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Silent Atherosclerosis | The Future of Breast Imaging

By The Imaging Wire (<https://www.theimagingwire.com/author/admin-jake/>), September 23, 2021

“To those afraid of getting your 1st colonoscopy, I recommend getting a CT Colonoscopy.”

SharkTank Shark and emerging CTC screening influencer, Mark Cuban.

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Silent Atherosclerosis

A new [study in Circulation](https://www.doi.org/10.1161/CIRCULATIONAHA.121.055340) (<https://www.doi.org/10.1161/CIRCULATIONAHA.121.055340>) used coronary CTA scans and CAC scoring to reveal a surprisingly high prevalence of “silent” coronary artery atherosclerosis in the general population, suggesting that this could “lay the foundation” for future CT-based cardiac screening programs.

The Study – The researchers analyzed CCTA and CAC exams from 25k randomly recruited Swedish participants (50-64yrs, none w/ known coronary heart disease) finding that:

- 42% had CCTA-detected atherosclerosis
- 8.3% had noncalcified plaques
- 5.2% had significant stenosis
- 1.9% had serious coronary artery diseases
- All participants with >400 CAC scores had atherosclerosis (yes, 100%), and 45.7% had significant stenosis
- Some participants with 0 CAC scores had atherosclerosis (5.5%) and significant stenosis (0.4%)
- So, CAC-based screening might still miss some at-risk patients

The Takeaway – 2021 brought a notable surge in [academic](https://www.theimagingwire.com/subscribe/?continue=2021/06/03/opportunistic-cts-ai-shortcuts-pocus-ei) (<https://www.theimagingwire.com/subscribe/?continue=2021/06/03/opportunistic-cts-ai-shortcuts-pocus-ei>) and [business](https://www.theimagingwire.com/2021/06/24/clearlys-pathway-bias-playbook-neuro-gamechanger/) (<https://www.theimagingwire.com/2021/06/24/clearlys-pathway-bias-playbook-neuro-gamechanger/>) efforts focused on CT-based cardiac screening, and this study’s revelation about “silent” atherosclerosis in the general population suggests that cardiac screening’s momentum will continue.

Zebra’s Population Health Codes

We’ve heard a lot about the AMA’s new Category III CPT codes for artificial intelligence. Check out [this post](https://zebramedblog.wpcomstaging.com/2021/07/21/the-next-step-in-zebra-meds-population-health-mission/) (<https://zebramedblog.wpcomstaging.com/2021/07/21/the-next-step-in-zebra-meds-population-health-mission/>) from Zebra-Med CEO, Zohar Elhanani, about how these codes bring the next step in Zebra-Med’s population health mission.

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GE’s CT Cost Playbook

Rising CT volumes and related costs are creating new pressures on CT teams, but these trends can be corrected through greater communication, education, and awareness. See how in this new [GE Healthcare report](https://www.gehealthcare.com/long-article/how-to-reduce-the-cost-of-care-in-ct). (<https://www.gehealthcare.com/long-article/how-to-reduce-the-cost-of-care-in-ct>)

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- **VA Vision:** The US Department of Veterans Affairs [revealed plans \(https://www.fedscoop.com/the-va-is-looking-to-5g-to-enable-x-ray-vision-for-doctors/\)](https://www.fedscoop.com/the-va-is-looking-to-5g-to-enable-x-ray-vision-for-doctors/) to expand its use of augmented reality combined with medical imaging. The VA's AR ambitions were made possible by its previous efforts to expand its 5G infrastructure, allowing it to test pre-surgical AR use cases during the last year (training, planning, etc.) and bringing it to “the cusp” of superimposing medical images on patients during actual medical procedures.
- **The Future of Breast Imaging:** A new [EJR study \(https://www.ejradiology.com/article/S0720-048X\(21\)00442-3/fulltext\)](https://www.ejradiology.com/article/S0720-048X(21)00442-3/fulltext) detailed how monochromatic X-ray's image quality and radiation dosage advantages could make it “the future of breast imaging.” Scans made with Imagine Scientific's monochromatic X-ray prototype on breast phantoms showed that it reduced radiation dosage by 5-10x, while maintaining image quality. When used on a thick breast phantom (9cm), it produced a 2.6x higher signal-to-noise ratio and a 4.2x lower dose than a conventional system, suggesting that monochromatic X-ray could also reduce breast compression.
- **uCT ATLAS Cleared:** United Imaging announced the FDA clearance of [its new uCT ATLAS premium CT scanner \(https://usa.united-imaging.com/united-imaging-announces-fda-clearance-for-its-versatile-ultra-premium-scanner-the-uct-atlas\)](https://usa.united-imaging.com/united-imaging-announces-fda-clearance-for-its-versatile-ultra-premium-scanner-the-uct-atlas), which leads with its “exquisite” image quality (640-slice, 16cm detector), support for large and trauma patients (82cm bore, 700 lbs. table weight, 0.25 second rotation), and its efficient technologist workflows (3D camera w/ integrated AI). Like United Imaging's other CT systems, the uCT ATLAS comes as an All-in Configuration (ships with all available software pre-loaded) and is supported with the company's Software Upgrades for Life program (automatic future updates).
- **Another Case for Structured Reporting:** A [new EJR study \(https://www.sciencedirect.com/science/article/pii/S0720048X21004356#b0050\)](https://www.sciencedirect.com/science/article/pii/S0720048X21004356#b0050) added more evidence in favor of structured radiology reporting. The researchers had eight radiology residents produce structured and free-text reports (SRs & FTRs) based on 14 trauma patients' whole-body CT scans, finding that the SRs were completed faster (19 min vs. 25 min avg) and contained more secondary criteria.
- **Mark Cuban, A CTC Influencer:** Dallas Mavericks owner and Shark Tank Shark, Mark Cuban, recommended CT colonography screening to his 8.5m Twitter followers last week, posting a relatively convincing [thread \(https://twitter.com/mcuban/status/1438319675616731137\)](https://twitter.com/mcuban/status/1438319675616731137) detailing his positive CTC experience (30 minutes, no meds, no pain, low out-of-pocket). This went about as viral as a colon cancer screening Twitter post gets (210 retweets, 1,750 likes) and even prompted a [Tweet response \(https://twitter.com/RadiologyACR/status/1438863990097125383?s=20\)](https://twitter.com/RadiologyACR/status/1438863990097125383?s=20) from the ACR. It also earned Cuban his 5th appearance in The Imaging Wire (all others were for his investment in cardiac MGC startup, [Genetesis \(https://www.theimagingwire.com/2020/12/17/no-ai-resistance/\)](https://www.theimagingwire.com/2020/12/17/no-ai-resistance/)).
- **Echo Video AI:** Stanford researchers developed [a cardiac ultrasound AI system \(https://www.nature.com/articles/s41467-021-25503-9#Abs1\)](https://www.nature.com/articles/s41467-021-25503-9#Abs1) that was able to predict postoperative right ventricular failure more accurately than human experts who used both echocardiographic metrics and clinical risk scores (0.729 AUC). More notably, the system introduced a new approach to echo AI, as it uses ultrasound video (vs. static images), analyzes spatiotemporal information to catch more subtle motion aberrations (vs. segmenting cardiac chambers), and it can be applied to a wide range of echocardiography use cases.
- **GE Revolution Ascend:** GE Healthcare announced [its new Revolution Ascend CT system \(https://www.gehealthcare.com/products/computed-tomography/revolution-family/revolution-ascend\)](https://www.gehealthcare.com/products/computed-tomography/revolution-family/revolution-ascend), highlighted by major operational efficiency and patient comfort upgrades. The Revolution Ascend's operational improvements largely come from GE's new Effortless Workflow AI suite (automates pre-scan positioning, reduces technician clicks by 66%) and new Clarity Operator Environment (provides patient-specific scan range, dose, and image quality). Meanwhile, its comfort improvements come from a redesign that benefits high-BMI and trauma patients (75cm gantry, 40mm detector, lower table) and a 21% scan time reduction from the above efficiency upgrades.
- **Patients on AI:** A new [Mayo Clinic paper \(https://www.nature.com/articles/s41746-021-00509-1\)](https://www.nature.com/articles/s41746-021-00509-1) provided some much-needed insights into patients' opinions and concerns about healthcare AI. Their analysis of fifteen focus groups (87 participants, 2019-2020) revealed that patients are generally optimistic about healthcare AI, particularly if there's proactive oversight from clinicians to avoid any AI-based harm to them or their loved ones. The participants also believed that patients should be able to choose whether AI is involved in their care, and were concerned about AI's cost impact, potential for bias, data security, and vulnerability to IT crashes.
- **Predicting Alzheimer's Disease:** Researchers from St. Louis' Washington University [discovered \(https://n.neurology.org/content/early/2021/09/09/WNL.00000000000012775\)](https://n.neurology.org/content/early/2021/09/09/WNL.00000000000012775) a way to predict when patients would develop Alzheimer's disease symptoms using amyloid PET data. The researchers analyzed baseline and follow-up amyloid PET scans from 236 people (66.5yrs avg age, follow-ups scans at ~4.5yrs), finding that once people reach the amyloid burden “tipping point” (SUVR 1.2) they continue to accumulate amyloid at high levels. The age that patients reach this “tipping point” predicted when they would experience Alzheimer's disease symptoms, as patients who hit SUVR 1.2 at 50yrs remained symptom-free far longer than patients who reached that point at age 80 (~20yrs vs. ~10yrs).
- **Wellbeing Adds contextflow:** Wellbeing Software and contextflow [announced a partnership \(https://www.einnews.com/pr_news/551362056/wellbeing-software-partners-with-contextflow-to-deliver-dynamic-ai-clinical-decision-support-to-radiologists\)](https://www.einnews.com/pr_news/551362056/wellbeing-software-partners-with-contextflow-to-deliver-dynamic-ai-clinical-decision-support-to-radiologists) that will make contextflow's unique SEARCH Lung CT tool available on Wellbeing's AI Connect Marketplace. The partnership expands the Wellbeing AI Marketplace to 10 AI players, while representing an early milestone in contextflow's [recent commercialization push. \(https://www.theimagingwire.com/2021/09/13/viral-ai-pcct-race-4d-flow-biomarker/\)](https://www.theimagingwire.com/2021/09/13/viral-ai-pcct-race-4d-flow-biomarker/)
- **Optimizing PCA Screening Reports:** A multidisciplinary Swiss team proposed a new data-integrated [synoptic approach \(https://www.karger.com/Article/Pdf/518381\)](https://www.karger.com/Article/Pdf/518381) to prostate cancer screening reports, finding that it reduces reporting and interpretation time across departments and improves data quality. The novel system significantly reduced urologists' patient info collection and integration times (~91% to 0.36 min) and allowed notable reporting time reductions for radiologists (~44% to 4.18 min) and pathologists (~33% to 3.77 min) compared to the standard narrative reporting system.

MCRG's Nuance Optimization

See how Florida's Medical Center Radiology Group (MCRG) improved its workload distribution, team communication, and overall productivity [after implementing Nuance's](https://www.nuance.com/content/dam/nuance/en_us/collateral/healthcare/case-study/cs-medical-center-radiology-group-optimizes-workloads-and-communication-en-us.pdf) (https://www.nuance.com/content/dam/nuance/en_us/collateral/healthcare/case-study/cs-medical-center-radiology-group-optimizes-workloads-and-communication-en-us.pdf) PowerScribe Workflow Orchestration and PowerConnect Communicator solutions.

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- Check out [this Imaging Wire Show interview](https://www.youtube.com/watch?v=kSUc3uSd1xk&t=1079s) (<https://www.youtube.com/watch?v=kSUc3uSd1xk&t=1079s>) with Riverain Technology's Chief Science Officer, Jason Knapp, where we discuss the evolution of imaging AI, how to get generalizability right, AI's path forward, and much more.
- See how New Jersey's Ramapo Radiology Associates [overcame their CD burning problems](https://blog.novarad.net/ramapo-radiology-associates-cryptochart-case-study) (<https://blog.novarad.net/ramapo-radiology-associates-cryptochart-case-study>) and improved their physician and patient experiences with Novarad CryptoChart.
- Be at the forefront of PET/CT with an extended field of view. Download [this Siemens Healthineers clinical case gallery](https://www.siemens-healthineers.com/en-us/molecular-imaging/pet-ct/biograph-vision-quadra/clinical-image-gallery?stc=ushc205995) (<https://www.siemens-healthineers.com/en-us/molecular-imaging/pet-ct/biograph-vision-quadra/clinical-image-gallery?stc=ushc205995>) to see how the extended field of view on Biograph Vision Quadra could reshape clinical outcomes.
- [This Blackford Analysis video](https://www.youtube.com/watch?v=p5tMMLqdrge&t=5s) (<https://www.youtube.com/watch?v=p5tMMLqdrge&t=5s>) details how imaging AI can improve radiology efficiency and patient care, and discusses the key role that AI assessments and curation plays in achieving these improvements.
- Watch CriticalCare's Dr. Yusuf Karrar, MD [discuss how](https://us.medical.canon/products/computed-tomography/aquilion-prime-sp/experience/#/resources/videos/computed-tomography/testimonials/video-ct-ag-prime-sp-karrar-ct-fluoroscopy.php) (<https://us.medical.canon/products/computed-tomography/aquilion-prime-sp/experience/#/resources/videos/computed-tomography/testimonials/video-ct-ag-prime-sp-karrar-ct-fluoroscopy.php>) Canon's CT Fluoro touch interface allows "Simple, Streamlined CT Fluoroscopy."
- [This Bayer Radiology case study](https://www.radiologysolutions.bayer.com/sites/g/files/kmftyc641/files/2019-11/Certepra%20P3T%20Software%20for%20Abdomen%20Contrast%20Enhanced%20Abdominal%20CT.pdf) (<https://www.radiologysolutions.bayer.com/sites/g/files/kmftyc641/files/2019-11/Certepra%20P3T%20Software%20for%20Abdomen%20Contrast%20Enhanced%20Abdominal%20CT.pdf>) details how its Certepra P3T Software automates contrast enhanced abdominal CT injection protocols based on patient characteristics and contrast concentration.
- This Fujifilm Healthcare blog details how a complete CVIS solution [drives efficiencies and increases productivity](https://www.hitachihealthcare.com/see-how-complete-cvis-solution-drives-workflow-efficiencies?utm_source=tiw&utm_medium=tiw-newsletter&utm_campaign=ifdblogworkflow). (https://www.hitachihealthcare.com/see-how-complete-cvis-solution-drives-workflow-efficiencies?utm_source=tiw&utm_medium=tiw-newsletter&utm_campaign=ifdblogworkflow)
- [This prospective study](https://public.arterys.com/ImagingWire/Whitepaper_MSK_retrospective_study_EN.pdf) (https://public.arterys.com/ImagingWire/Whitepaper_MSK_retrospective_study_EN.pdf) out of Centre Hospitalier de Valenciennes in France revealed that Arterys' MSK AI module improved junior and senior radiologists' fracture interpretations and suggested that the tool might be particularly useful for ED physicians that handle frontline X-ray reads.
- See how United Imaging's new uCT ATLAS combines advancements in image quality, patient comfort, and operator efficiency to bring you [one step closer to your masterpiece](https://usa.united-imaging.com/products/computed-tomography/uct-atlas/). (<https://usa.united-imaging.com/products/computed-tomography/uct-atlas/>)

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