

In 2016, despite accounting for only 4% of India's population, Odisha accounted for nearly half of the nation's malaria cases. This staggering statistic was largely due to residents working in dense forests without adequate protection, leaving them highly susceptible to mosquito-borne diseases. Compounding the crisis were the widespread misuse of bed nets, the practice of sleeping outdoors, and the unsettling development of mosquito resistance to [three of four WHO-recommended classes of insecticides](#). This alarming scenario underscored the critical need for urgent and effective interventions. In response, the strategic deployment and use of long-lasting insecticidal nets (LLINs) emerged as a transformative solution, dramatically reshaping the landscape of malaria control in Odisha, [India's highest malaria-burden state](#).

## **Significant reduction in malaria cases**

Within five years, a coordinated and focused government intervention, mobilisation of local and community networks, and holistic prevention and treatment programmes would result in a [90%](#) reduction in malaria cases and an [89%](#) reduction in malaria deaths.

Malaria cases across India decreased by more than 40% in the same period. The remarkable achievement demonstrates to the global malaria community how malaria cases and deaths can be drastically reduced through coordinated intervention and effective deployment of LLINs.

## **A National Framework for Malaria Elimination**

The Indian Government introduced its National Framework for Malaria Elimination (NFME) in 2016 with two main goals: to eliminate malaria throughout the country by 2030 and maintain malaria-free status. Embracing WHO's high-burden, high-impact approach - focusing on high transmission areas like Odisha - would be critical to success.

## **Scaling up bed net distribution**

India's [malaria control strategy](#) focused on the distribution of pyrethroid LLINs, indoor

residual spraying, expanding the use of diagnostic tests and providing early treatment for malaria cases. In 2017, the Government of India significantly [scaled up the distribution of bed nets](#). With financing from the Global Fund, approximately [11 million bed nets were distributed in Odisha](#) in 2017, 4.5 million of which were Vestergaard's PermaNet® 2.0. Between 2017 and 2018, Odisha saw an 80% reduction in malaria cases.



In 2017, 4.5 million PermaNet® 2.0 bed nets were distributed in Odisha, contributing to an 80% drop in malaria cases by 2018.

## **Community involvement and education**

Odisha's successful prevention and treatment strategies were underpinned by strong political will and mobilisation of resources. [Dr Kaushik Sarkar](#), Director Institute for Health Modelling and Climate Solutions at [Malaria No More](#) and advisor to the DAMaN project in Odisha, explains:

“In Odisha, beyond the support provided by the Government of India, there was also a very high level of state commitment and political will to mobilise resources, which contributed substantially to the success. Strategic support to the government was provided by organisations like Malaria No More. We advised on targeted interventions at the state and district level, appropriate areas of focus, and mobilisation of resources with organisations like Vestergaard, Abbott, UNICEF, and many others who supported us in our endeavour.”

## **Overcoming implementation challenges**

A holistic approach to prevention and treatment, considering local contexts, mobilising communities and incorporating effective social and behavioural change campaigns, yielded excellent results.

900,000 trained Accredited Social Health Activists (ASHAs) spearheaded the distribution of bed nets and were present in every village across the hilly State, serving as health activists, educators, and promoters. ASHAs taught communities about the life-saving protection of bed nets and the correct ways to use them. In some villages, the state also enlisted folk troupes who travelled from village to village to perform and communicate the basics of malaria control. Health workers drove vans equipped with loudspeakers to broadcast messages and distribute pamphlets.

“Once nets are distributed, at the grassroots level, some people might not use them for a variety of reasons, including cultural ones,” explains Dr Kaushik Sarkar, Malaria No More.

“Men sometimes do not want to carry them when going to work in the forest, and some don’t want to use them when sleeping outdoors in hot, humid, tropical weather. Nets are not always used properly and are washed and dried in the wrong manner.

To overcome these challenges, ASHAs sensitised community leaders, conducted nightly monitoring to ensure that nets were fitted properly, provided demonstrations on how the nets should be used and washed and rang a warning bell at night to remind villages to put up the nets.

The distribution of ITNS with a three-year and 20-wash lifespan to communities that had not received nets in many years was critical. This factor, alongside the large-scale distribution, provided a preventive umbrella across the state.

Malaria No More conducted an attitude survey across 17 high endemic districts, which showed that the social and behavioural campaign achieved a high level of LLIN utilisation. No country has been able to eliminate malaria without the preventive activities – the role of LLINS cannot be over emphasised.”

However, more still needed to be done to reach the less accessible areas of the state where routine programmes consisting of umbrella healthcare provided by ASHAs were insufficient. In some areas, ASHAs and patients would have to travel distances as long as 13 kilometres, crossing forests and rivers, creating barriers to accessibility and security.

Furthermore, some people were unaware of the role of ASHAs, instead seeking traditional healers or unqualified practitioners. In high malaria endemic areas, a further challenge is asymptomatic malaria cases, which, due to the lack of symptoms, often go undiagnosed.

## **Innovative strategies: malaria camps**

So, a further strategy was adopted – “malaria camps”, otherwise known as DAMaN Durgama Anchalare Malaria Nirakaran’ (malaria elimination in less accessible areas).

Malaria camps are more effective in diagnosing and treating people in high transmission areas compared to routine programmes. These camps occur two to three times a year, once before the monsoon and once after. They are based on [three basic principles](#): mass screening of populations aimed at the simultaneous elimination of all malaria parasites, treating all positive cases, irrespective of symptoms, and reducing the population of vector-borne mosquitoes through measures such as LLINs and IRS. ASHAs visit the villages to provide these key interventions, along with education and maternal and child health visits.

Dr Kaushik Sarkar, Malaria No More, explains: “We needed to strengthen the essential services like the drugs and diagnostics at the last mile. That’s why the camp-based approach

proved so effective.”

## **National and global efforts to sustain success**

The Indian government is seeking to [replicate the success in Odisha](#) by launching national campaigns, mobilising expanded domestic and global resources and building coalitions and partnerships. Malaria No More, with its network of advisors and partners, is providing strategic support.

Educational and behavioural campaigns are becoming increasingly important with the growing threat of temperature increase in the Himalayan region. In Odisha, extreme weather events like storms and cyclones are becoming commonplace. The India Intelligence Expert Committee on Malaria and Climate raised the concern that with erratic rainfalls and flash flooding creating new bodies of water, new areas are becoming receptive to malaria. People who have never experienced malaria and have limited or no knowledge of malaria prevention and treatment could come into contact with the disease.

## **Continued challenges and future directions**

In 2019, the Government of India [increased funding by more than 25%](#) for the National Vector Borne Disease Control Programme and increased support as a donor to the Global Fund.

The effects are clear - according to [World Malaria Report 2023](#), the number of cases and deaths due to malaria in India has continued to decline. With an estimated 3.4 million cases and 5,511 deaths, India saw a decline of 30% in malaria incidence and 34% in mortality in 2022 compared to the previous year. The malaria camp model continues to operate in Odisha, where cases continued to decline consistently up to 2022 by around 90% - from 450,000 to 25,000.



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However, more recently, there are signals that if LLIN delivery intensity slackens, progress could be threatened:

According to the National Centre for Vector Borne Diseases Control, [malaria cases in Odisha almost doubled in 2023 compared to 2022](#). In 2023, Odisha had the highest number of malaria cases in India – 41,971 and four deaths, showing that sustaining efforts is crucial to reaching elimination goals.

The State Health Department officials [explain the rise in malaria cases](#) due to the misuse of LLINS and the lowering of the efficacy of the nets due to non-replacements after three years. Odisha's Health & Family Welfare Minister Niranjan Pujari is urging the Government of India over the delay in the supply of 15.6 million LLINs to Odisha, which was meant to arrive in 2023 but has been delayed by nearly a year. He [states](#) that the supply of 15 million

LLINS to Odisha in 2020-21 “protected highly vulnerable people from malaria infection, which led to a remarkable decline in malaria caseload in the State”.

“India has made a huge success in terms of reducing malaria, and I would say it is on track to achieving the 2030 elimination goal. In India, there are pockets where socio-economic and geophysical access is a problem. In those areas, you cannot reach elimination without a focus on holistic development. I think the government is taking steps towards this through the NITI Aayog programmes, which target the 112 most under-developed districts nationwide. Measures like vaccines or spatial repellents can be used as additional or supplementary measures. Still, it cannot ever replace the routine of traditional interventions like Indoor Residual Spraying or bed nets, which function as a barrier between the man and the mosquito and are a very critical tool at the last mile of elimination,” Dr Kaushik Sarkar, Malaria No More.