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# Math wizards to fight disease; Modelling to help control spread in various groups

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Canada sent its top math brains to Africa on the weekend to share the country's knowledge about controlling the spread of disease.

"The mathematical techniques have done lots in Canada so there's no reason they shouldn't work in Africa," said Dr. **Arvind Gupta**, a computer-science professor at Simon Fraser University, who is co-ordinating the project.

Gupta noted that Canada uses mathematical models to track the spread of disease through various groups such as the gay community, drug users and prostitutes.

"We can predict when we will start seeing the disease spread in the other community through something we call leakage," he said.

He said identifying the leakage in diseases such as HIV shows how it can be successfully targeted through traditional techniques such as education and information.

"It's like a forest fire. You can throw a lot of water at it or you can put in fire breaks so the fire can't get through," he said.

"Spending money on education is more cost-effective than spending millions on drugs.

"Among prostitutes, you target the users of the service." Other diseases that benefit from the mathematical models include malaria and tuberculosis.

The project is based at the SFU centre of excellence called the **Mathematics of Information Technology and Complex Systems**.

The centre is authorized to set up international projects. It has a $20,000 federal grant for this one. The Canadian team will conduct a two-week course for 25 Canadian and African graduate students in Botswana. The students are coming from all over sub-Sahara Africa.

Canada's team includes top-flight mathematic professors Dr. Abba Gumel of the University of Manitoba and Dr. Troy Day of Queen's University.

Gupta said the project is only a beginning because the team won't have all the local knowledge necessary to apply the techniques.

"We're not going to build sophisticated modelling in two weeks. This is the first step toward an ongoing dialogue," he said.
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