



Dr. Jay Udell (L) and
Dr. Muhammad Mamdani (R)

FIGHTING CVD

WITH FLU VACCINE

Seasonal influenza results in up to 20,000 hospitalizations and claims about 4,000 lives in Canada each year. But it likely causes a lot more morbidity and mortality related to cardiovascular disease (CVD) than we think, suggests Dr. Jay Udell, an HSRLCE member and staff cardiologist at Women's College Hospital and the Toronto General Hospital, as well as a clinician-scientist at the University of Toronto.

In response, Dr. Udell and Dr. Michael Farkouh, HSRLCE's Director, are exploring whether a flu vaccine could serve as a cardioprotective measure—essentially, a cardiovascular disease vaccine.

Heart attack and stroke risk are acutely elevated for a few days after flu infection. Evidence suggests that the flu has pro-inflammatory and pro-thrombotic effects, which can produce unstable plaque and blockages and lead to serious cardiovascular events. The flu vaccine triggers antibodies that may have a stabilizing—cardioprotective—effect, says Dr. Udell.

Dr. Udell's quest to determine whether the flu vaccine would protect high-risk individuals began with a systematic review of six randomized clinical trials of flu vaccine with CV outcomes as endpoint. The findings, published in the *Journal of the American Medical Association*, were positive. "People who got treated with flu vaccine had a lower risk of major adverse CV events such as heart attacks and stroke for the next year," Udell reports. The greatest benefit was seen among the highest-risk patients with more active coronary disease.

Now the HSRLCE team is launching a large North American clinical trial to investigate whether the flu vaccine's benefits perhaps extend beyond infection control to cardiovascular protection. The collaboration spans the University of Toronto in cardiovascular medicine and infectious disease and involves all teaching hospitals in Toronto, plus 60 hospitals and clinics across Canada and another 120 in the United States.

The ambitious project also involves HSRLCE member Dr. Muhammad Mamdani's team at the HUB, a U of T-affiliated organization that manages the logistical end of clinical trials. Recruitment for the study will start in 2016, aiming for 9,300 patients and running for three flu seasons (over three years), with a minimum of one year of follow-up.



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While Dr. Udell's team awaits Canadian and U.S. National Institutes of Health funding, it is embarking on a pilot study that compares a more potent flu shot with the regular shot in patients with heart attacks or congestive heart failure. "We want to see if we can do a better job of mounting an immune response to the flu and preventing bad clinical outcomes," says Dr. Udell. "The Holy Grail will be looking at whether we have a CV disease vaccine on our hands."