

***On World Malaria Day, we must accelerate our efforts to address the increasing challenges we face in the fight against malaria. With the “funding gap” for malaria interventions widening, we must intensify campaigning efforts to increase funding while making sure that every investment we make is optimised.***

*We believe that by applying data-driven, robust decision-making practices, we can deploy the most cost-effective malaria tools available.*

*By adopting a robust approach to leveraging data that accurately identifies an LLIN's impact and value for money, we can maximise every investment.*

As a global community, we must again call for the sustained investment and political commitment to save lives, prevent new infections, and eliminate malaria.

While progress in malaria prevention and treatment has been significant, we face a great challenge. The current funding levels will need to triple by 2030 to meet global targets of USD 10.3 billion per year. According to the [WHO Global technical strategy and targets for malaria 2016 - 2030](#), funding for malaria control in 2022 was estimated at USD 4.1 billion against a target of USD 7.8 billion.

The funding gap represents the difference between the amount invested in malaria-related efforts and the resources needed to combat the deadly disease. Current trends in malaria elimination, such as vaccines and seasonal malaria chemoprevention, have increased the cost of malaria programmes and, therefore, tend to limit population coverage. Climate change, displacement, and growing population density also stretch resources further.

**Availability of long-term field data on the three dimensions of durability is needed to make more select**

## **and informed purchasing decisions for PBO nets.**

Long-lasting insecticidal mosquito nets (LLINs) are one of our armoury's most cost-effective tools. A modelling exercise<sup>1</sup> conducted in 2020 demonstrated that effective application of the most durable LLINs could save stakeholders between US\$500 million and US\$700 million over five years.

Investing in the most durable LLINs reduces operational costs, increases household retention rates, and ultimately improves a population's access to life-saving interventions.

Current decision-making on LLIN durability relies on data from laboratory and semi-field studies that don't adequately simulate an LLIN's actual durability in communities. They presume that all LLINs have the same three-year lifespan, whereas, in reality, there is substantial data showing that an LLINs functional life differs substantially between products.<sup>2-10</sup>

To better understand the effectiveness and value of LLINs, it is important to shift the focus from buying LLINs based solely on their price to making more cost-effective investments. We propose a three-dimensional evaluation of LLIN durability supported by long-term field data for a minimum of three years across at least three diverse settings.

The first two factors, physical durability and retention, determine a net's "**functional life**" - the time in years when a net is present in the community and in good physical condition, thus providing protection against vector-borne diseases. To measure the functional life, we would consider the **median survival** of a bed net, the time at which half of the bed nets remain functional.

Determining a net's functional life allows a more accurate cost-benefit analysis between a longer-lasting net and a short-lived net - the "**cost of functional life**." The chart demonstrates how cost of functional life could be calculated simply for a LLIN, in this case our pyrethroid-PBO net, PermaNet® 3.0.

## PermaNet 3.0: A durable PBO-pyrethroid-PBO LLIN with proven best value for money

LLIN Unit Price (USD)	Median Survival (Years)							
	1	1.2	1.5	1.9	2.2	2.5	3*	3.2
1.90	1.90	1.58	1.27	1.00	0.86	0.76	0.63	0.59
2.00	2.00	1.67	1.33	1.05	0.91	0.80	0.67	0.63
2.10	2.10	1.75	1.40	1.11	0.95	0.84	0.70	0.66
2.20	2.20	1.83	1.47	1.16	1.00	0.88	0.73	0.69
2.30	2.30	1.92	1.53	1.21	1.05	0.92	0.77	0.72
2.40	2.40	2.00	1.60	1.26	1.09	0.96	0.80	0.75
2.50	2.50	2.08	1.67	1.32	1.14	1.00	0.83	0.78
2.60	2.60	2.17	1.73	1.37	1.18	1.04	0.87	0.81
2.70	2.70	2.25	1.80	1.42	1.23	1.08	0.90	0.84
2.80	2.80	2.33	1.87	1.47	1.27	1.12	0.93	0.88

Cost of functional life for global median survival of LLINs (1.9 years) estimated by the WHO at different price points

Average median survival of PermaNet 3.0 is 3.2 years (across all published data).

With a price of 2.5 USD, the cost of functional life for PermaNet 3.0 is **0.78 USD**

0.00 PermaNet 3.0 cost of functional life

0.00 Combinations of Unit Price and Median survival giving a higher cost of functional life than PermaNet 3.0

\* Expected median survival time for LLINs

PermaNet<sup>®</sup>###  
3.0 by VESTERGAARD

The physical durability and bioefficacy of PermaNet 3.0 is backed by a substantial body of evidence that demonstrates sustained quality and efficacy over three years in multiple settings.

According to WHO 2013 guidelines, long-term (3 years) field data across at **least three diverse settings** is needed to measure the actual durability of pyrethroid-PBO LLINs. However, today, **only two PBO LLIN brands** have presented this data. PermaNet 3.0 is one of them.

PermaNet 3.0 has been shown to have the lowest cost per functional life of these PBO LLIN brands. The physical durability and bioefficacy of PermaNet 3.0 is backed by a substantial body of evidence that demonstrates sustained quality and efficacy over three years in multiple settings. These include randomised controlled trials, laboratory and semi-field trials, community studies and post-market surveillance.

## Conclusion

With the widening funding gap, customers are under increased pressure to maximise the

impact per dollar spent, particularly in High-Burden, High-Impact countries. There is a crucial need to optimise the impact of LLINs and ensure the best value-driven purchasing decisions are made.

- Regulatory and procurement agencies should ensure manufacturers generate and provide long-term field data in diverse settings.
- There should be a consensus on the approach of estimating the cost of functional life in the malaria Vector Control community.
- Procurement agencies should include the cost of functional life of an LLIN (when available) in addition to the unit price in their procurement decision criteria.
- The global malaria community has a responsibility to make data-driven and evidence-oriented decisions when purchasing Vector Control Tools

Together the global malaria community must grasp responsibility to make evidence-based decisions. Factoring field durability data into deployment decisions would be a step in the right direction.

Every step we take must be decisive, measurable, and forward. We have neither the time nor the resources to waste.

## References

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