

## Case Study: Too Many Issues to Consider

**Industry:** *Epidemiological Control*

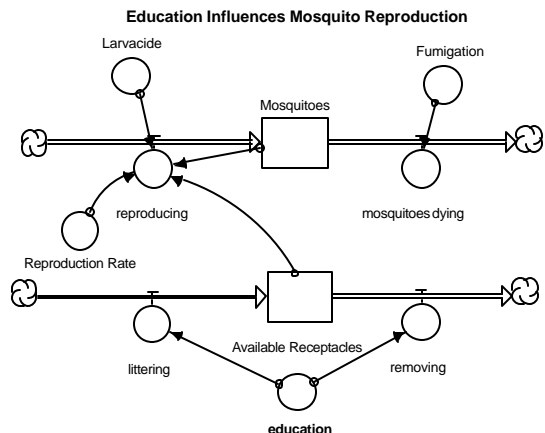
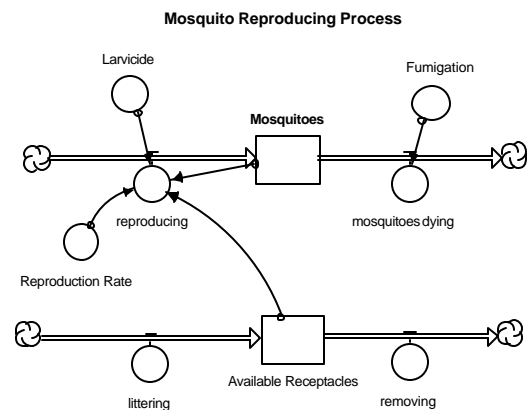
### The Issue

The Mexican Secretary of Health faced a potential epidemic in 1995 with scarce financial resources. As the mosquito-transmitted disease, dengue, crossed Guatemala towards Mexico, estimated worst-case fatalities reached sixteen million people. Experts from around the world arrived to advise the Secretary on disease transmission characteristics, pathologies and treatment, as well as mosquito control programs, disease detection and isolation techniques. The Secretary had to decide, with very little money and many expert opinions, how to minimize the impact of this potential disaster on the Mexican population.

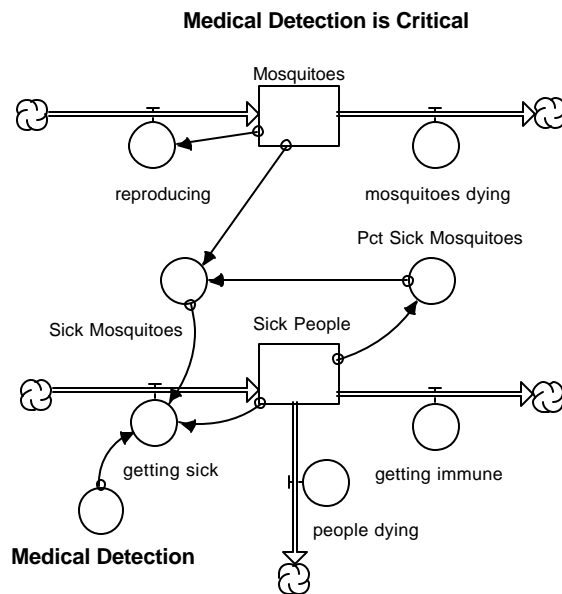
### The Approach

The Secretary of Health brought in Strategic Clarity to help the advisory board understand the dynamics of epidemiological control and to evaluate whether the current policies would provide adequate control in the short and long-term. The modeling process captured the many different expert perspectives into one high level platform. It became possible to evaluate the impact of traditional and costly interventions of fumigation and larvicide on other parts of the system. It became clear that, even though small climate changes account for the death of 98% of the mosquitoes, these intervention techniques could not provide an affordable long-term solution, unless they could guarantee 100% effectiveness. This is due to the extremely powerful positive feedback nature of mosquito reproduction (i.e., the population can grow 20-fold per week).

By including other approaches in the analysis, other opportunities began to present themselves. One observation highlighted the chance to eradicate the mosquito by removing the receptacles, such as old tires and oil drums, where they breed. To do this would require a massive education campaign. But work could begin immediately.



Lastly, the modeling efforts showed the dynamic link between the mosquito and infected humans. The model revealed that the positive feedback of the mosquito reproduction process directly influences the generation of sick people, fueling the epidemic cycle. Seen structurally, additional measures could also be taken in addition to applying fumigation, larvicides and education programs. A critical link in the chain of prevention is a medical diagnostic program to facilitate the identification of any epidemic symptoms. This measure can be very effective in nipping any future epidemic at the bud, but is very costly to implement in the short term and requires significant lead time to train doctors as well as communities country wide.



## The Results

The Secretary of Health used this approach to develop a coordinated, multi-pronged initiative that included protective measures in the short term and corrective measure for the long term within the limited budget available. In the short term, a massive education campaign was launched to remove the mosquito receptacles and prevent the massive reproduction of mosquitoes before they started. Concurrently, they continued a surgical strike fumigation campaign where these efforts were seen to be most effective. And lastly, the Secretary instituted a long-term structural change through the design and step-by-step implementation of a nation-wide medical detection program.

This effort was presented at an international dengue control conference in Panama in 1995 and was accepted as the model policy approach for nations threatened by the dengue epidemic.

For more information regarding Strategic Clarity, please visit our website at [www.strategic-clarity.com](http://www.strategic-clarity.com), or contact us at [info@strategic-clarity.com](mailto:info@strategic-clarity.com)