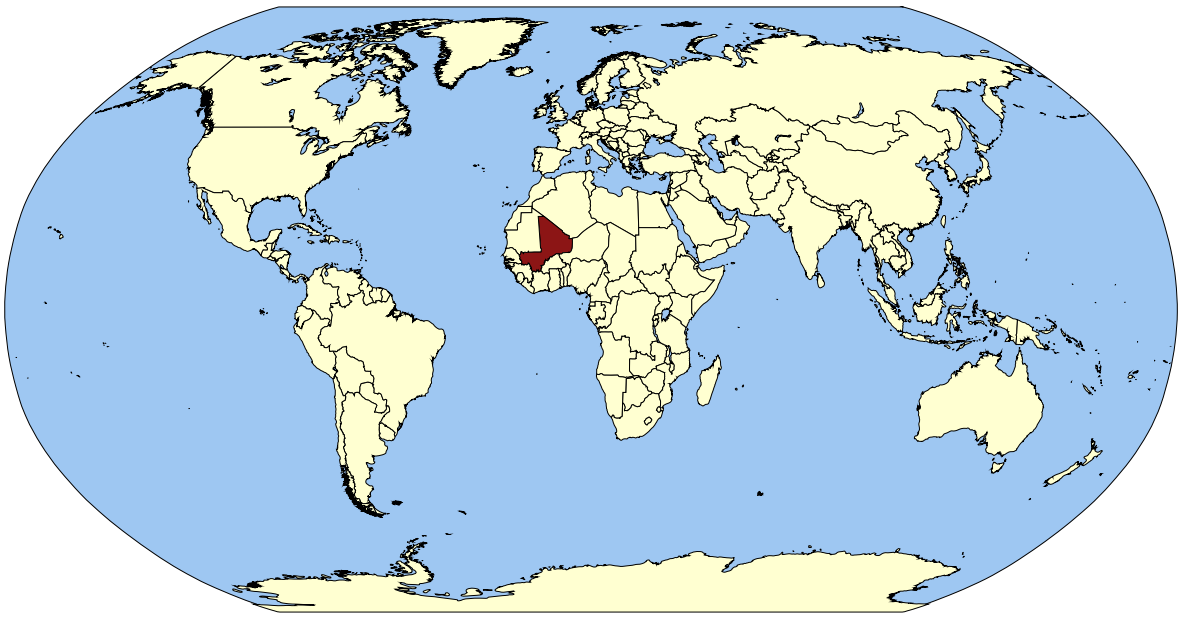
Mali



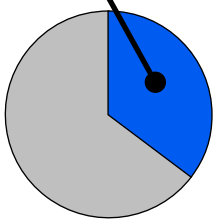
The History of Schistosomiasis in Mali

The first official report of schistosomiasis in Mali was in 1908 when Bouffard and Neveaux reported the infection in the region of Bamanko [1]. Long before, however, La Ronciere wrote about caravaners "urinating blood," a telltale sign of *Schistosoma haematobium* infection, during the 14th century while crossing the Sahara from Tombouctou (Mali) to the Tafilalet region in the south of Morocco, known for its commerce with Sub-Saharan Africa [2]. In 1978, Mali became one of the first countries in Sub-Saharan Africa to initiate a national control program. The historical record of schistosomiasis prevalence is inconsistent prior to the initiation of control programs. In 1976, Iatroski and Davis reported that 3.6 of 6 million people (59%) in Mali were at risk of infection. Most of the infections were distributed in the wetter and more populated south.

Schistosomiasis in Mali [7]

4,308,880 were treated for schistosomiasis in 2013.

35% of the population requires preventive chemotherapy for schistosomiasis



In 1978, Mali became one of the first Sub-Saharan African countries to start a schistosomiasis control program.

Overview of Mali [8]

- Population in 2014: 16,455,903
- Official Language: French
- Capital: Bamako
- Republic
- Percentage of Population with Access to Improved Drinking Water in 2012: 67.2%
- Percentage of Population with Access to Improved Sanitation in 2012: 21.9%

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The Perfect Environment

Mali is a large country (1.24 million km^2) with a fairly flat relief that spans the sudano-sahelian zone. There is a high mean annual temperature and a short rainy season from July to September. The rivers of Mali have long been the target of hydro-agricultural projects. Large dams like the Markala, Manantali, Selingue, Sotuba and Felou were already in place by the 1980's and many reservoirs and irrigation schemes have since been implemented. Rural populations living in the agricultural zones supported by these reservoirs and dams have a high risk of schistosomiasis infection due to their frequent water contact with snail-infested waters, promoting the lifecycle of the parasite [1]. Both *S. haematobium* and *S. mansoni* are distributed widely throughout the country, although *S. mansoni* has a lower and more focal and heterogeneous prevalence [1, 3].

Past Control Efforts in Mali

The control program started as a focal effort in the Mopti region near the construction of several small dams. After some success, the effort was expanded to a national program in 1982 with the help and funding from the World Health Organization (WHO) and the German Technical Cooperation (GTZ, Deutsche Geselischaft fur Technische Zusammenarbeit)[3]. During the following 10 years, the national control program was strongly funded by the external support of the GTZ and WHO. Extensive national parasitological surveys during 1984-1989 [4] preceded mass treatment campaigns in target areas, coordinated from a central team stationed in Bamanko. Mass drug treatment was sometimes supplemented with a test and treat strategy. The control program was initially focused on two endemic areas: Office du Niger (an irrigation area) and the Plateau Dogon (a small dams area) but was subsequently expanded. The control program relied heavily, if not entirely, on distribution of praziquantel. During the 10 year campaign, little to no coordinated snail control, sanitation improvements, or engineering controls were implemented as part of the program[3].

Since 2007, schistosomiasis control program coverage has increased to above >70%

Recent Control Efforts in Mali

By 1992, external financial support for the program ceased and the control activities were decentralized; responsibility for the national control program was then assumed by the Malian government [3]. However, a reduction of resources meant control activities were considerably reduced for at least 12 years [3,5]. In 2004, there was renewed interest to resume the national control activities fueled by funding from the Schistosomiasis Control Initiative (SCI), a large-scale, Gates-Foundation-backed initiative aimed at distributing praziquantel and other anthelminthic drugs in endemic regions [5]. The mass distribution of praziquantel thus resumed in Mali in 2005, this time targeting only school-aged children (5-15 years old) in highly endemic areas, which is the preferred strategy of SCI programs. In 2007, the schistosomiasis control program was rolled into the National Control Program on NTD's, funded primarily by the US Agency for International Development (USAID). Since 2007, therefore, mass drug administration with praziquantel has once again been scaled up to target a large portion of school age children and adults in high risk and hyper-endemic regions, reaching an impressive program coverage >70% in the target areas [5].

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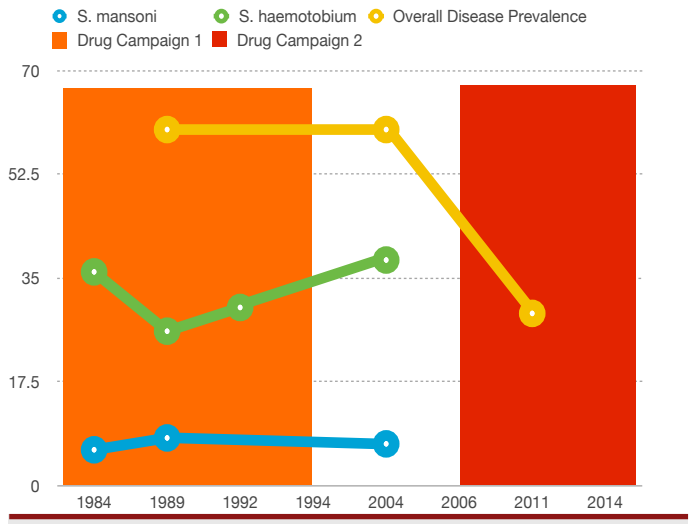
Data Analysis

Because large-scale parasitological surveys preceded both the initial and more recent MDA programs in Mali, there was the opportunity to compare the national prevalence and distribution of the disease prior to and 12 years after the initial 10-year control efforts. The results of a mapping effort by Clements *et al* 2009 that did just that: this report showed little change in the disease prevalence or distribution between the baseline surveys in 1984-9 and follow up surveys in 2004-6 [3]. A major take-home message of the study was the realization that, without a sustainability strategy, even large-scale, well-funded national MDA programs can fail to have a lasting effect on the prevalence and distribution of the disease. Indeed, a time series of the total population infected, compiled from various sources between 1987 and 2010 shows a slight dip in the total population infected with *S. haematobium* in the late 1980's and early 1990's, but a resurgence to pre-treatment levels by 2004, although the differences were slight enough and the data sources different enough that the dip and resurgence may have been noise in an otherwise relatively flat trend. Although data from Rollinson 2012 suggests another overall drop in national-level prevalence from a reported 60% in 2003 to 30% by 2010, after initiation of the second major national control program in 2005, it is too early to say whether the second round of mass drug distribution will have any lasting impact in Mali. Although a sustainability strategy has been discussed in the literature as a good idea for the renewed program [3,6], no reports were available to date to allow a review of whether other strategies (besides mass drug administration) have been implemented to bolster sustainability this time around.



Disease Prevalence in Mali

Schistosomiasis disease prevalence in Mali has varied over the past few decades -- rising and falling, but never disappearing. Two major drug campaigns (one of which is ongoing) are shown as bars spanning several years.

References

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