Combating Malaria

Aaron Sabbs, Dennis Leung, Neil Innarelli, Hillary Cirka, Mason Andruskiewicz
GPS: Heal the World

Need

To determine an effective and affordable way to combat Malaria in Africa.

Why?

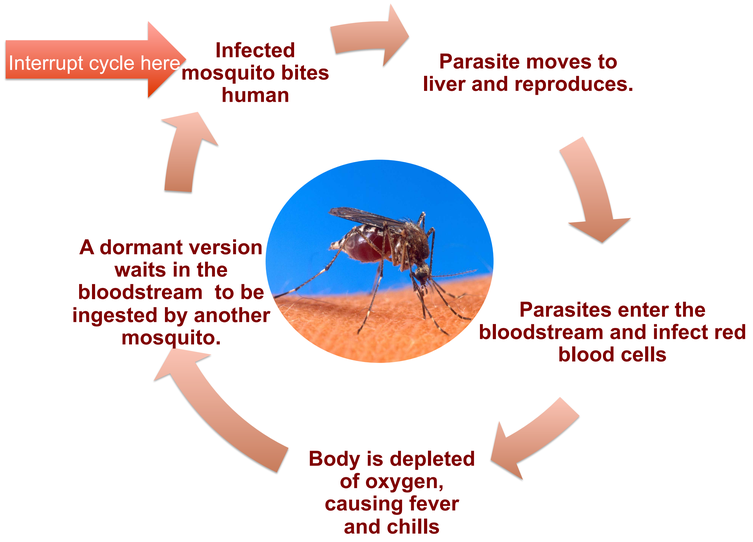
- Over 1,000,000 people die of Malaria every year.
- 90% of these deaths occur in Sub-Saharan Africa.
- Every 30 seconds a child dies of Malaria.
- It is predicted 20 -80 million people will be living in malaria infested regions by the year 2080 due to global warming.

Approach

1. Evolve malaria towards mildness
2. By reducing the number of mosquito bites in Africa
3. By investigating methods of mosquito prevention
4. Finally, raising awareness as to how people can help through flyers and fundraising

Life Cycle of Malaria

Malaria requires both humans and mosquitoes to survive. There are different strands of the disease, of varying states of virulence. The most virulent strands kill their host the fastest.



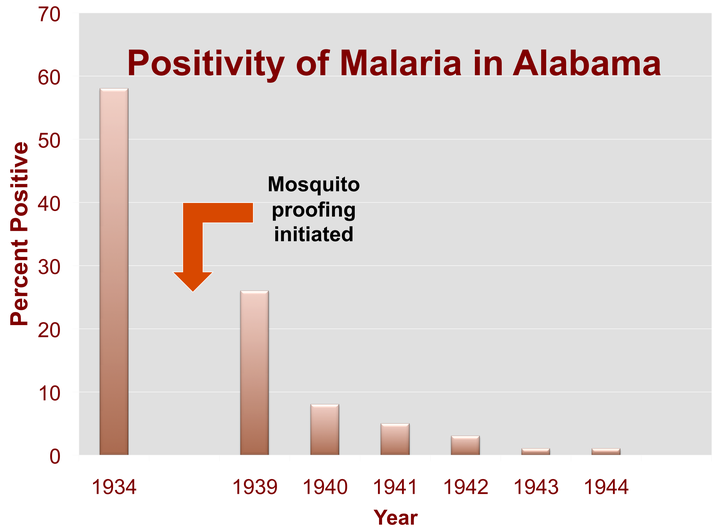
However, if a person who is infected with one of these strands isn't bitten by another mosquito, there is no way for the strand to be passed on. It will die with the person, leaving only the less virulent strands surviving.

Evolving Malaria

•Malaria cycle depends on parasite being passed from mosquito to human.
•Break cycle at transmission point and parasite will not reproduce in humans.
•This limits number of vectors of malaria because mosquitoes have fewer humans to contract the parasite from.
•By limiting vectors, malaria has fewer opportunities to infect humans.
•If we can keep breaking the transmission point, the number of vectors will be so small that malaria will not be a major problem due to huge decrease in infection rate.
•Disease will evolve toward mildness due to lack of hosts and reproduction.

Past Examples

Between 1927 and 1934 there was an explosion of malaria in Northern Alabama. Almost every house in the area was mosquito proofed by 1939 and the malaria rate dropped drastically.



Malaria and Drug Resistance in Southeast Asia

•Artemisinin is considered the most effect drug against malaria and has been used in Southeast Asia for the past 30 years.
•Artemisinin can kill the parasite in less than 72 hours. However, it does not remain in the body. In order to kill any remaining parasites that may have developed resistance, Artemisinin is often taken with another slower acting drug.
•In Cambodia, Artemisinin is losing its effectiveness due to lack of medical compliance.
•The parasite has been evolving into an untreatable, deadly disease.

Method	Pros	Cons
Bed nets	Simple, cheap	Limited protection
Insecticide treated bed nets	50% more effective than untreated nets	Need retreatment, costly compared to regular nets
Source elimination	No chemicals required, eliminates spawn point	Can damage ecosystem
DDT, insecticide spraying	Effective in small doses	Detrimental to environment/health
Natural predators	No chemicals required	Can damage ecosystem
Vaccine	Can prevent up to 50% of cases	Only effective for African strain, not on market
Artemisinin	Preferred and most effective medicine	May develop resistance
Treated bed sheets/ clothes	Mobile protection	Environmental/health factors
ProVector BT	Biodegradable, environmentally safe, cheap	New and relatively untested
Zooprophylaxis	Effective when used with insecticides	Detrimental without insecticides

Conclusion and Our Intentions

The simplest way to combat malaria would be to avoid being bitten by mosquitoes. At $10, insecticide treated bed nets are the most affordable and effective to combat malaria. Our plan is to educate the public as to how they can make the biggest difference. We will distribute flyers listing different charitable organizations such as Nothing but Nets, which supply insecticide treated nets to families in need. This will reduce the number of cases of malaria in Africa.

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