

Winnipeg Free Press

Prof prescribes good dose of math for infectious diseases

Winnipeg Free Press
Thu 14 Aug 2008
Page: B5
Section: Life
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It's not unusual for University of Manitoba professors to battle infectious diseases in Africa -- but Prof. Abba Gumel's "medicine" is mathematics.

Gumel is part of a Canadian team of mathematicians leaving for Botswana Friday to teach about two dozen Canadian and African graduate students how to control the spread of infectious diseases using equations and formulas.

"The idea is to use mathematical approaches to understand infectious diseases," Gumel said. "This is my area of specialization, mathematical biology. "

Gumel explained that the project goes far beyond compiling and analyzing statistics. It involves math, computer science, statistics, and public health policies.

"The key point is to come up with strategies," he said.

"The model is a mathematical model, using equations" that can take the data on a disease, and then help researchers predict the number of cases likely to develop, where and whom the disease will afflict, how many hospital beds will be needed and how many deaths will occur, he said.

Using math, public health officials can see where they'll need to establish quarantines or have resources ready for effective intervention, Gumel said.

"It's really focusing on the training side of things," Gumel said. "(Africa) is a hot spot, if you really want to do serious modelling of infectious diseases."

Gumel said Canadian mathematicians have been working with public health officials here to develop mathematical models, particularly since the SARS outbreak in the Toronto area several years ago.

Gumel and Queen's University mathematics, statistics and biology Prof. Troy Day are members of the **Mathematics of Information Technology and Complex Systems (MATICS)**.

They'll link in Botswana with colleagues from Makerere University in Uganda, the National University of Science and Technology in Zimbabwe, and University of Botswana, to lead the grad students through an intense two-week workshop that will teach them the latest math tools and techniques to help predict outbreaks of diseases such as HIV/AIDS, malaria and tuberculosis, and control their spread.

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Idnumber: 200808140057
Length: 323 words

Tone: Neutral
Ad Value: \$1,661.16
Circulation: 119,169