JING LI, The University of Ottawa, 585 King Edward Avenue, Ottawa, ON K1N 6N5
Can we spend our way out of the AIDS epidemic? A world halting AIDS model

There has been a sudden increase in the amount of money donors are willing to spend on the worldwide HIV/AIDS epidemic. Present plans are to hold most of the money in reserve and spend it slowly. However, rapid spending may be the best strategy for halting this disease. We develop a mathematical model that predicts eradication or persistence of HIV/AIDS on a world scale. Dividing the world into regions (continents, countries, etc.), we develop a linear differential equation model of infectives which has the same eradication properties as more complex models. We show that, even if HIV/AIDS can be eradicated in each region independently, travel/immigration of susceptibles could still sustain the epidemic. We use a continent-level example to demonstrate that eradication is possible if preventive intervention methods (such as condoms or education) reduced the infection rate to two fifths of what it is currently. We show that, for HIV/AIDS to be eradicated within five years, the total cost would be $\approx$ \$63 billion, which is within the existing \$60 billion (plus interest) amount raised by the donor community. However, if this action is spread over a twenty year period, as currently planned, then eradication is no longer possible, due to population growth, and the costs would exceed \$90 billion. Eradication of AIDS is feasible, using the tools that we have currently to hand, but action needs to occur immediately. If not, then HIV/AIDS will race beyond our ability to afford it.