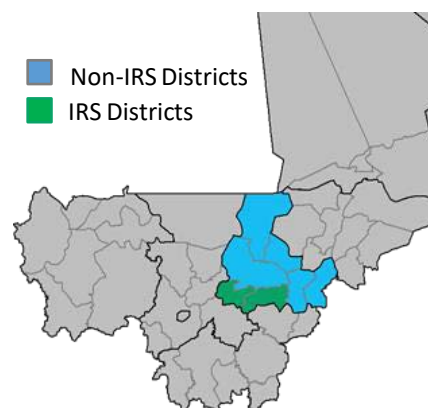


## Evidence Snapshot: 3<sup>rd</sup> generation IRS (3GIRS) in Ségou Region, Mali

### Background:

The Region of Ségou in central Mali has a high malaria burden: in 2013, parasite prevalence in children younger than 5 years old was 56%<sup>1</sup>. Though many people in Ségou sleep under insecticide-treated mosquito nets (ITN) to help prevent malaria infection<sup>1</sup>, the mosquitoes in Mali are highly resistant to the kind of insecticide used on nets (pyrethroids)<sup>2,3</sup>.

In 2014, some districts in Ségou participated in the US President's Malaria Initiative (PMI) Africa Indoor Residual Spraying (AIRS) project. Houses in these districts were sprayed with a newer, 3GIRS product: Actellic<sup>®</sup> 300CS, which contains an encapsulated organophosphate insecticide, pirimiphos-methyl (PM).



### The epidemiological impact of 3GIRS in Mali, 2014<sup>4</sup>:

In the six months after houses were sprayed with Actellic<sup>®</sup> 300CS, IRS districts reported malaria incidence rates **40% lower** than the non-IRS districts. This corresponds to **76,260 fewer cases** of malaria recorded at health centers from the IRS districts compared to what was seen in the comparable non-IRS districts.

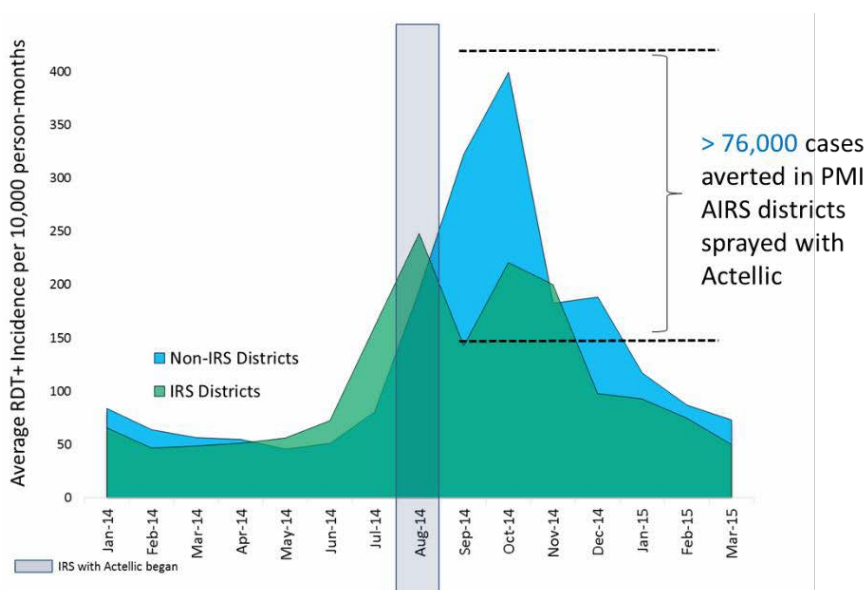


Figure 1. After spraying Actellic<sup>®</sup> 300CS in 2014, the incidence of malaria cases reporting to public health centers was reduced by 40% compared to neighboring districts without an IRS intervention.



### The entomological impact of 3GIRS in Mali, 2014:

Of note, the same 2014 IRS campaign was associated with decreases in the numbers of mosquitoes collected during entomological surveillance. In IRS areas, significant reductions were observed in the number of malaria mosquitoes:

- ↓ Resting Indoors (**79% fewer mosquitoes in IRS districts**)
- ↓ Biting Indoors (**93% fewer mosquitoes in IRS districts**)
- ↓ Biting Outdoors (**84% fewer mosquitoes in IRS districts**)

## Evidence Snapshot: 3<sup>rd</sup> generation IRS (3GIRS) in Ségou Region, Mali

### The epidemiological impact of suspending 3GIRS in Mali, 2015:

In 2015, IRS activities were suspended in one of the districts that was previously sprayed with Actellic® 300CS in 2014, Bla District. The neighboring district of Barouéli was sprayed in both 2014 and 2015.

The effect of suspending IRS was striking (Figure 2): **From 2014 to 2015, malaria case incidence rates went up by an average of 70% at health facilities in Bla** (202 additional cases) – during the same time period incidence rates stayed essentially the same in Barouéli, where IRS was implemented in both years. There is no indication that access or usage rates of ITNs were different between Barouéli and Bla. The most recent mass distribution was 2012 in both districts, and in 2013 and 2014 distribution continued via ANC/EPI.

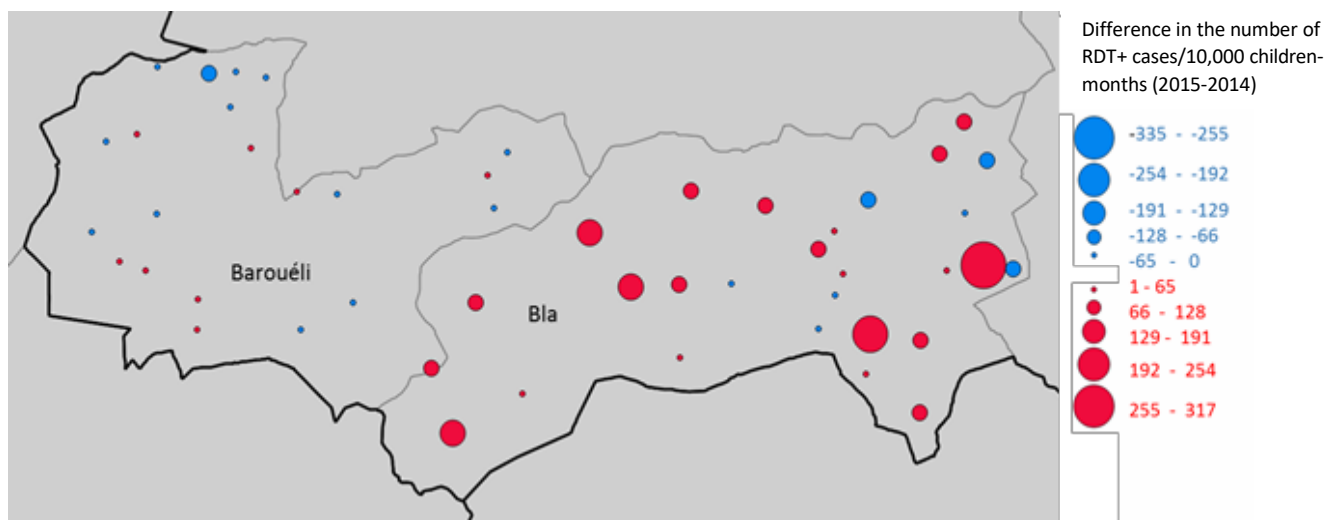


Figure 2. After 3GIRS operations were suspended in Bla district in 2015, the incidence of malaria cases reported at public health facilities went up an average of 70%.

**In 2014, 3GIRS with Actellic® 300CS was a good public health investment in Mali. In Barouéli district alone, around 260,000 people were protected and 76,000 cases of malaria were prevented.**

**After suspension of IRS in Bla District after the 2014 campaign, a 70% increase in under-5-years-old malaria incidence rates from 2014 to 2015 was observed. This was significantly greater than the change reported from Barouéli District, where incidence rates remained the same.**

**The increase in malaria observed in Bla after withdrawing IRS in 2015 suggests that more nuanced cost-effectiveness calculations should consider the negative impact of withdrawal to inform implementation decisions.**

<sup>1</sup> 2013 DHS, <sup>2</sup>PMI, 2016. Mali: Entomological Monitoring of 2015 IRS Activities  
<sup>3</sup>Cisse, et al. 2015. *Mal J.* 14:327, <sup>4</sup>Wagman, et al. 2018. *Mal J.* 17:19