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“Imminent” flu pandemic: Are we ready?

For years, experts have been saying that we're overdue for an influenza pandemic, but how prepared are we to cope if — or when — it happens? US experts say that the potential lag time between detection of the first human cases of a new, highly pathogenic strain and production of a clinically tested vaccine is dangerously long.

Writing in *Science* (2003;302 [5650]:1519-22), Robert G. Webster and Richard J. Webby of St. Jude's Children's Research Hospital in Memphis note that pandemics take place every 10 to 40 years. The increased frequency since 1997 of novel influenza subtypes in human and animal reservoirs suggests that the next pandemic may be “imminent.”

“Everyone believes we're overdue for one,” agrees Dr. Arlene King, who co-chairs the national Pandemic Influenza Committee and is Health Canada's director of immunology and respiratory infections. “In Canada, everyone has used SARS as the dress rehearsal for pandemic influenza.”

“A pandemic could make SARS look like a cakewalk,” adds Dr. Danuta Skowronski, an epidemiologist with the British Columbia Centre for Disease Control. “We estimate that up to 50 000 people could be affected at the same time, and that's why it's important to be self-sufficient [in vaccine] at the local and provincial level. We need to ramp up manufacturing capacity really quickly,” she said. “Vigilance, infection control and communication are important.”

The World Health Organization estimates that the next pandemic will likely kill up to 650 000 in developing countries.

Most governments aren't up to the challenge, according to Webby and Webster, but “the country best prepared to meet this need is Canada.” They cite the Ontario government's decision to offer free flu shots as the kind of “progressive strategy during interpandemic years [that] will ensure ... vaccine-manufacturing capacity.”

The Canadian government is also working with provincial and territorial governments, industry and scientists to orchestrate a national response plan, says King. “We have been leading the world in ensuring the infrastructure to create a vaccine, should a pandemic occur.” Health Canada is working with Shire Biologics of Sainte-Foy, Que., so that “we could produce 8 million doses per month.”

Both British Columbia and Alberta also have plans spelling out roles and responsibilities. This is particularly important in BC, which sees itself “as the gateway between southeast Asia and Canada in a pandemic,” said Skowronski.

But no amount of preparedness can speed up the process for producing a vaccine to protect against new strains of flu. It takes 4 to 6 months for manufacturers to grow the vaccine culture in eggs and take it through clinical trials. Webster and Webby state that this is too slow to respond to a pandemic.

The avian flu strains that

cropped up in Asia in 2003 add a new wrinkle: vaccines against the highly pathogenic H5 and H7 subtypes cannot be cultured in eggs, currently the only means of developing enough vaccine for a pandemic.



Dr. Danuta Skowronski gets her shot: “A pandemic could make SARS look like a cakewalk.”

“One of the challenges of a flu pandemic is the lack of ability to scale up production quickly enough,” said Toronto infectious disease expert, Dr. Donald Low. “While new vaccine techniques that hold promise are being developed, they may be available in a few years, but not now.”

Webby and Webster point out that, until new methods such as reverse genetics (a plasma-based production method that clones genetic components of potentially pandemic flu strains) can be mass produced, the solution is to stockpile antiviral drugs to be used while the vaccine is being grown, and to raise public awareness. As yet, no country has begun to stockpile antivirals. That includes Canada.— *Margot Andresen, Ottawa*