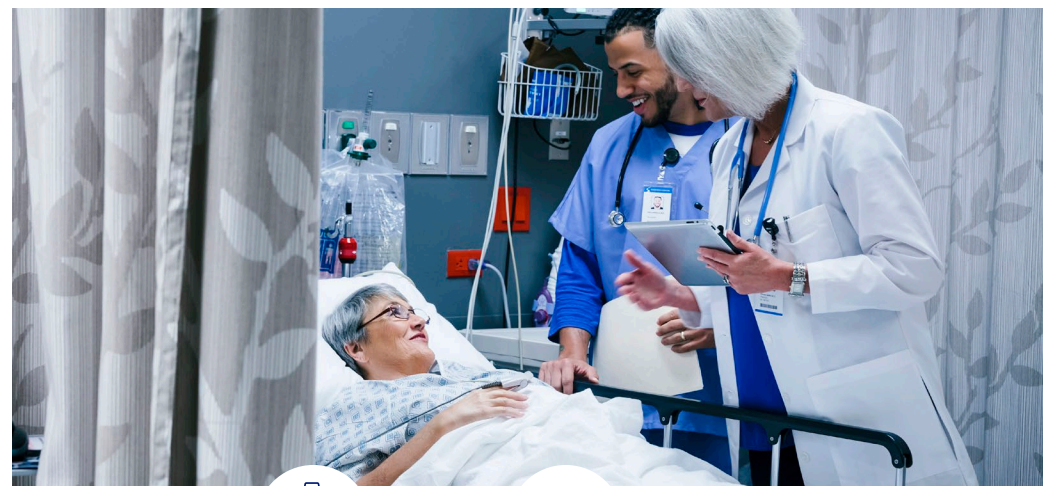


Electronic “second opinion” helps ER doctors decide if low-risk heart failure patients can be safely sent home

An important goal in medicine today is the ability to more accurately predict the outcomes of illnesses, treatments and surgeries in advance, so that patients and their care providers can make informed treatment decisions that are customized to their individual risk. A potential revolution in predictive medicine has become more possible as massive collections of real-world health data, such as the unique and robust data held at ICES, become available. These data can be used to create predictive algorithms that are based on the real-world experiences of thousands, or even millions, of patients. As data sets grow bigger and more complex, prediction tools are able to zoom in even more tightly on an individual’s personalized risk; in other words, more data means more precision.



Areas of impact:



Stronger Health Care System



Healthier People

ICES Research

The Emergency Heart Failure Mortality Risk Grade (EHMRG) Calculator is an important ICES-developed risk prediction tool that is growing in international reputation. Not intended to replace a doctor’s judgement, the tool acts as a sort of clinical “second opinion,” helping to ensure that patients receive the most appropriate care. An online questionnaire that works on emergency doctors’ computers and smartphones, the calculator is used in the emergency department when a patient arrives with heart failure, to help estimate severity and whether the patient needs to be admitted to hospital, or if they

can be safely sent home with follow-up care. Doctors enter their patients’ vital signs and other information into the calculator, and the calculator estimates the risk of whether this patient might die within seven days.

A **follow-up study** has shown that the EHMRG tool could be better than physicians’ estimates at predicting risk. Early results from a subsequent large ICES-led trial, called the COACH trial, show that when the EHMRG tool is used in conjunction with a rapid follow-up clinic program, it is a safe and effective way to reduce unnecessary hospitalizations.

How this work is having **impact**

[The EHMRG tool] illustrates the potential for the novel use of data for health-care innovation.

2018 report prepared by the Expert Panel on Timely Access to Health and Social Data for Health Research and Health System Innovation for the Council of Canadian Academies.

Clinical Adoption

- Estimates of cost savings and safety from the nearly complete **COACH trial** using the EHMRG calculator are so compelling that several hospitals in Ontario plan to fund the program after the trial ends.
- In the U.S., **Saint Luke's Health System**, which includes four hospitals with emergency departments in Kansas City, added the EHMRG tool as a mandatory element of its electronic medical records system, following a trial of the tool's effectiveness and safety.

Endorsement by Professional Organizations

- In a **2018 report**, an expert panel of the Council of Canadian Academies cited the EHMRG tool as a cutting-edge model that "illustrates the potential for the novel use of data for health-care innovation."
- In 2017, the European Society of Cardiology – Acute Cardiovascular Care Association published a **position paper** that singled out the EHMRG tool as a promising support for physician decision-making, with ongoing development and validation.
- An expert panel appointed by Health Quality Ontario and the Ministry of Health and Long-Term Care reviewed the EHMRG calculator in the **2013 clinical handbook for congestive heart failure** and recommended that "the physician community needs to adopt this tool or a risk-stratification method to guide decisions."