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malaria atlas project

The changing impact of malaria control in Africa 2000-2025

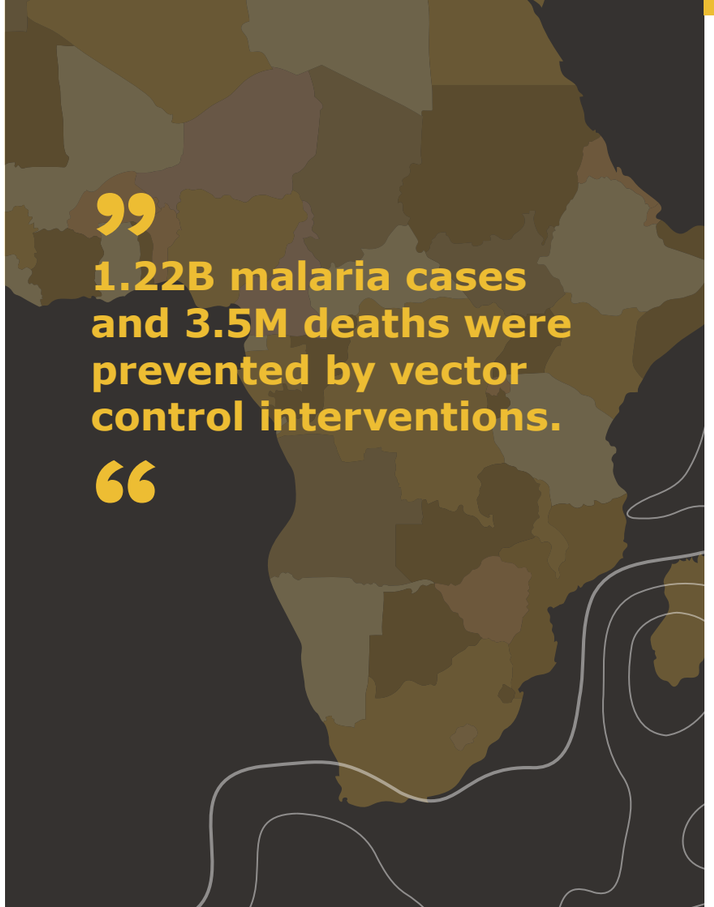
Malaria Atlas Project

Research 2025

Introduction

Research from the Malaria Atlas Project has reaffirmed the transformative impact of vector control on malaria since the turn of the century.

Building upon the seminal research first published in Nature (526, 207-211), by S Bhatt et al. The Malaria Atlas team have shown that vector control remains the backbone of malaria control, averting over **1B** malaria cases and **3.5M** deaths between **2000** and **2024.**



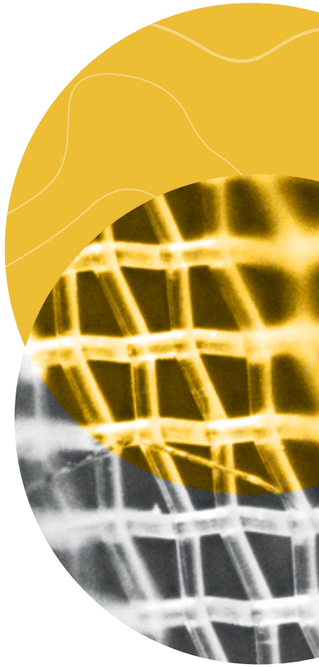
Executive summary

Over the past two decades, vector control has been the single greatest driver of progress against malaria worldwide.

Our analysis shows that between 2000 and 2024:

- 1.22B malaria cases and 3.5M deaths were prevented by vector control interventions.
- This is 77.7% of the total ~1.6B cases averted by all malaria control (ITNs, IRS, ACTs and SMC).
- ITNs were responsible for most cases averted by malaria control (1.13B) with IRS averting a further 85M cases.
- Next-generation ITNs, designed to combat insecticide resistance, have already prevented an estimated 40M additional cases despite only partial roll-out.

Without these tools, malaria would have resurged to pre-2000 levels, reversing two decades of hard-won gains. The implications are clear: sustained investment in innovation, scale-up, and delivery of vector control tools remains central to malaria elimination strategies.



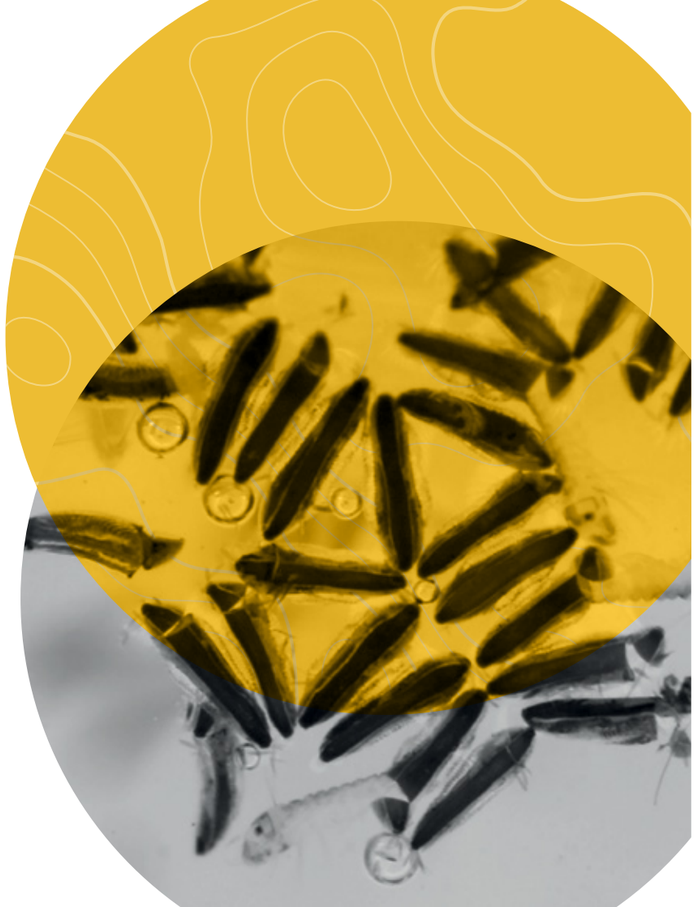
Key findings

1. Vector control has delivered the majority of malaria gains

• *Plasmodium falciparum* parasite rate (the prevalence of malaria infection) has declined by more than half since 2000.

• More than 50% of this progress is attributable to vector control.

• Without ITNs and IRS, malaria prevalence would likely have remained at - or rebounded to - pre-2000 levels.



2. ITNs remain the cornerstone of prevention

• ITNs are the most widely deployed malaria intervention.

• Coverage increased dramatically from 2000 to 2015, saving millions of lives, but has plateaued since 2016.

• ITNs have prevented over 1B malaria cases since 2000, proving to be one of the most cost-effective health interventions globally.

3. IRS has played a targeted but vital role

• Usage has declined due to cost and operational complexity but remains crucial in areas of high transmission or epidemic risk.

• Continued innovation and use of the now wider range of modes of action available in longer-lasting, resistance-breaking formulations is vital to maintain IRS as a viable option.

4. Innovation is already saving lives

• The emergence of pyrethroid resistance threatened to undermine ITN effectiveness.

• In response, next-generation ITNs combining pyrethroids with additional active ingredients (e.g., PBO, chlorfenapyr, pyriproxyfen) were developed.

• Early adoption of these products has already averted ~39.3M cases (to end 2024). Their full potential impact remains much greater, contingent on donor funding and rapid scale-up.

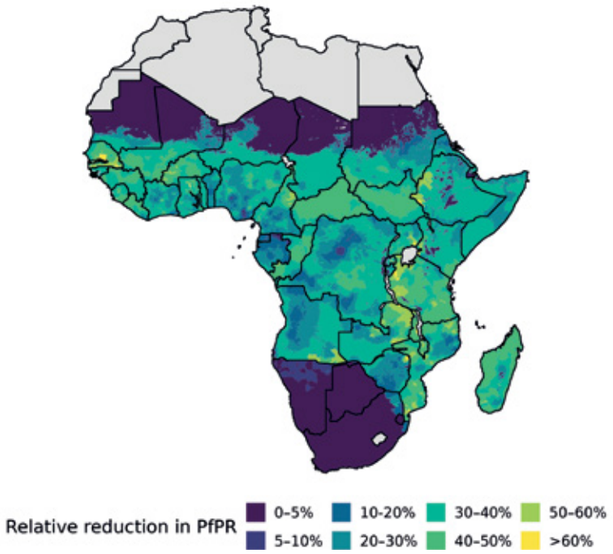
5. Reductions in $PfPR_{2-10}$

• Decrease in the prevalence of Plasmodium falciparum malaria infection in children aged 2 to 10 years.

• We estimate that 93% of the change in $PfPR_{2-10}$ since 2000 is attributable to the combination of malaria control interventions and secular improvements in care-seeking and socioeconomic development.

• Of this $PfPR_{2-10}$ averted, we estimate 71.1% has been averted by the scale-up of vector control, the majority of which (93.4%) is attributable to ITNs. IRS is locally important, however.

Percentage reduction in PfPR due to vector control (2020-2023 average)

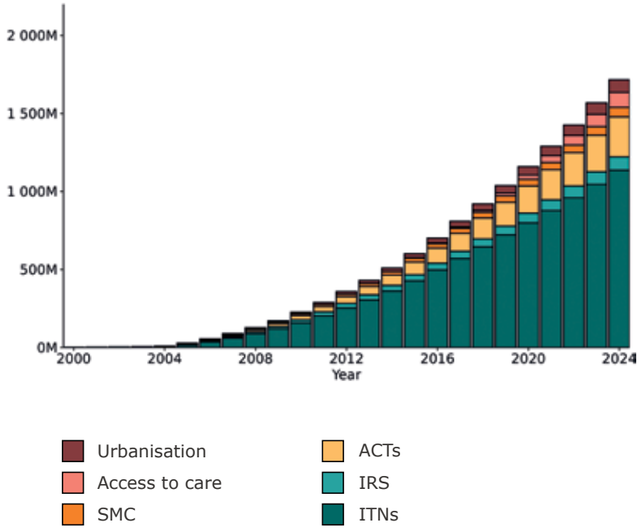


6. Cumulative clinical malaria averted since 2000 by contribution of different intervention and background factors

• We estimate that vector control has averted ~1.2B cases, cumulatively, since 2000. This is 77.7% of the total ~1.6B cases averted by malaria control (ITNs, IRS, ACTs and SMC), and 71.2% of the total cases averted (~1.7B, including cases averted by secular trends in care-seeking and urbanisation).

• Vector control plays a proportionally larger role in high-burden rural settings with perennial transmission, especially in countries with weaker health systems and less economic development.

Cumulative clinical malaria cases averted

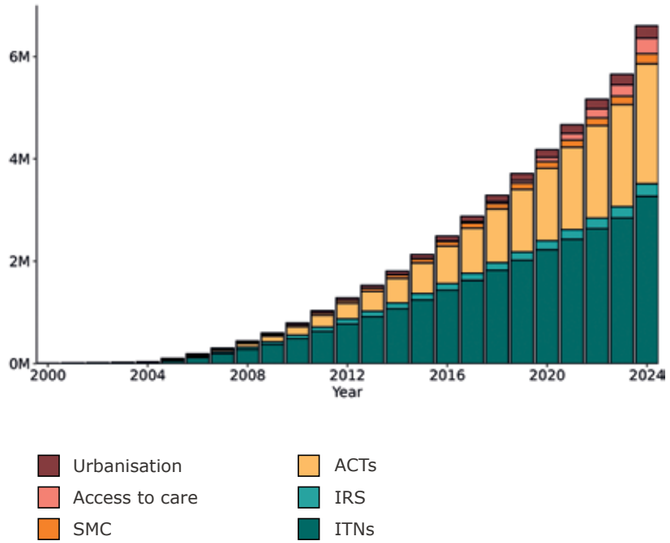


7. Cumulative malaria mortality averted since 2000 by contribution of different interventions and background factors

• By the end of 2024, we estimate that vector control has averted around 3.5M malaria deaths since 2000.

• This is just over half (58%) of the total ~6.2M deaths averted by all malaria control (ITNs, IRS, ACTs and SMC) combined, and 53% of the total decline in malaria mortality (~6.6M deaths averted when impact of care-seeking and urbanisation is included).

Cumulative malaria deaths averted



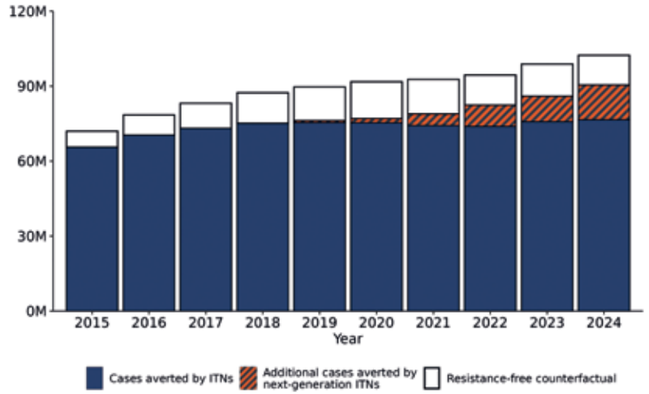
8. Impact of next generation ITN scale up

• We predict that in 2024 ITNs – including next-generation ITNs – averted ~90.4M cases of malaria in Africa, and ~209,000 malaria deaths.

• In 2025 70% of ITNs distributed in sub-Saharan Africa will be dual-AIs, and an additional 13% PBO.

• Had next-generation ITNs not been introduced in 2018, we predict ~13.8M more cases and ~24,000 more malaria deaths would have occurred in 2024 alone.

Annual clinical cases averted



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