the loss (thereafter) is very significant, especially from the second year”¹⁶.

Alongside this urgent need to maintain ITN coverage, particularly in epidemic-prone areas in Burundi, the inclusion of a new ITN continuous distribution channel requires additional financial resources for procurement and distribution. Community distribution of ITNs in other countries has demonstrated significant increases in household ownership of ITNs^{17,18}, as well as decreases in malaria cases in Madagascar¹⁹. However, securing funding and political buy-in to implement and scale-up continuous distribution of ITNs remains a challenge in many countries, including Burundi.

To overcome these challenges, Burundi undertook an evidence-based step-by-step approach:

Step One: Data compilation

The NMCP developed a stratification of districts to plan interventions according to need in Burundi. This stratification was based on two main criteria – vulnerability and insecticide resistance. A vulnerability score was defined according to six indicators: annual malaria incidence, incidence of malaria in pregnant women, malaria case-fatality, rate of health facility attendance, poverty index, and the rate of chronic malnutrition.

¹⁵ République du Burundi, MSPLS (2020). Stratégie de Distribution de Moustiquaires Canal Communautaire, Draft.

¹⁶ Ibid.

¹⁷ Zeger de Beyl, C., Kilian, A., Brown, A., Sy-Ar, M., Ato Selby, R., Randriamanantenaso, F., et al (2017). ‘Evaluation of community-based continuous distribution of long-lasting insecticide-treated nets in Toamasina, Madagascar’. *Malaria Journal* (2017) 16:327

¹⁸ Kilian, A., Schnurr, L., Matova, T., Selby, R., Lokko, K., Blaufuss, S., et al (2017). ‘Evaluation of a continuous community-based ITN distribution pilot in Lainya County, South Sudan 2012—2013’. *Malaria Journal* (2017) 16:363

¹⁹ Girond, F., Madec, Y., Kesteman, T., Randrianarivojosia, M., Randremanana, R., Randriamampionona, L., et al (2008). ‘Evaluating Effectiveness of Mass and Continuous Long-lasting Insecticidal Net Distributions Over Time in Madagascar: A Sentinel Surveillance Based Epidemiological Study’. *EClinicalMedicine* 1 (2018) 62-69.

Applying a ranking of one to eight to each of these vulnerability indicators, the PNILP was able to develop a district vulnerability map as shown in Figure 2. In combination with the mapping of insecticide resistance to malaria vectors shown in Figure 1, the PNILP classified districts in five categories – very high, high, moderate, low, and very low – and for each category prioritized malaria interventions tailored to each category.

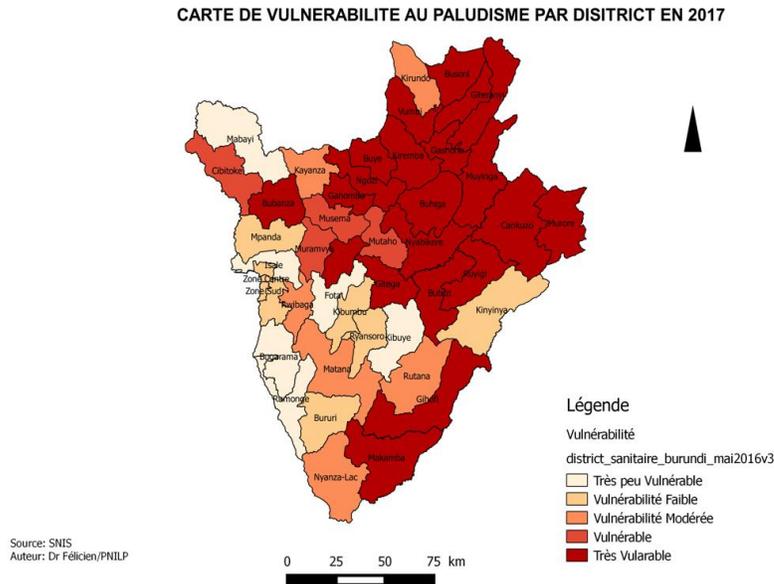


Figure 2. Map of malaria vulnerability by district for Burundi

Step Two: Advocacy

Based on these data and the results of the stratification, the PNILP included indicators and annual budget needs for ITN distribution at community level in Burundi’s National Malaria Strategic Plan. This included a planned launch of ITN distribution at community level as a pilot programme in eleven districts in 2019; with expansion to 15 districts in 2021; and to 46 districts by 2022²⁰.

Step Three: Resource mobilization

With particular emphasis on protecting families and blocking the processes of epidemics, the PNILP built on available data and the national malaria stratification to mobilize the resources needed to achieve the objectives of the National Malaria Strategic Plan. It is in this context that a continuous distribution of ITNs at community level was proposed to start in five of the most vulnerable districts. Subsequently, in final grant negotiations, the Global Fund proposed to further reduce the pilot to two districts or just under 20 per cent of the community ITN distribution pilot envisioned in the National Malaria Strategic Plan.

The Global Fund-funded pilot of the continuous ITN distribution through community channels will be initiated with Global Fund financing in Giteranyi health district in Muyinga province and

²⁰ République du Burundi, Ministère de la Santé Publique et de la Lutte contre le SIDA (MSPLS, 2018). Plan Stratégique National de Lutte Contre le Paludisme 2018—2023.

Ngozi health district in Ngozi province. Current discussions are examining the potential to procure the new Interceptor G2 ITNs for distribution as part of this pilot. Selection criteria for these two health districts are:

1. Being among the districts hardest hit by epidemics
2. No longer receiving indoor residual spraying (IRS) interventions due to budget constraints
3. Presence of performance-based financing and well-organized and effective community health agent groups and provincial verification and validation committees providing activity oversight. This includes an ITN use follow-up initiative supported by Population Services International (PSI) in the districts

To develop the draft ITN Distribution Strategy for the community channel, the PNILP led a collaborative process with partners including the PMI VectorLink project and Population Services International (PSI). Moving forward, the PNILP would like to have ongoing technical support from AMP to ensure the success of the pilots and more rapid scale-up.

The operational guide will be finalized in early 2021. Initial plans for the pilot phase include storage and pre-positioning of ITNs at health centres and distribution by CHAs to households. CHA roles include:

- Identification of households in the community who have uncovered sleeping spaces or ITNs which are no longer functional. CHAs will do this by visiting each household once during the month and checking the household's malaria protection card.
- Documentation of the household and ITN needs in community ITN distribution registers.
- Distribution of coupon(s) to households with identified ITN gaps allowing them to access an ITN at the health centre.
- Recording the coupon identification number in the community ITN distribution register for verification by the provincial verification and validation committee.

CHAs are contracted through the performance-based financing system and also provide an integrated package of interventions for HIV, tuberculosis, malaria, and reproductive, maternal, neonatal, child and adolescent health. Health centre in-charges will ensure ITN storage, conduct a weekly tracking of the community distribution activities with the CHAs, and produce an ITN distribution report each month. The PNILP will coordinate with community-based associations to support implementation and promotion of community ITN distribution. Religious and opinion leaders will also be called on to contribute to community mobilization for behaviour change²¹.

Next steps for implementation of the continuous ITN distribution through community channels include:

- Finalization of the operational guide
- Mobilization of leaders and communities
- Finalization of the ITN quantification based on expected distribution
- Securing sufficient ITN stocks to be set aside at health centres and dedicated to the community channel
- Selection of a monitoring and evaluation framework with local administrative and health leaders to track progress and measure key performance indicators

²¹ République du Burundi, MSPLS.

Mitigating the effects of COVID-19 to maintain ITN access

As noted above, during three months of the COVID-19 pandemic (March to June 2020) transport of health supplies from the central to district levels was disrupted as the fear of COVID-19 slowed internal movement. In response, the PNILP worked with the central medical store, CAMEBU²², to organize targeted distributions of malaria commodities in response to identified needs. As ITNs were stocked out at national level, the PNILP focused during this period on customs clearance and internal transport for the 446,000 ITNs that had been delayed since 2019 to re-establish the national stock of ITNs. As central level supervision and technical assistance visits were also put on hold from March to June, the PNILP called health centres during this time to update stock consumption and stock-on-hand information. From this, the PNILP undertook a quarterly ITN dispatch planning so that as soon as internal transport and movement re-opened in July, ITNs could quickly be transported to district health teams and health facilities to re-stock all facilities. Due to this planning, the disruptions for pregnant women and children to receive their ITNs were minimized. As shown in the monitoring data above, the percentage of pregnant women and children receiving their ITN at ANC and vaccination services in the first half of 2020 was only approximately 11–12 per cent lower than in 2019.

Burundi's MOH established a national task force, with key MOH directorate leaders, WHO, Global Fund and health partners. As part of this national response, the MOH Communication Unit developed national messages in response to the COVID-19 pandemic. The Minister of Health directly delivered many of the key messages and provided coordinated health messages for COVID-19, malaria, TB, maternal and child health. For example, messages included:

- MOH confirmation of safety measures in place in health centres
- Reminders of the importance to continue to seek health care when ill for any reason
- Encouragement to continue to adhere to preventive health services including ANC and immunizations

The MOH was concerned that a focus only on COVID-19 would put the country at heightened risk for a rise in malaria and TB cases as well as a risk for a reduction in ANC coverage and immunization rates. In response, the MOH Communication Unit supported integrated and simultaneous dissemination of health messages across these priority health areas.

The PNILP worked with UNICEF, Caritas and PSI to develop malaria-specific messages to be included as part of the national COVID-19 response. With the MOH Communication Unit, PNILP personnel recorded the messages as public service announcements and skits. These PNILP malaria messages were broadcast via national and local radio outlets alongside national COVID-19 messages. Malaria messages included:

- The importance of prompt care-seeking behaviour for any case of fever, as this could be a sign of malaria or COVID-19
- Encouragement to the population to seek medical attention to determine the cause of the fever
- The similarity between a fever caused by malaria and that caused by COVID-19 and the effectiveness of malaria rapid diagnostic tests and COVID-19 tests where available.

²² Burundi has established a medical store for centralized procurement of pharmaceutical products – the Centrale d'Achats des Médicaments Essentiels et des Consommables Médicaux du Burundi (CAMEBU, Central Medical Store for Essential Medicines and Medical Consumables of Burundi).