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Nomadic populations remain a vulnerable group disproportionately affected by malaria and other vector borne diseases. Vestergaard is partnering with Médecins Sans Frontières (MSF) to address the urgent need for tailored and effective malaria interventions by providing 10,000 PermaNet® Dumuria nets for nomadic populations in South Sudan.

Nomadic Populations Face Disproportionate Vulnerability to Malaria

Nomadic populations are communities with no fixed home who move according to the seasons and in search of water, food, and pasture within traditionally defined grazing lands. Those who live and sleep outdoors face distinct challenges from exophagic mosquitos (mosquitos that feed outdoors) and the harsh conditions of open environments.

The nomadic people of South Sudan traverse hundreds of miles in the dry season in search of water and green pasture. They are part of an estimated 50-100 million nomadic people globally, with over 60% found in Africa.[1] Changes in climate, such as drought and other geographical elements, lead communities to adopt new migration cycles. These communities typically have reduced access to health services, with the nearest hospital often being more than 50km away, which puts them at greater risk of malaria morbidity and mortality.

Adressing the Malaria Risk Among Nomadic Families

Although indoor residual spraying and long-lasting insecticidal nets (LLINs) have contributed substantially to the reduction in malaria worldwide over the past two decades, these interventions are not suitable for protecting nomadic populations.

The harsh operating conditions that vary greatly between locations and populations can significantly impact the physical and chemical durability of standard LLINs.[2] For instance, outdoor use and ultraviolet exposure accelerate the rate and degree of insecticide degradation, leaving the nomadic communities with ineffective nets that offer limited

protection against malaria vectors.[3]

Olympe Peretz, Product Portfolio Manager at Vestergaard, comments, “Nomadic populations are at a significantly higher risk of contracting malaria due to their mobile way of life. Regrettably, they are often excluded from disease control programs, which makes accessing preventive and treatment measures extremely challenging. Whilst they have a good understanding of malaria prevention, traditional insecticide-treated nets and other malaria interventions cannot meet their needs. It is therefore crucial to deliver malaria interventions that are exclusively tailored to the specific needs of nomadic communities.”

Designing PermaNet® Dumuria Nets for Nomadic Populations in South Sudan

PermaNet Dumuria, a mosquito net based on the PermaNet® 2.0 technology, was developed specifically to meet the needs and conditions of the nomadic families.

The concept arose following trials in the Bieh State in South Sudan in 2001 by Oxfam GB and Roll Back Malaria (RBM)/WHO to identify the most culturally compatible, cost-effective bed net to protect the Nuer nomadic community.[4]

The study discovered that families would typically prefer to sleep under a cotton “demuria” because it is warm and safe, provides some protection from mosquitoes, is durable and easy to repair, and affords privacy. However, because the original demuria is not treated with insecticide, its effect on preventing death or illness was proven to be limited.

Meanwhile, manufactured insecticidal bed nets, while highly effective, were not being used properly or sufficiently, as the users preferred to sleep under the traditional cotton demuria nets for warmth and privacy.

Vestergaard responded by designing new treated nets — in line with the Nuer cultural and practical criteria that provide a greater degree of privacy and adapted to the harsh living conditions of nomadic populations.

Unlike a typical LLIN, PermaNet Dumuria is made of a non-mesh, opaque, bed sheet-like fabric. They are designed for outdoor use and are treated with a pyrethroid insecticide and a UV screen protector to make the insecticide more durable under sunlight. UV protectants (not found in the PermaNet 2.0) are added to the insecticide to make it more resilient to sunlight exposure. The physical properties of the bed sheet-like Dumuria also provide additional desirable functions of privacy, security and shelter.

Médecins Sans Frontières (MSF) contacted Vestergaard after discovering Dumuria nets that were in great condition after several years of active use in a community. *"In South Sudan, we found Dumuria nets that were distributed in the early 2000s still in use in the population today. The nets provide privacy, security, warmth and are relied on for when eating outdoors and sleeping by the nomadic communities. We began envisioning the partnership with Vestergaard to distribute Dumuria nets as good value for money. Dumuria is a tailored tool that will keep access high and make sure that there's an equity investment in the healthcare," explains Corey LeClair, Vector-Borne Disease Control Referent at MSF.*

Partnerships like Vestergaard and MSF Drive Solutions for Marginalised Groups

At MSF's request, Vestergaard has produced and shipped 10,000 PermaNet® Dumuria nets that reached South Sudan in April 2024. The nets will be distributed to a network of 7-8 villages in Maruwa, a town in Boma National Park, to around 20,000-40,000 people of a population group called Murle. For the sedentary population, MSF will continue the distribution of PermaNet® 3.0.

"This partnership touches on a number of core principles, not just that of MSF, but also of the way that malaria control globally needs to begin to envision itself. If we can continue to have similar collaborations between population, industry, academia and manufacturers, we can open the pipeline for other organisations that work with these marginalised groups, to provide them a cost-effective and synergistic tool for improving their population health," Corey LeClair, MSF.

Dumuria has previously been distributed amongst nomadic communities in South Sudan, as well as in Garissa County, Kenya, where studies have provided evidence of high usage and

acceptability of Dumuria, as well as increased durability, compared to standard mesh bed nets[2]. Together with Dr Natacha Protopopoff (Swiss TPH), Dr Jackie Cook (LSHTM) and Azzurra Dinca (MSF EH Unit), MSF are working on a way to properly quantify the epidemiological effect of the Dumuria nets. They are hoping to see an impact on disease prevalence, as well as a decrease in severe cases, cases requiring referral, and mortality. They are also interested in exploring the role of Dumuria nets as a mitigation tool for climate change.

"To improve health outcomes and meet global malaria targets, we need to continue to adopt tailored interventions that respond to the needs and challenges of communities who are not reached by blanket net distribution campaigns and core vector control interventions. Through our collaboration with MSF, we aim to deliver an effective tailored malaria intervention for nomadic populations in South Sudan," explained Olympe Peretz.

References

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