Optimizing Preventive Cardiology: Harnessing AI For Early Detection Of Coronary Artery Disease

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Introduction

- **Coronary artery disease** (CAD) scoring is a critical indicator of cardiovascular risk, yet integration of AI derived data within clinician workflow remains a challenge for most systems.
- **AI solutions** are required to augment clinician workflow- not only by providing actionable analysis but through **actionable insights** supported by robust clinical decision support (CDS).
- **HealthCCSng**, an AI tool, was implemented within Corewell Health, a large integrated delivery network (IDN), to automatically detect and quantify CAC from CT images.
- This study evaluates the impact of HealthCCSng on **reducing the time required** for patients to receive statin prescriptions following CAC detection.

Methods

- A **retrospective analysis** was conducted comparing pre- and post-implementation and integration into EHR periods of HealthCCSng.
- The study included patients undergoing CT scans where CAC was incidentally detected. In the pre-implementation phase (Q3-4 2023), CAC identification relied on manual radiologist incorporation into the report, whereas in the post-implementation phase (Q3-4 2024), HealthCCSng provided **automated CAC quantification** and alerts within the electronic health record (EHR).
- The primary outcome was the time from CAC detection to statin prescription. additional outcomes included the proportion of eligible patients receiving statins.

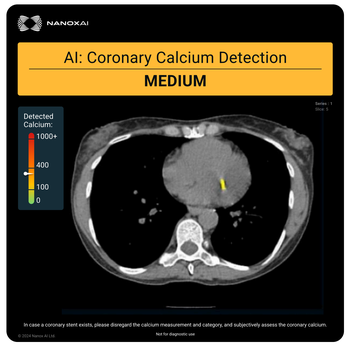
Results

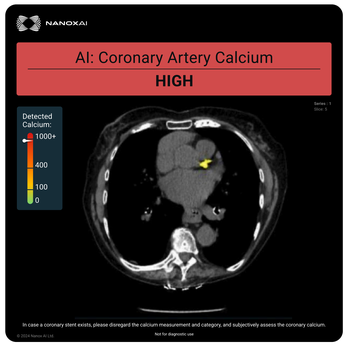
- Following implementation, the median time from CAC detection to statin prescription significantly decreased from 146 days (pre) to 28 days (post).Additionally, **the number of eligible patients prescribed statins increased from 1113 to 1424** (28% increase).
- Patient addition to CAD registry time was also significantly reduced from 157 to 30 days, reflecting **improved workflow efficiency** and clinical decision support integration.

Conclusions

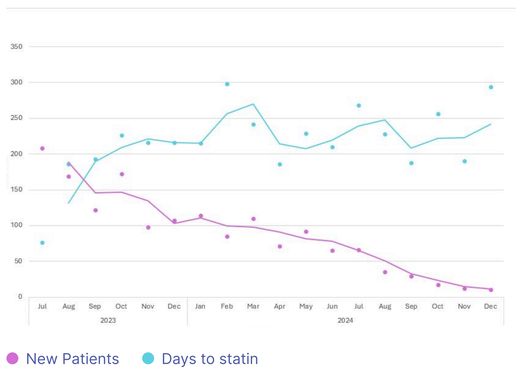
- The introduction of **HealthCCSng** within Corewell Health substantially **reduced the time to statin prescription** for patients with detected CAC. The CDS developed and implemented here gleans high impact findings directly to clinicians, providing a **concise, clinically relevant, pre-interpreted output** for the clinician which is easy to understand and actionable.
- This is demonstrated by our data **exhibiting reduced response time to critical data**. Future studies will explore long-term patient outcomes and scalability across diverse healthcare settings.

Sample output from the NanoxAI HealthCCSng





Patients Detected and Statin Start Time Trends



Patient journey CAD diagnosis

1634 Patients
Formally diagnosed with CAD following NanoxAI results | *Q3-Q4 2024*

33.7 Days
AVG time from the diagnosis to statin | *Q3-Q4 2024*