Combating Malaria

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Interrupt cycle here

The year 2080 due to global warming.

• 90% of these deaths occur in Sub-Saharan Africa.
• It is predicted 20-80 million people will be living in malaria infested regions by the year 2080 due to global warming.

90% of these deaths occur in Sub-Saharan Africa. Over 1,000,000 people die of Malaria every year. Finally, raising awareness as to how people can help through flyers and fundraising.

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

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.

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

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.

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.

A dormant version waits in the bloodstream to be ingested by another mosquito.

Body is depleted of oxygen, causing fever and chills

Interrupt cycle here

Infected mosquito bites human

Parasite moves to liver and reproduces.

Parasites enter the bloodstream and infect red blood cells

Positivity of Malaria in Alabama

Malaria and Drug Resistance in Southeast Asia
• Artemisinin is considered the most effective 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.

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Conclusion and Our Intentions
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.

Past Examples

Past 30

Insecicide treated bed nets

Source elimination

DDT, insecticide spraying

Natural predators

Vaccine

Artemisinin

Treated bed sheets/clothes

ProVector BT

Zooprophylaxis

Method

Pros

Cons