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Title: Cardiac link: a retrospective cohort study evaluating a clinical pathway for expedited cardiology referral
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Reviewer 1: Dr. Arjun Gupta
Institution: University of Alberta
General comments (author response in bold)

The authors should be commended for this interesting project. Overall, a well written paper. I have the following comment:

Given the patients enrolled in the Cardiac Link program had dedicated time slots for CCTA booking, comparing CCTA booking time as well as Time to Diagnosis should not be included in the outcomes/results as it is a major confounder; Patients not enrolled in the Cardiac Link program waited nearly twice as many days for their CCTA (29 +- 31 days vs. 62 +- 40 days).
For full transparency, we had to include this data on the CCTA booking times because of its influence on overall time to diagnosis which is a clinically meaningful outcome measure. As mentioned in earlier responses, revised the primary outcome measure as the time from CCTA to cardiology referral, since the primary goal of the CL program was to triage and expedite cardiology referral based on CCTA findings through use of our clinical pathway. We have revised the overall time to diagnosis and CCTA booking time to be secondary outcome measures, as they are also important for our program evaluation.

Reviewer 2: Dr. Bryan Har
Institution: University of Calgary
General comments (author response in bold)

Strengths:
1. This study illustrates the benefits of having direct/automated referral pathways, triggered by abnormal and/or threshold values. The mean time from CCTA to cardiology consult was reduced from 93 days to 30 days.

Weaknesses:
1. Providing dedicated CCTA to the Cardiac Link patients, but not the Non-Cardiac Link patients confers a major advantage for time to book a CCTA for the Cardiac Link patients. The difference in means is 33 days. Essentially, if only one protected CCTA spot is available, then a Cardiac Link patient will get the CCTA, and non-Cardiac Link patient has a longer delay to CCTA.
CL was intended to be a quality improvement project to reduce cardiology wait times for patients who most required urgent specialized medical care. Since one of the primary incentives for uptake of the CL program was to improve booking time, we created dedicated time slots to facilitate a shorter booking time.
As part of this quality improvement project, Cardiac Link patients had two dedicated time slots for CCTA each week, which were made available for other non-Cardiac Link referrals if unused within 2 weeks preceding the time slots.

2. The difference in mean Time to diagnosis between the two groups is 36 days. As such, it appears much of the improvement for time to diagnosis can be attributed to having the dedicated CCTA booking slots.

Unfortunately, due to impact of dedicated CCTA booking slots for the Cardiac Link program, it is difficult to illustrate the benefit for time-to-diagnosis. If one program gets dedicated booking slots, then another program that uses a CT scanner loses out. CT imaging slots are a finite resource constrained by time.

While the improvement in cardiology referral time is substantial, it is an expected outcome given the automated process. It is in my opinion not sufficiently novel to publish in *CMAJ Open*. As well, there remains the preferential treatment for a Cardiac Link patient to "jump the queue" so-to-speak, as that clinic slot could have been use for the patients with the other important cardiac diagnoses.

As previously mentioned, the primary goal of CL program was to reduce cardiology referral wait times for patients who most required urgent specialized medical care based on CCTA findings. This was achieved by the CL program. It is true that overall reduction in time to diagnosis for the CL group was influenced by the dedicated CCTA booking time slots. This is why we have revised time to diagnosis as a secondary outcome measure- important to evaluate because it is clinically meaningful, but of less importance due to the influence of dedicated CCTA time slots for the CL program.

The novelty of the program is the engagement and empowerment of primary care physicians to request CCTA in the evaluations of outpatients with stable chest pain. Our clinical pathway has future potential to reduce unnecessary cardiology referrals, thereby saving time and health care costs and this could be a focus for future study. This was mentioned in the Discussion (page 11-12).