

Low Value Tests: ECG

What is the Choosing Wisely recommendation on ECG testing?

It is estimated that 30 percent of tests performed in Canada have low diagnostic and prognostic value. While electrocardiogram (ECG) testing can be useful in assessing chest pain, shortness of breath or palpitations, ECGs are not recommended in the following situations:

- Detecting heart disease in patients without symptoms
- Predicting future risk of developing heart disease
- Routine screening during annual check-upⁱⁱ
- Routine screening before surgeryⁱⁱⁱ

Testing for minor abnormalities seen on routine ECGs may result in “testing cascade” of multiple unnecessary low value tests. The cascade of further tests can lead to patient worry, stress and potential harm, including unnecessary radiation exposureⁱⁱ.

Scope

The Cardiovascular Health and Stroke Strategic Clinical Network (SCN) and its partners have been seeking to reduce low value cardiac investigations in Alberta. An estimated 1.2 million ECGs are performed every year with the approximately 750,000 within AHS. With ECGs being a test performed in extremely high volumes, this test was prioritized as a starting point. Lessons from reducing low value ECG testing is intended to be applied to reducing other low cardiac investigations.

An Advisory Committee has been the governance committee for the Low Value ECGs initiative since June 2022. The scope was determined to be provincial, for 12 lead ECGs only, for patients over 18 years of age and older, and within the AHS setting excluding the emergency department, where half of AHS’ ECGs are performed but where they may be high value.

Actions Undertaken

An environmental scan was undertaken in 2020-21, including review of the literature and consultation with key players in the provincial ECG ecosystem, particularly diagnostic imaging stakeholders. A data dashboard was developed to inform the extent of ECG use across the province. In the process of understanding ECG use, best practices already in place within the province were also uncovered.

Accordingly, actionable priorities guided by the Advisory Committee for Low Value ECGs consisted of the following:

1. Education, Awareness & Communication

Educational materials and infographics were developed in partnership with key stakeholders to disseminate to clinician groups including physicians, nursing and diagnostic imaging practitioners as well as to leadership within AHS. Patient-facing materials were co-developed with patient partners to create awareness with patients. Awareness building is a key foundational step in the change management process that has been well-received. Special interest was also received from groups outside of AHS who assisted in disseminating awareness into community practice.

2. Leveraging Connect Care

As key partners, Connect Care stakeholders have taken notable leadership in ensuring that order sets that have pre-selected or “default” ECGs, are reviewed by physicians authors. These conversations have led to increasing awareness with Area Councils, leading to actionable changes where default ECGs where deemed low value, have been removed and other areas of improvement within Connect Care identified. This intervention primarily reduces likelihood of automatic ordering of ECGs where they may be low value.

3. Spreading Best Practices

Numerous best practices have been uncovered during the environmental scan. One exemplary practice was chosen as a focus for provincial spread.

The low value cardiac investigations initiative was conceptualized in 2015 by Cardiac Sciences Leadership who were successful at implementing a decision algorithm at a pilot cardiac ambulatory site at the Calgary Foothills Medical Center resulting in a 34% unit-level and 7% site-wide reduction in ECG testing. They realized \$2.4 million cost savings based on

\$148 per test (estimate from AHS Finance) taking into consideration direct and indirect costs (case costing), resulting in a 12% cost reduction over 3 years.

This pilot initiative has regained interest for scale and spread which had been paused during the COVID-19 pandemic. The developed algorithm is being adapted to be applied in practice across different ambulatory settings such as in cardiac outpatient, pre-assessment clinics and possibly others. Conversations have been initiated with unit managers and physicians at various sites within Alberta. Nursing staff have been socialized on potential quality improvement opportunities through a marketing poster. While there is interest in adopting the algorithm in workflow processes, the significant impact that spread of the algorithm can achieve requires equally significant effort and resources within a dedicated project. Financial projections and feasibility of spread are currently being explored.

Summary

With the multi-pronged approaches mentioned; we aim to reduce ECGs within the system by 10%. Curbing low value ECG use translates to cost reduction and better use of nursing and physician time, less health care waste and ultimately, increased delivery of high value, quality and safe, patient care and enhanced patient experiences.

ⁱ Cihi.ca. 2017. Unnecessary Care in Canada. [online] Available at: <https://www.cihi.ca/sites/default/files/document/choosing-wisely-baseline-report-en-web.pdf>

ⁱⁱ Choosing Wisely Canada. 2021. Five tests and treatments physicians and patients should question in cardiology.. [online] Available at: <<https://choosingwiselycanada.org/cardiology/>> [Accessed 31 March 2021].

ⁱⁱⁱ Hepner, D., 2009. The role of testing in the preoperative evaluation. Cleveland Clinic Journal of Medicine, [online] 76(10 suppl 4), pp.S22-S27. Available at: <https://www.researchgate.net/profile/David-Hepner/publication/38059069_The_role_of_testing_in_the_preoperative_evaluation/links/5499f5580cf2d6581ab15748/The-role-of-testing-in-the-preoperative-evaluation.pdf> [Accessed 31 March 2021].