Findings presented at SCCT 2024

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

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Introduction

- **Coronary artery disease** (CAD) accounts for 50% of all cardiovascular related deaths and remains a leading cause of death worldwide.
  Whilst cardiac gated CTs minimize image noise caused by cardiac motion, there are an estimated 20 times as many non-cardiac-gated CTs of the chest performed in the USA each year.
- The HealthCCSng (NanoxAI) device is an **artificial intelligence software** to evaluate calcified plaques in the coronary arteries on non-ECG gated chest CTs, which may present risk for coronary artery disease. The detection capabilities of AI make it a valuable tool in population health management, as organizations work to shift their services to early identification and intervention of chronic disease.
- The cascade of data from identification to care delivery represents a challenge to many health care systems. Corewell Health **has successfully deployed a system integrating the AI data** into the EMR for the early detection and intervention of CAD.

Methods

- The device was deployed in December 2022 at Corewell Health for all CT scans meeting inclusion criteria for 14months. Studies with high or medium coronary artery calcium (CAC) (CAC>99 AU) were sent for radiologist review.
- Text related to the finding was embedded discretely into the radiology report. This text was then filed into the EMR, triggering a chart query to determine if the patient had an existing diagnosis of CAD.
- The cascade of data from identification to care delivery represents a challenge to many health care systems. Corewell Health **has successfully deployed a system integrating the AI data** into the EMR for the early detection and intervention of CAD.

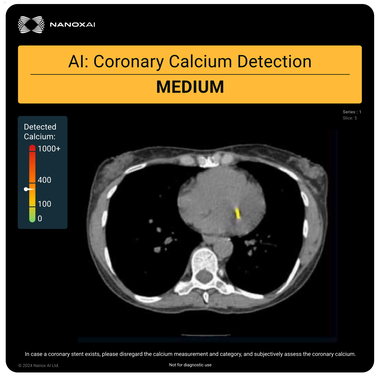
Results

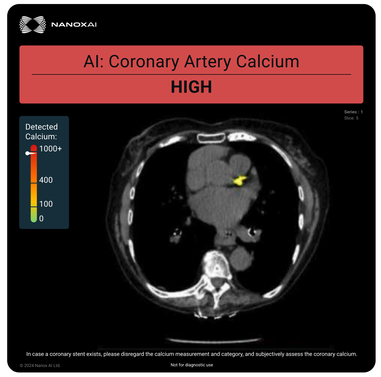
- Data was collected between 2/1/23 and 1/31/24. **32,650 scans** were read by the algorithm, with **8,481 returning medium or high** CAC findings; **67% were reported** by the radiologist. Of these, **64% were previously undiagnosed** with CAD and **79% were not on statin therapy**. Those undiagnosed had an average age of 70.8, an average End of Life score of 11.2, and an average ASCVD risk of 19.1.
- History of tobacco use and oncological concerns were the most frequent ordering diagnoses. Following identification, **14.3% of patients were formally diagnosed with CAD**, **27% were started on statins**, and **12% were referred to cardiology**.

Conclusions

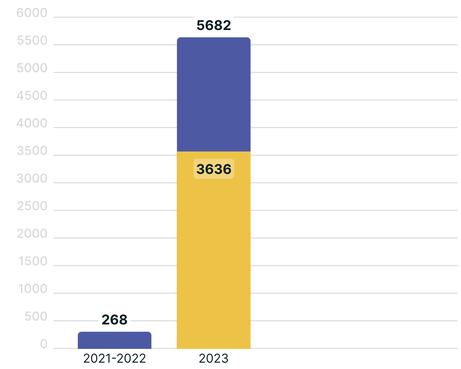
- This observational study demonstrated that the AI algorithm is useful in **identifying patients with undiagnosed CAD** and that AI integrated into the EMR **positively impacts population health goals**.

Sample output from the NanoxAI HealthCCSng





Diagnosed patients



- Total reported patients
- Previously undiagnosed patients

Patient journey CAD diagnosis

812 Patients
Formally diagnosed with CAD following NanoxAI results

1534 Patients
Started on statins following NanoxAI results

682 Patients
Were referred to cardiology following NanoxAI results