Public Health in Practice 2 (2021) 100133

Contents lists available at ScienceDirect

Public Health in Practice

journal homepage: www.sciencedirect.com/journal/public-health-in-practice

Commentary

Coverage enhancement and community empowerment via commercial availability of the long-lasting nets for malaria in India

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ARTICLE INFO

Keywords:
Malaria elimination
Long lasting nets
Vector control
Private sector

ABSTRACT

Achieving malaria elimination goal in India will require supplemental measures to plug in the gaps in implementation of malaria control programmes. Use of long-lasting insecticide nets is one of the two core interventions for vector control in malaria. The most common distribution channel is free delivery via national malaria control programme of various countries and in India, this is the only channel to provide nets to the masses. Understandably, there are gaps in the optimum coverage of at-risk population due to multiple reasons ranging from population growth to time lag in replacements, emergency conditions like floods and logistical impediments among others. At this juncture, it is crucial for India to explore complementary routes to expand access for nets by its people and one is making them available in private sector at an affordable price. The commercial availability of nets offers several advantages like filling in coverage gaps, overcoming additional requirements by families and financial resources being freed up for poor households. However, there are barriers to the successful operationalization of net commercialization like affordability issues, economic viability for manufacturers, regulatory issues etc. All the so-called barriers can be addressed in a concerted and pragmatic way to make access and availability of nets in private market a reality as that is a need of the hour, if India wants to achieve malaria elimination goal by 2030.

Insecticide treated nets (ITNs) includes both these and factory treated nets wherein insecticide is incorporated in the fibres or bound to fibres. Along with Indoor Residual Spray (IRS), it is a core vector control intervention advocated by World Health Organization. The ITN is an effective tool as it acts by killing or repelling the mosquitoes owing to the insecticide on the fabric material. In addition to a household product, ITN takes the role of a public health tool at an absolute coverage of ≥50%, as they produce a 'community effect'. By virtue of this effect even non-users are protected due to the impact of ITN as a vector control tool in the users' environment. Long lasting nets sustain at least 20 WHO standard laboratory washes and three years of appropriate usage in real life situation while retaining their anti-mosquito activity [1]. As LLINs are highly effective, for universal coverage all distribution channels are recommended by WHO. These include mass distribution, continuous distribution through antenatal and immunization clinics, distribution via occupation based (especially in Asia) workers from farms, forest, industry and mines [1]. Mass campaign is considered the best way for achieving high coverage, although it is not deemed sufficient.

However, several challenges remain in optimising combinations of delivery for universal coverage. The need for private sector participation has been recognised due to following reasons: a) free distribution is limited as it targets 1 ITN/LLIN per 2 persons at risk of malaria. This is not in sync with reality of households with additional members. WHO does not recommend 'Top-up' campaigns to compensate with additional number of nets in order to fulfil the target coverage [1]. b) post-campaign coverage gaps due to degradation and disintegration of nets and population increase, c) time gap in replacement can expose the populations to malaria, d) emergencies such as floods, outbreaks and natural disasters, e) inaccessible populations, f) donor dependence (between 2010-19, 70% funding for malaria control and elimination was from international donors and 30% was from the governments of malaria endemic countries) [2]. India distributed 50 million LLINs in 2016–18 of which only 20% (10 million) were supported by domestic budgetary support [3]. Hence, dwindling international donor funding can have an adverse impact on progress and sustenance of the malaria control and elimination programmes including vector control g) funding

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https://doi.org/10.1016/j.puhip.2021.100133
Received 30 March 2021; Accepted 3 May 2021
Available online 7 May 2021

plateau situation that will likely worsen due to COVID-19, operational/logistical issues like poor transport infrastructure. The above reasons therefore warrant an additional distribution avenue for LLINs via the private sector.

The benefits of making LLINs available in the private sector (at an affordable cost) and accessible to communities through commercial outlets are numerous: a) it will substantially enhance net ownership in the community and thus increase the coverage of the target population and overcome some coverage deficits due to reasons cited earlier b) LLIN in commercial sector will allow government to channelise scant resources to the financially weaker section who cannot afford to buy nets on their own and thus widen the coverage c) private sector can be an easy source of LLINs for the households exposed to the risk and which can afford and would want to pay for an LLIN d) availability of LLIN in private market can act as a safeguard mechanism and a cushion to circumvent the deficits in distribution in public health system in supply or replacements [4] e) purchase of LLINs through private sector can also tide over the additional needs of a family like visitors, new births and marriages. In rural areas in India, LLINs are considered a precious commodity and often given to the daughter as dowry in marriage.

India bears the largest share of malaria burden (88%) in South East Asia [2]. With the target to cover 80% of at risk population, the demand for vector control tools is bound to be high in India. Amidst these challenges, India is committed to elimination of malaria by 2030. The Indian national programme introduced LLIN as a vector control tool in 2009 and since then with the assistance of Global Fund has been distributing LLINs to the vulnerable population living in malarious areas. However, universal coverage by LLINs via national programme is a dauting task, both financially and logistically. Yet, deployment of LLIN as a protective vector control tool is only through the national programme in India, leaving a large proportion of at-risk population (especially in remote and inaccessible areas) vulnerable to malaria and unwitting partners in malaria transmission. It is well-known that 'one strategy will not fit all' as a delivery mechanism and multiple systems complimenting each other would need to be devised [5]. Thus there is a need for India to exploit alternative procurement and distribution channels in order to scale-up LLIN distribution. India's GDP per capita has increased from $1350 in 2010 to $2100 in 2019 [6] and thus it may well be able to afford purchase of healthcare products.

The private and public provisions for LLINs would address and suffice demands and needs of different sections of society. However, there are possible barriers to successful deployment of LLIN via private sector. The demand for nets in private sector is known to be 'price-elastic' which means even that marginal increases in costs lead to reduction in adoption rates by communities as observed in several countries like Zambia and Kenya. Another reason for poor acceptance of nets available in commercial market is limitation of liquidity because buying LLINs would need a substantial one time expenditure which may be difficult for poor households, more so when in comparison, these nets are also available for free via national program [7]. Cost competitiveness with other household products of vector control like coils, vaporizers vis-à-vis higher unit cost of LLIN may also act as an inhibitory factor. Lack of incentives and 'perceived' low economic profitability may discourage manufacturers from entering private market space especially in rural/-poor areas. Challenges of supply chain and retail - long shelf-life and slow movement (via sales) would lead to longer storage and may be prohibitive for individual stores. There is a risk of pilferage of 'free' nets and their sale in private market. Regulatory bodies will need to be alert against substandard nets with unreliable dosages of insecticide and other vital features. Also, fake nets may be sold to gullible communities. There is the risk of development of resistance in vectors due to uneven coverage in the community [8]. The misuse and inappropriate use by community such as re-sale at a higher price and use other than for vector control may also be a problem. Inadequate or absence of disposal mechanism of used nets may lead to environmental pollution. However, on balance, these caveats do not outweigh the benefits of wider distribution and coverage of LLINs as this will have an immediate impact on transmission and hence reduction of malaria.

The above challenges are to be recognised and mechanisms to surmount these need to devised. An enabling environment needs to be created to overcome these impediments. Some of the solutions are: (1) subsidy schemes/vouchers/cash transfers/micro loans/corporate social responsibility have proven beneficial as demonstrated in some countries like Tanzania and India [7]. A study in endemic area of India revealed that even when the nets were priced at a higher cost, $>$ 50% of households under study bought ITNs with the assistance of micro-loans - highlighting the role of financial schemes in overcoming liquidity constraints [7]. The aid can be extended to the high risk groups for families with young children and for pregnant women. Public-private partnership could be an important modality of making the nets affordable and accessible to communities in private sector (2) demand creation by social marketing, via especially targeting vulnerable groups. Engaging with consumers on their preferences for sizes, colours, prints and fabric types to increase acceptability, would create a market for them (3) manufacturer-friendly taxation schemes would assist manufactures. Distribution channels for the nets also need to be devised and agreed upon by the government and manufacturers (4) Stringent but favourable and harmonised insecticide regulatory standards are needed. Quality assurance mechanisms need to be instituted. (5) The nets in private sector may have suitable identification stamp or marking to prevent confusion with those from public sector and fake nets. (6) Sensitization and engaging with communities to enhance the uptake of nets in private retail sector and providing information about correct usage (7) Disposal policies and mechanisms such as "buy back" kind of a strategy may be implemented and collected nets to be disposed off using approved methods.

Malaria elimination is an overwhelming and demanding task for India. The impressive declines in recent years are highly encouraging. Moving forward, India needs to leverage all possible tools and involvement of all stakeholders including private sector to continue its intensity of malaria interventions as has been done to mitigate COVID-19 in 2020 but unfortunately not in 2021 [9]. One such game changer can be the availability of insecticide impregnated bed nets in the private retail sector. There is an urgent need for India to integrate the role of private sector and bring it on one platform with public sector in its strive towards malaria elimination [10]. This provision will cover LLIN distribution deficits and empower communities to use LLINs as a preventive tool in a self-tailored manner.

Ethics approval and consent to participate

Not Applicable.

Consent for publication

Not Applicable.

Availability of data and materials

There is no data in this work.

Funding

None.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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