New health calculator can help predict heart disease risk, estimate heart age

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A new online health calculator can help people determine their risk of heart disease, as well as their heart age, accounting for sociodemographic factors such as ethnicity, sense of belonging and education, as well as health status and lifestyle behaviours. The process to build and validate the tool is published in *CMAJ* (*Canadian Medical Association Journal*).

Cardiovascular disease is the leading cause of death in Canada, although risks of death from heart disease are modifiable with lifestyle changes. Most people are unaware of their cardiovascular risk until they experience a cardiac event, which may be fatal.

"What sets this cardiovascular risk calculator apart is that it looks at healthy living, and it is better calibrated to the Canadian population," says Dr. Doug Manuel, lead author, senior scientist at The Ottawa Hospital and a senior core scientist at the Institute for Clinical Evaluative Sciences (ICES).

Using a "big data" approach, researchers used routinely collected data on 104 219 Ontario residents from the Canadian Community Health Surveys (2001 to 2007) linked to ICES data on hospitalizations and deaths to develop and validate the Cardiovascular Disease Population Risk Tool (CVDPoRT).

The calculator allows individuals to accurately predict their risk of hospitalization or death from cardiovascular disease within the next five years. For example, if

their risk is five percent, it means that five in 100 people like them will experience a serious cardiovascular event in the next five years. The calculator also provides heart age, an easy-to-understand measure of heart health.

Unlike other risk prediction tools, the Cardiovascular Disease Population Risk Tool considers many factors, such as sociodemographic status, environmental influences like air pollution, health behaviours ranging from smoking status to alcohol intake to physical activity, health conditions and more. The list includes:

- Age
- Smoking status and lifetime exposure
- Alcohol consumption
- Diet
- Physical activity
- Stress
- Sense of belonging
- Ethnicity
- Immigration status
- Education
- Socioeconomic status of the neighbourhood
- Diabetes
- High blood pressure

"A lot of people are interested in healthy living, but often we don't have that discussion in the doctor's office," says Dr. Manuel, who is also a professor at the University of Ottawa. "Doctors will check your blood pressure and cholesterol levels, but they don't necessarily ask about lifestyle factors that could put you at risk of a heart attack and stroke. We hope this tool can help people -- and their care team -- with better information about healthy living and options for reducing their risk of heart attack and stroke."

In addition to personal use, policy-makers can use the tool to calculate risk profiles for different populations. Currently set up for use in Canada, it can be adapted for any of the 100 countries around the world that collect health survey data.