

# The Impact of an Educational Intervention on the Diagnosis of Critical Coronary Artery Disease in Men and Women With Stable Angina by Age

## Objective

To compare rates of diagnosis of critical coronary artery (CAD) disease by indication following the introduction of universal use of eOrdering at a time when an educational intervention for management of stable angina was undertaken.

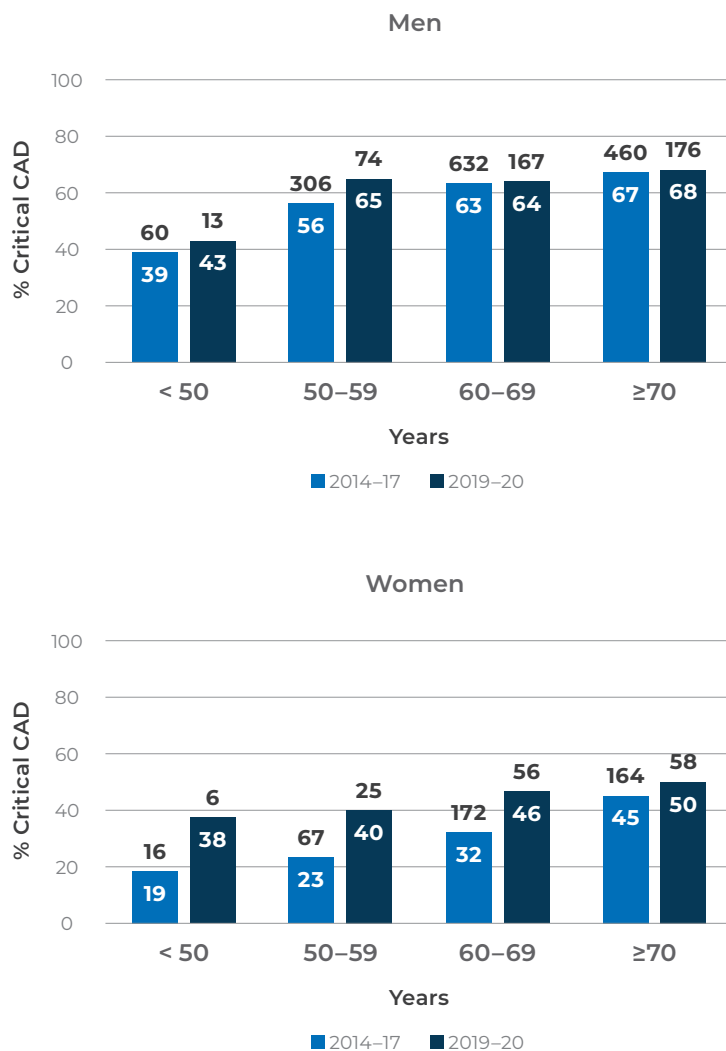
## Practice Points

1. In February 2019, ordering of a cardiac catheterization (CC) in NL could only be undertaken electronically using MyCCath.
2. In 2019, audit, feedback, and academic detailing of 46 referring physicians was undertaken to improve appropriate referral of patients with stable angina, particularly in women in whom the rate of diagnosis of critical CAD from 2014–2017 was 32%.
3. No educational program was undertaken in patients with ST Elevated Myocardial Infarction (STEMI) and Acute Coronary Syndrome (ACS). ACS comprises Non ST Elevated Myocardial Infarction (NSTEMI), in whom the use of CC may have been influenced by the advent of high sensitivity troponin tests, and unstable angina, in whom CC may be undertaken in patients with chest pain falsely attributed to CAD.
4. The hypothesis was that the use of the thrombolysis Myocardial Infarction (TIMI) score in the eOrdering tool, MyCCath, may be associated with some improvement in the rate of diagnosis of critical CAD in ACS but that the educational intervention would increase the rate more in patients with stable angina, particularly women and people <60 years.

## Methods

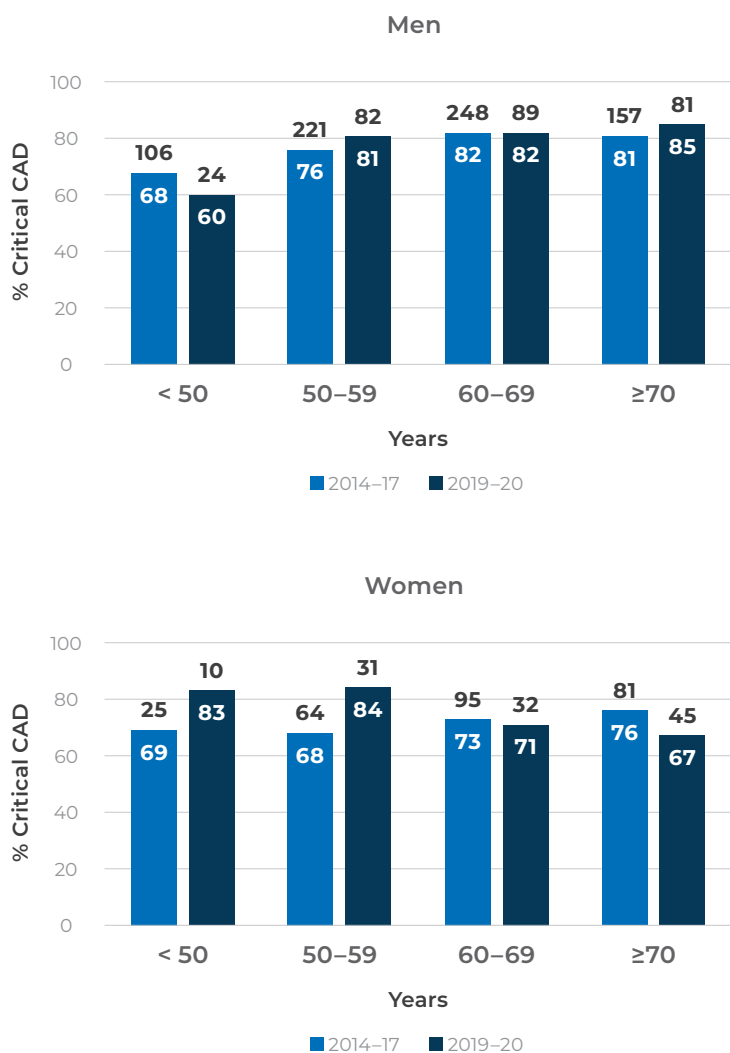
1. Patients in the APPROACH database who had cardiac catheterization for CAD were analyzed for the period 1 Jan 2019 – 15 Mar 2020 (63 weeks) by indication, age and sex, and compared to comparable groups in 2014–2017. Critical CAD was defined as  $\geq 1$  coronary artery with  $\geq 70\%$  stenosis or  $\geq 50\%$  stenosis of left main coronary artery.

## Results



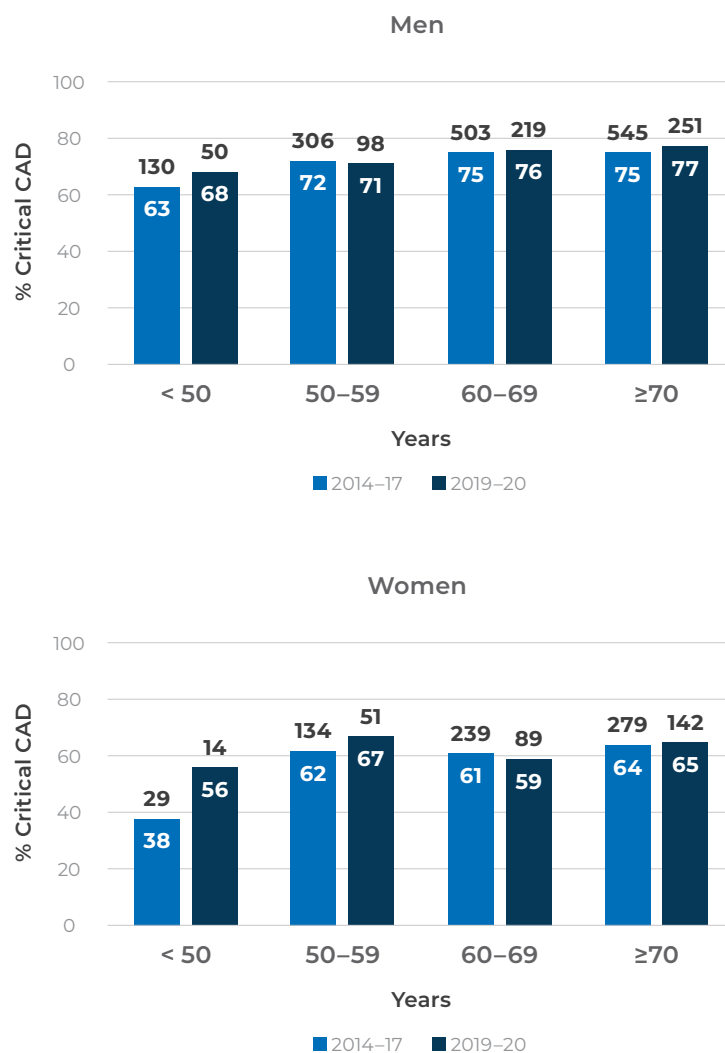
**Figure 1. Percent Diagnosed With CAD in Men and Women With Stable Angina by Age in 2014–2017 and 2019–2020**

- For men <60 years, improvement in percent with critical CAD was observed: overall rate improved from 60% in 2014-2017 to 65% in 2019-2020.
- For women, substantial improvement in the rate of diagnosis was observed in 2019-2020: overall the rate improved from 32% to 46%.



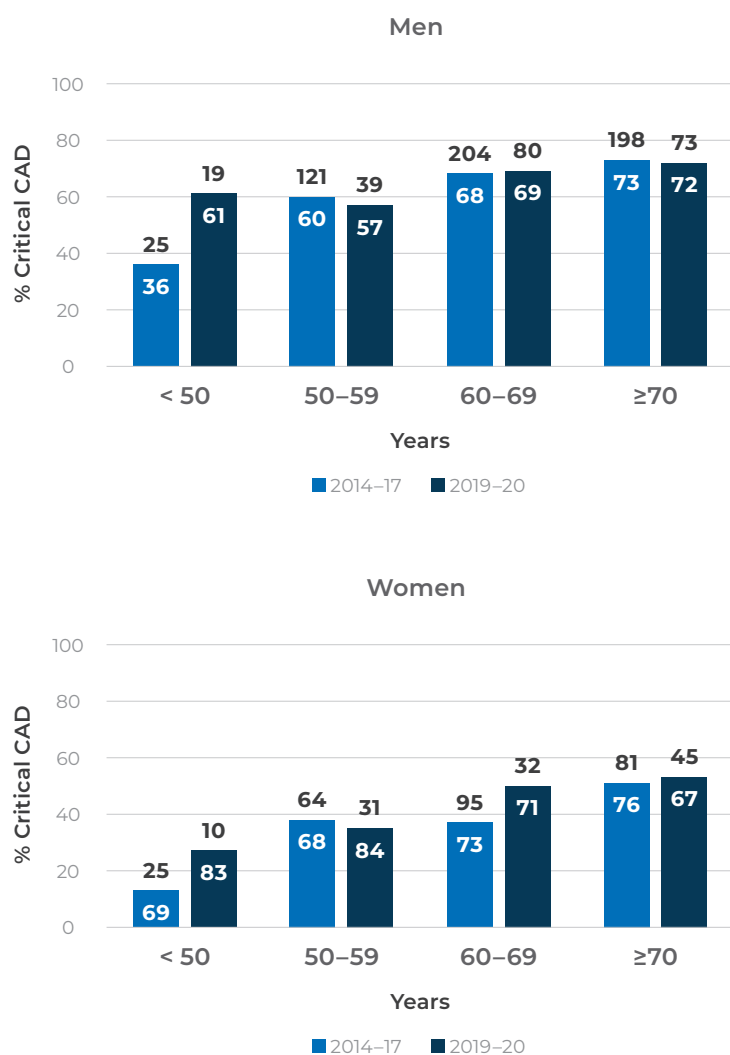
**Figure 2. Percent Diagnosed With Critical CAD in Men and Women with STEMI by Age in 2014–2017 and 2019–2020**

- Overall rate of diagnosis in men with STEMI was 80% in 2019–2020, compared to 78% in 2014–2017.
- Overall rate of diagnosis with critical CAD in women with STEMI was 77% in 2019–2020 and 72% in 2014–2017.



**Figure 3. Percent Diagnosed With Critical CAD in Men and Women With NSTEMI by Age in 2014–2017 and 2019–2020**

- Overall the rate of diagnosis in men with NSTEMI in 2019–2020 was 75% compared to 73% in 2014–2017.
- Overall the rate of diagnosis in females with NSTEMI was 63% in 2019–2020 compared to 61% 2014–2017.



**Figure 4. Percent Diagnosed With Critical CAD in Men and Women With Unstable Angina by Age in 2014–2017 and 2019–2020**

- Overall, percent diagnosed with CAD in males with unstable angina was 67% in 2019–2020 compared to 65% in 2014–2017.
- Overall, the percent diagnosed with critical CAD in females with unstable angina was 46% in 2019–2020 compared to 40% in 2014–2017.

## Conclusions

1. eOrdering and the educational intervention in stable angina were associated with an improvement in the diagnosis of critical CAD in men <60 years from 52% to 60% and in women from 32% to 46%.
2. In the groups with no educational intervention, the rate of diagnosis in men with STEMI was virtually unchanged, but a bigger improvement was observed in women. A small change was observed in NSTEMI (an absolute difference of 2%) and in unstable angina (3%).
3. In view of relatively low rates of diagnosis of critical CAD in unstable angina, particularly in women, and the benefit of an educational program on stable angina management, an educational program involving audit, feedback and academic detailing is indicated for referring physicians.