



ISCRIZIONE
GRATUITA

CONGRESSO

ROMA, 25 - 27 Giugno 2026

SEDE DEI LAVORI

A. Roma Lifestyle Hotel
Via Giorgio Zoega 59, Roma

AI IN ADVANCED CARDIAC IMAGING

Prof Gianluca Pontone, MD, PhD, FESC, FEACVI, FSCCT, FISC

Associate Professor of Cardiology, University of Milan

Deputy Scientific Director and Director of Perioperative Cardiology and
Cardiovascular Imaging Department

Director of Sport Cardiology Unit

Centro Cardiologico Monzino IRCCS

EACVI Chairman Industry Committee

E: gianluca.pontone@ccfm.it; gianluca.pontone@unimi.it;

gianpo1973@gmail.com

Background

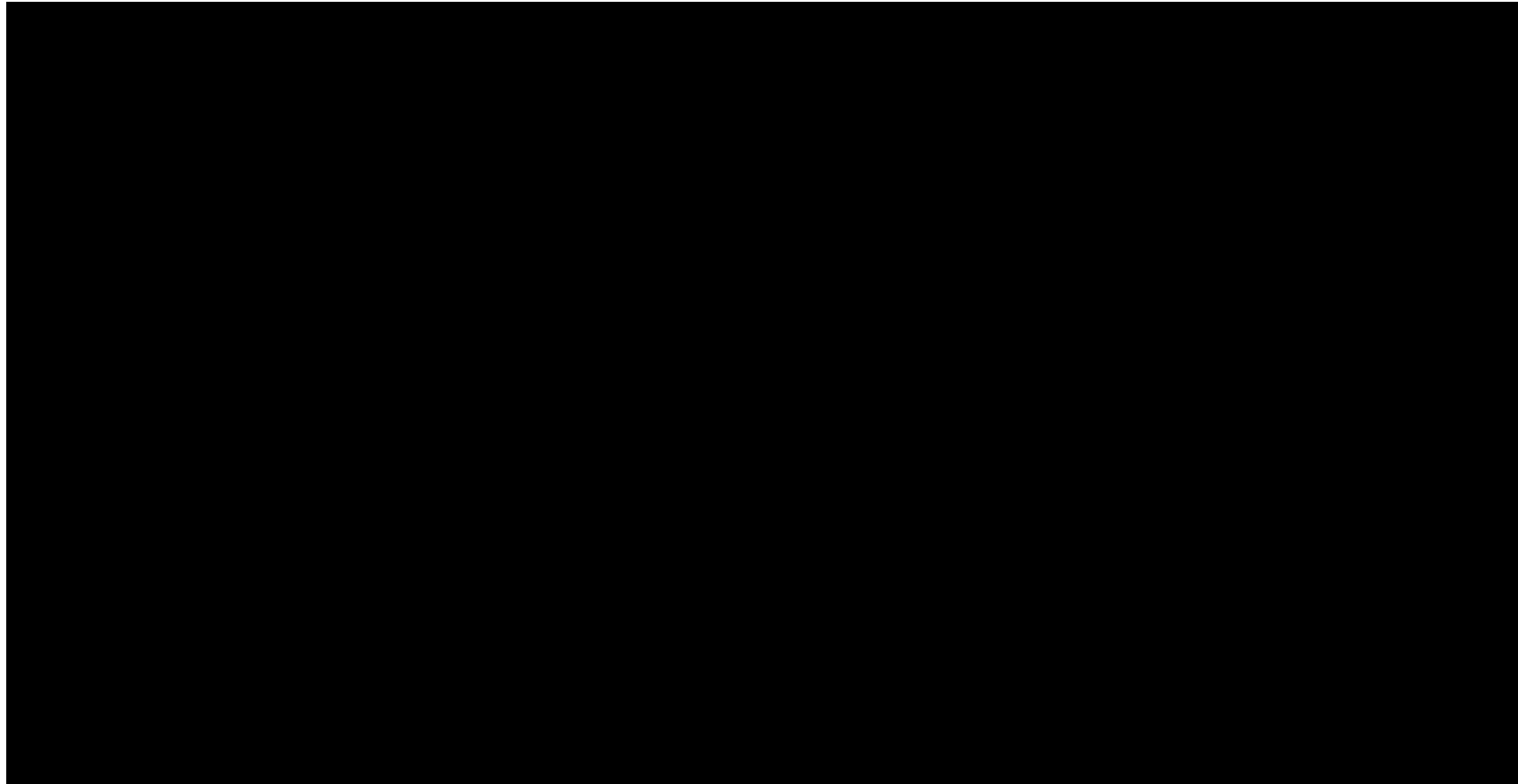


The New York Times | <https://nyti.ms/1T0p6Zc>

SCIENCE

Paging Dr. Pigeon; You're Needed in Radiology

By NICHOLAS BAKALAR NOV. 24, 2015



Scope of AI

Patient Selection & Protocols

Image Acquisition

Image Reconstruction

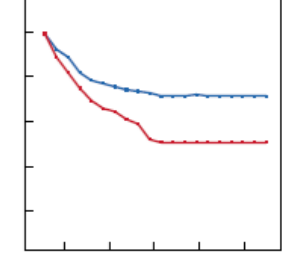
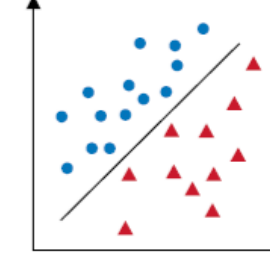
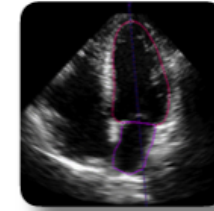
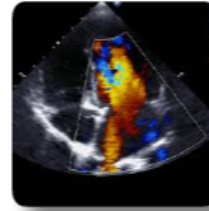
Image Quality

Segmentation & Quantification

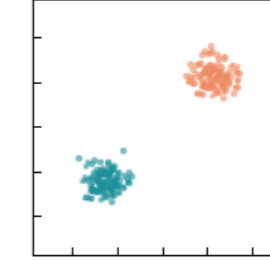
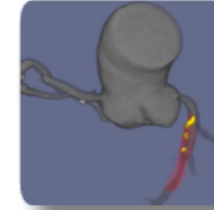
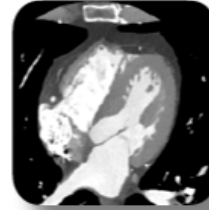
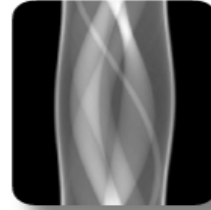
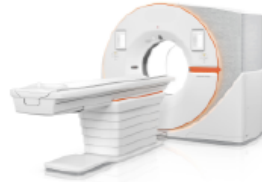
Classification & Reporting

Prognostication & management

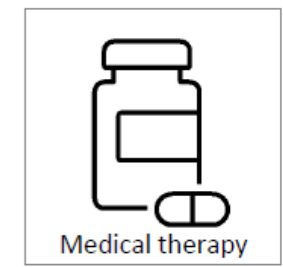
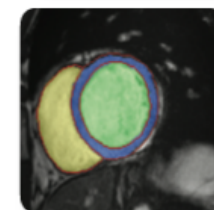
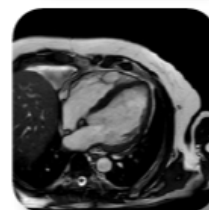
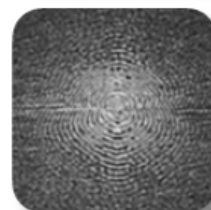
Ultrasound



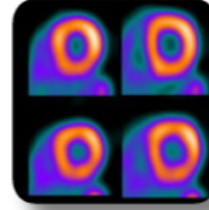
CT



MRI



Nuclear



Dey, Arnaout, et al NHLBI AI workshop Proceedings iJACC 2023

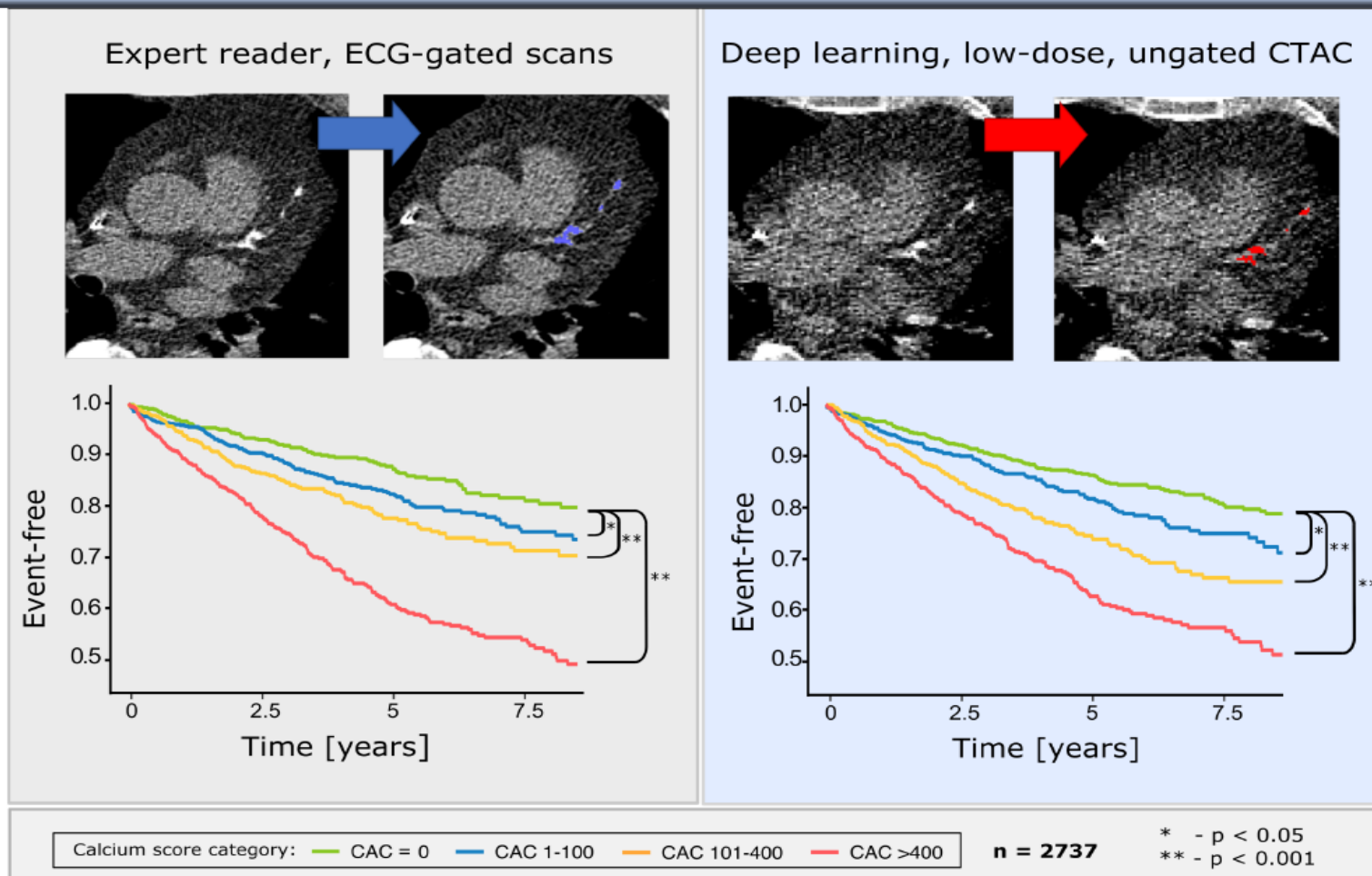
Computed tomography

- ☐ Calcium Score
- ☐ CAD-RADs
- ☐ AI-QCT
- ☐ Virtual Myocardial blood flow
- ☐ Therapeutic algorithm



Calcium Score

Deep learning calcium scoring: Very low-dose ungated CT attenuation correction scans





ELSEVIER

Contents lists available at [ScienceDirect](#)

Journal of Cardiovascular Computed Tomography

journal homepage: www.JournalofCardiovascularCT.com



Practice guidelines

CAD-RADSTM 2.0 - 2022 Coronary Artery Disease-Reporting and Data System
An Expert Consensus Document of the Society of Cardiovascular Computed Tomography (SCCT), the American College of Cardiology (ACC), the American College of Radiology (ACR), and the North America Society of Cardiovascular Imaging (NASCI)



Ricardo C. Cury ^{a,*}, Jonathon Leipsic ^b, Suhny Abbara ^c, Stephan Achenbach ^d, Daniel Berman ^e, Marcio Bittencourt ^f, Matthew Budoff ^g, Kavitha Chinnaiyan ^h, Andrew D. Choi ⁱ, Brian Ghoshhajra ^j, Jill Jacobs ^k, Lynne Kowek ^l, John Lesser ^m, Christopher Maroules ⁿ, Geoffrey D. Rubin ^o, Frank J. Rybicki ^p, Leslee J. Shaw ^q, Michelle C. Williams ^r, Eric Williamson ^s, Charles S. White ^t, Todd C. Villines ^u, Ron Blankstein ^v

Table 1
Grading scale for stenosis severity, plaque burden and ischemia.

Degree of luminal diameter stenosis	Terminology
0%	No visible stenosis
1–24%	Minimal stenosis
25–49%	Mild stenosis
50–69%	Moderate stenosis
70–99%	Severe stenosis
100%	Occluded

Grading Scale for plaque burden:	
Terminology	Overall plaque burden
P1	Mild amount of plaque
P2	Moderate amount of plaque
P3	Severe amount of plaque
P4	Extensive amount of plaque

Grading scale for Ischemia detection:	
Terminology	Meaning
Modifier I	Indicates that CT Ischemia test was performed either with CT-FFR or myocardial CTP
I+	Indicates that CT-FFR or CTP demonstrates lesion-specific ischemia or reversible perfusion defect
I-	Indicates that CT-FFR or CTP is negative for lesion specific ischemia or reversible ischemia ^a
I ±	Indicates that CT-FFR or CTP is borderline

European Journal of Radiology 191 (2025) 112320



(2) The total cost of the contract is \$100,000, and the contract is to be completed by 12/31/2010. The contract is to be completed by 12/31/2010, and the contract is to be completed by 12/31/2010.

FFR_{CT} Analysis

Plaque Analysis

Main vessel

LAD

LCX

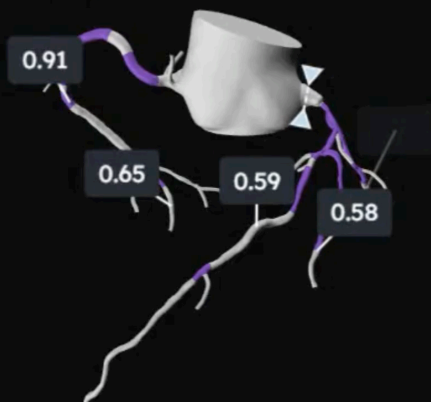
RCA

 Download PDF

3D Model

Show FFR_{CT} model ☐

Regions of total plaque



Total Plaque Summary

1544 mm³

Total Plaque Volume

● Calcified	548 mm ³	(35%)
● Non-calcified	996 mm ³	(65%)
● Low attenuation	18 mm ³	(1%)

sCPR

Vessel contours: ☒ Lumen wall ☒ Outer wallFFR_{CT} Pin

LM

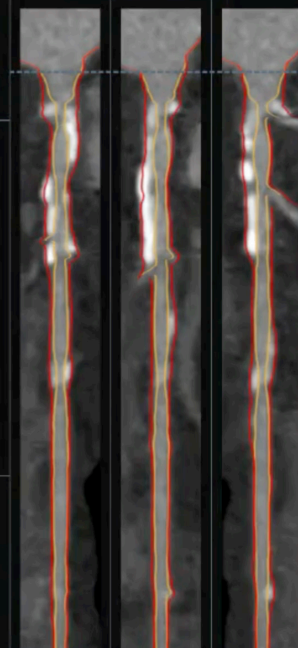
LAD

0.59

Scale

12.8 mm

0° 60° 120°

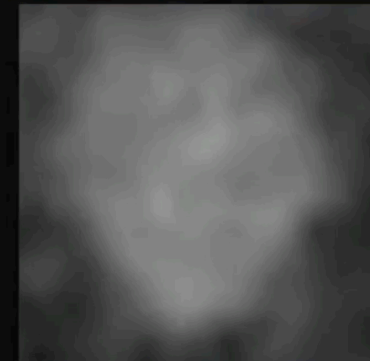


LM
1.00
FFR_{CT}
<30%
Stenosis
0 mm
From ostium

Plaque Cross-section

Select All

Clear All

☒ Calcified ☒ Non-calcified ☒ Low attenuation

Vessel Territory Analysis

LM

LAD



67 mm³
LM Plaque Volume

● Calcified	43 mm ³	(64%)
● Non-calcified	24 mm ³	(36%)
● Low attenuation	0 mm ³	(0%)

ORIGINAL RESEARCH

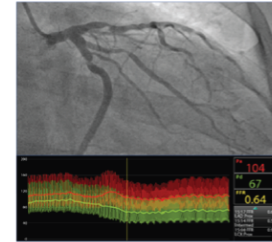
Deep Learning and Fluid Dynamics On-Site CT-FFR Solution Compared to Off-Site FFRct and Invasive FFR

On-site xFFR represents a new on-site mixed deeplearning– and fluid dynamics–based FFR method, with fast processing time and high reproducibility. It showed good agreement with iFFR and comparable diagnostic accuracy to off-site FFRct. Given these findings and its on-site operation, it could represent an ideal tool for implementing the use of CT-FFR in the clinical practice.

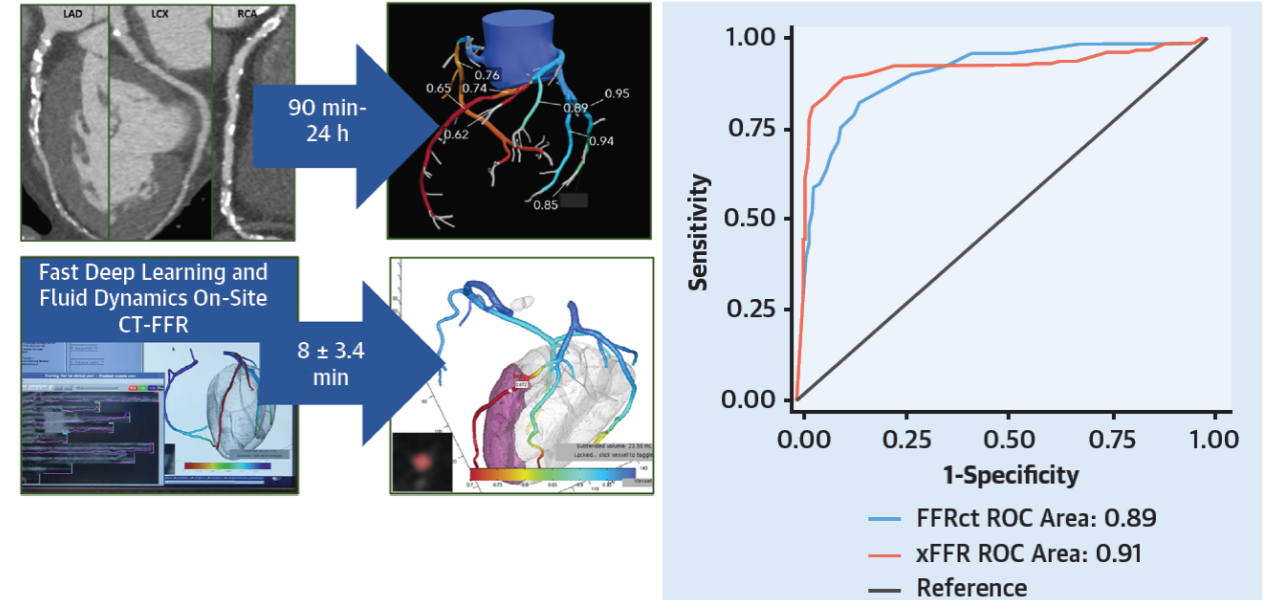
250 Patients
With Suspected CAD



Direct ICA+iFFR
Blinded to CT Results



Novel On-Site xFFR Tool Compared to Off-Site FFRct



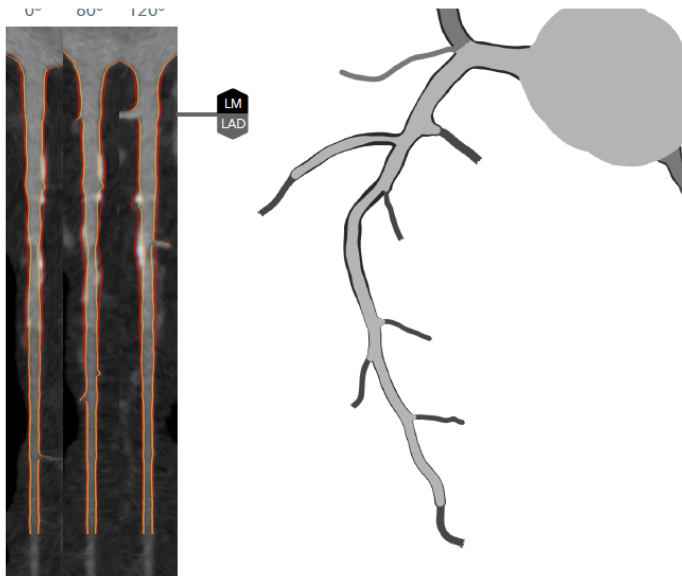
On-Site xFFR Is Faster and Provides Comparable Accuracy to Off-Site FFRct

HOW TO APPLY IN CLINICAL PRACTICE

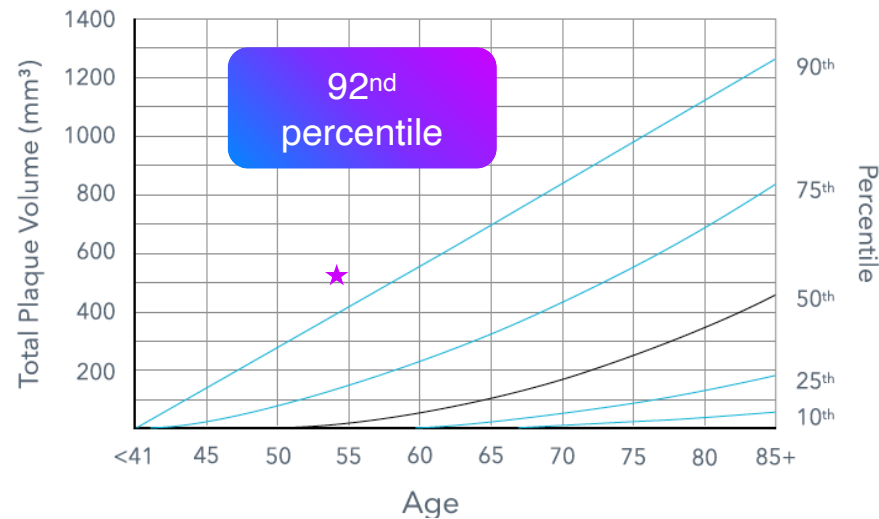
Plaque Types

	LM	LAD	LCX	RCA	Total
Calcified Plaque	0	83	9	10	102 (20%)
Non Calcified Plaque	0	230	89	90	409 (80%)
Low Attenuation Plaque	0	13	2	3	18 (4%)
Total Plaque(mm ³)	0	313	98	100	511

Quantitative plaque is provided on vessels > 1.8 mm.



Female Plaque Volume Nomogram



Patient adopted aggressive lifestyle modification and medication recommendations (high intensity statin, Zetia and low dose aspirin)

Most recent lipids:
cholesterol 167->84; HDL
cholesterol 46->43,
triglycerides 138->104 , LDL 88-> 50
mg/dL, respectively

Virtual myocardial blood flow

European Journal of Nuclear Medicine and Molecular Imaging
<https://doi.org/10.1007/s00259-021-05667-8>

ORIGINAL ARTICLE



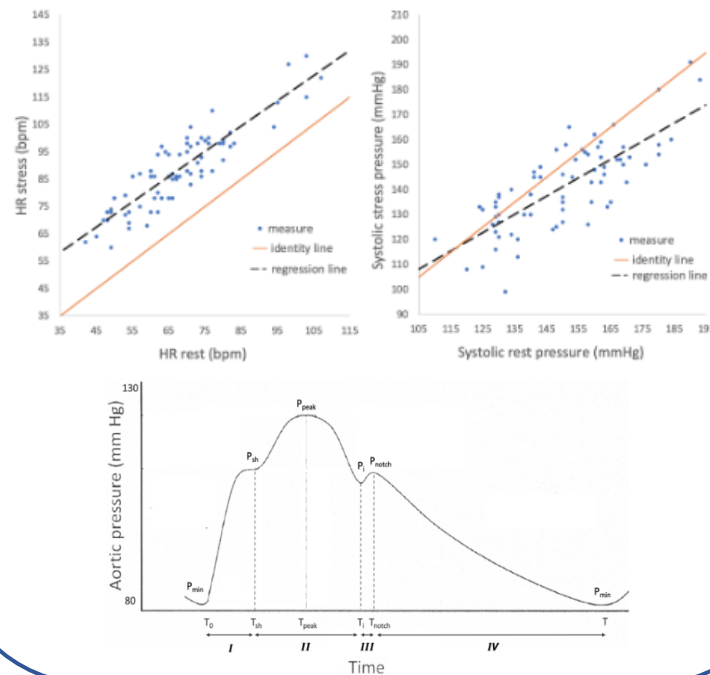
Prediction of myocardial blood flow under stress conditions by means of a computational model

Simone Di Gregorio¹  · Christian Vergara²  · Giovanni Montino Pelagi¹ · Andrea Bagglano^{3,4}  · Paolo Zunino¹  ·
Marco Guglielmo³  · Laura Fusini^{3,5}  · Giuseppe Muscogluri³  · Alexia Rossi^{6,7}  · Mark G. Rabbat^{8,9}  ·
Alfio Quarteroni^{1,10}  · Gianluca Pontone³ 

Virtual myocardial blood flow

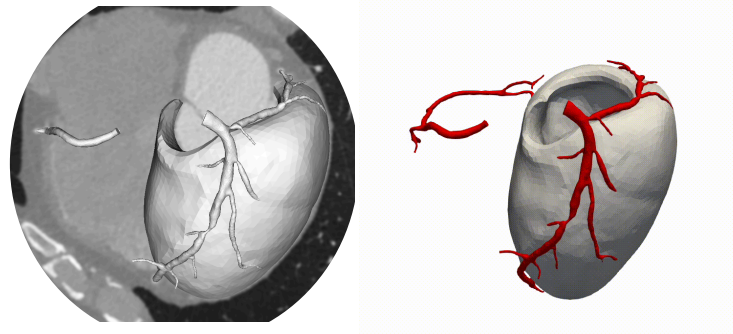
Personalized boundary conditions

- statistical analysis on routine clinical measures (n = 300)
→ personalized aortic pressure

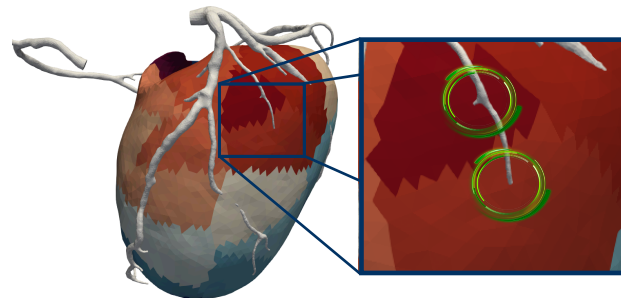


3D Geometry segmentation (n=8)

- segmentation from CT scans

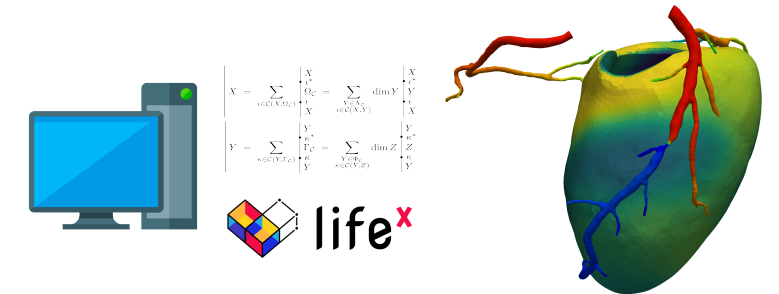


- coronary – myocardium association

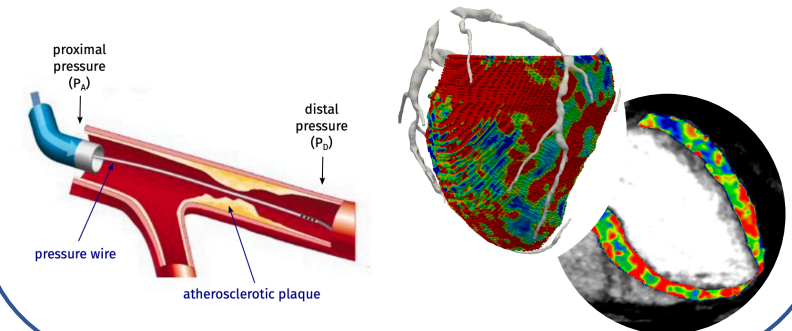


Simulation and validation

- finite-element simulation

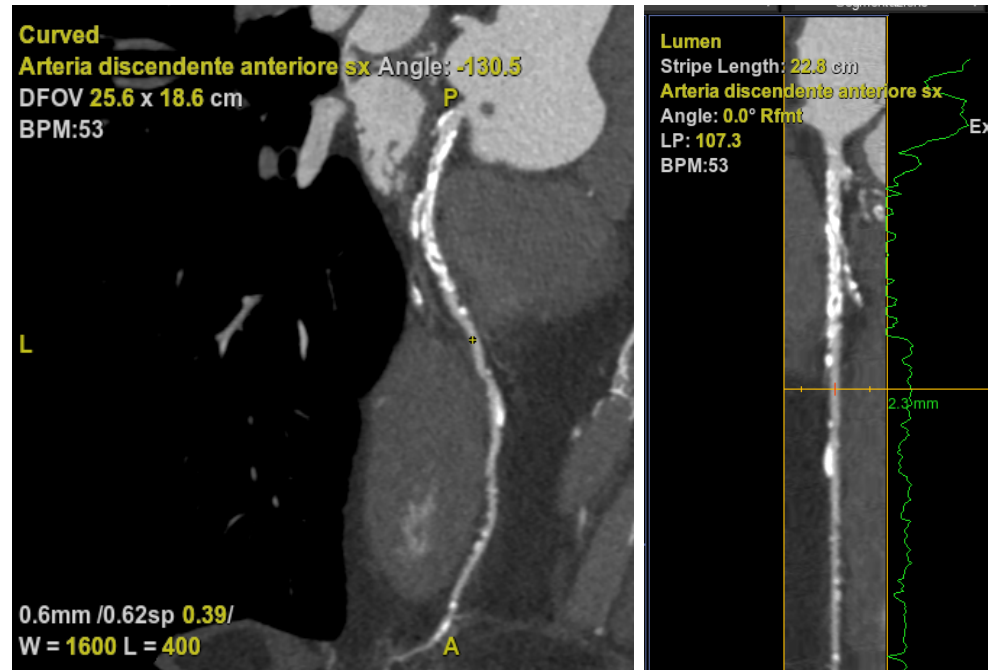


- validation: inv. FFR and stress-CTP



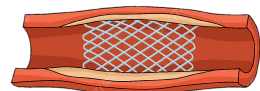
Virtual myocardial blood flow

- ❖ man, 72 yo, all typical symptoms of CAD
- cCTA scans: severe, diffuse multivessel disease
- CTP imaging: diffused inducible ischemia

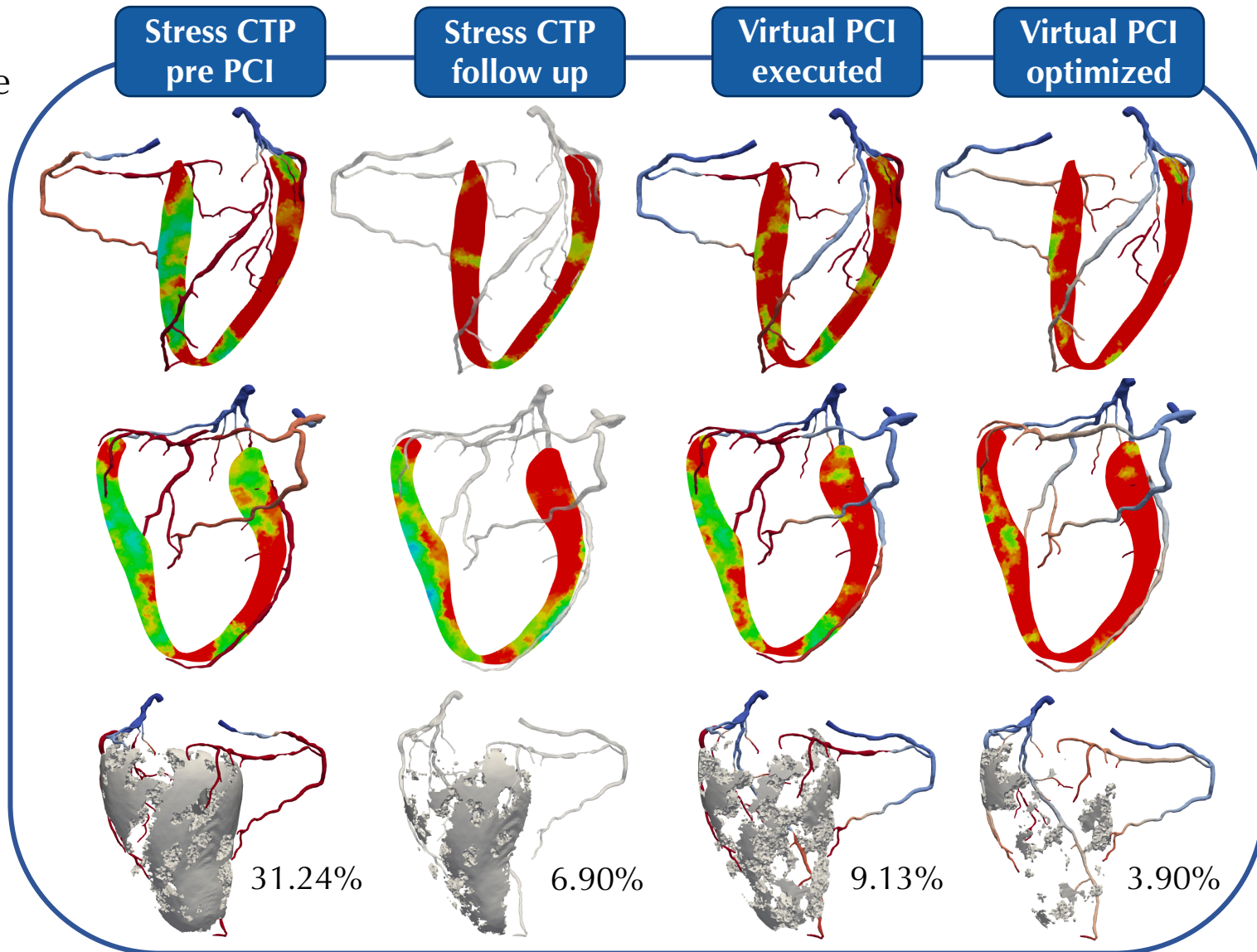


➤ PCI with stenting at 5 sites:

1. Left Main
- 2-3. LAD proximal and medial
- 4-5. RCA proximal and medial



Working in Progress



ORIGINAL RESEARCH

Guiding Automated Implementation Strategies for Patients With Atherosclerotic Plaque on Coronary Computed Tomographic Angiography

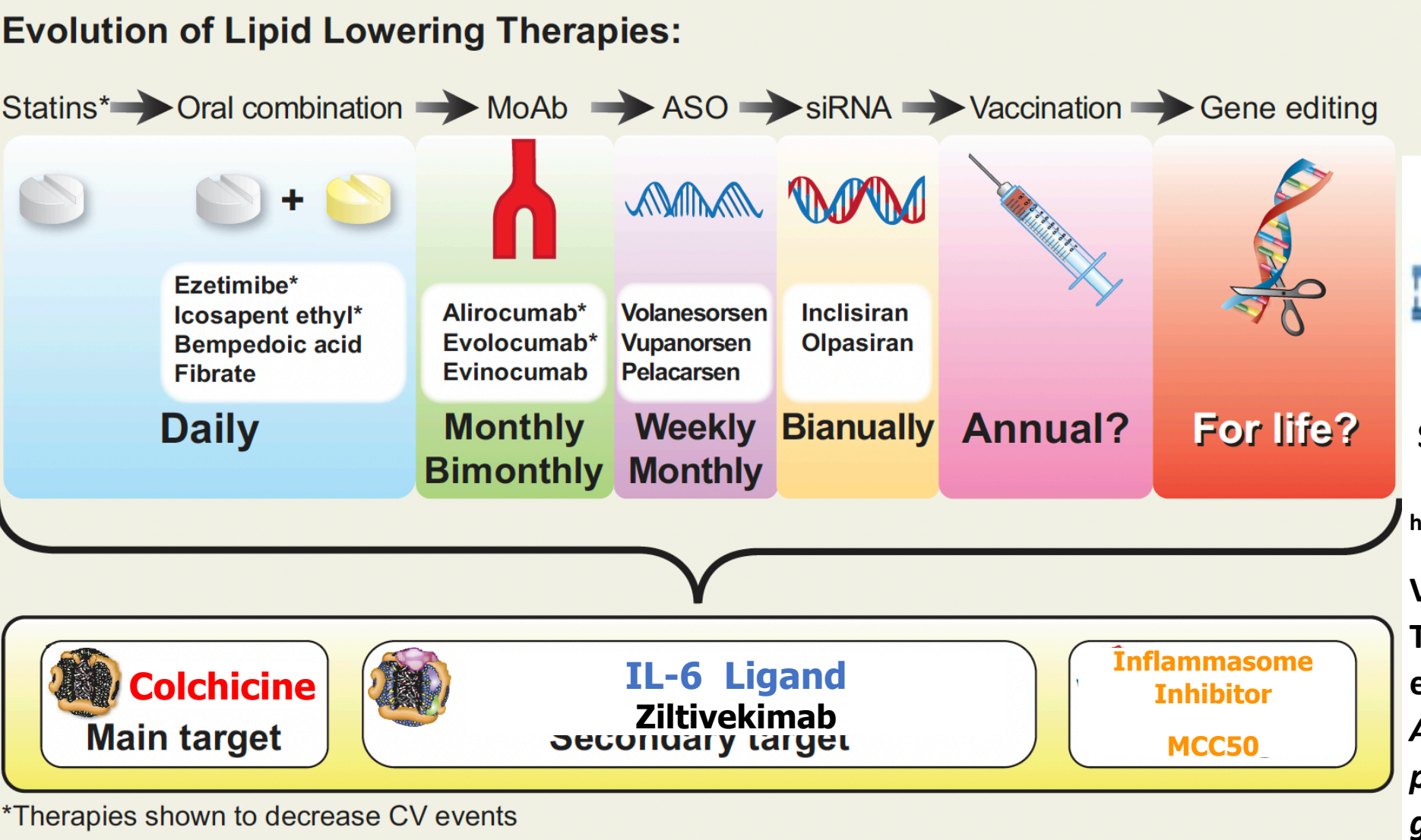
Rationale and Design of the Artificial Intelligence-DECIDE Study

Sarah Rinehart, MD,^a Ron Blankstein, MD,^b James L. Januzzi, MD,^c Cian McCarthy, MD,^c Markus Scherer, MD,^d
Wesley T. O'Neal, MD, MPH,^e Sarah Mullen, MBT,^f Campbell Rogers, MD,^f Leslee J. Shaw, PhD,^g for the DECIDE
Investigators

Young patient



Elderly

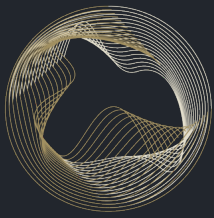


Genome editing
CRISPR-CAS9



Sek Kathiseran
(familial hypercholesterolemia)

VERVE
Therapeutics editing genes as
ANGPTLike
prot3 PCSK9
gene



P4 RCT



Patients with stable CAD* (n=1000) with at least one lesion with diameter stenosis >70% and $FFR_{CT} \leq 0.80$

* or stabilized ACS

Centralize Core Laboratory Screening for Eligibility



Key Exclusion Criteria: LM stenosis, STEMI, eGFR <30 ml/Kg, previous PCI in target vessel or CABG, insufficient CTA quality.

CT-guided PCI strategy
FFR_{CT} Planner + Online CT guidance

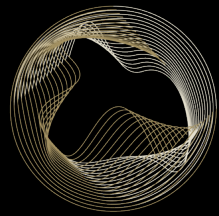
IVUS-guided PCI strategy
Mandatory pre and post PCI imaging

PCI at operator discretion
Invasive physiology pre and post-PCI recommended

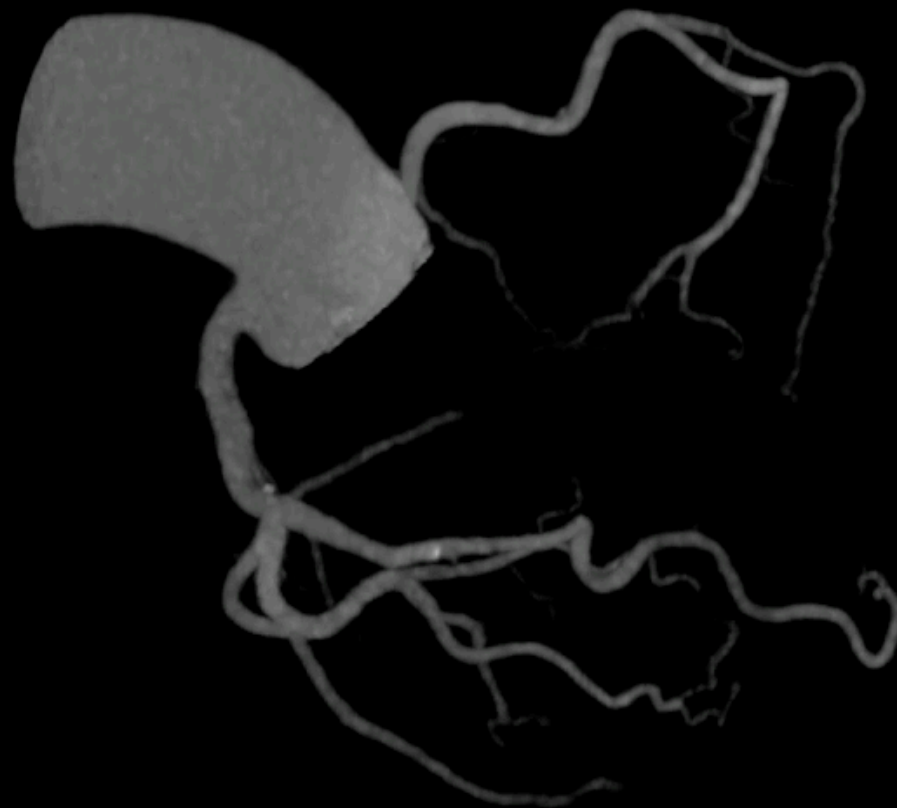
Primary endpoint (non-inferiority)
MACE (cardiac death, target vessel MI and ischemia-driven TVR) between CT- vs. IVUS-guided PCI at 1-year follow-up.

Key secondary endpoint
Radiation dose and contrast volume between CT-and IVUS-guided PCI strategies.
Post-PCI FFR measured immediately after PCI between CT-and IVUS-guided PCI strategies.
SAQ-7 scores between CT and IVUS guided PCI strategies at 12 months.

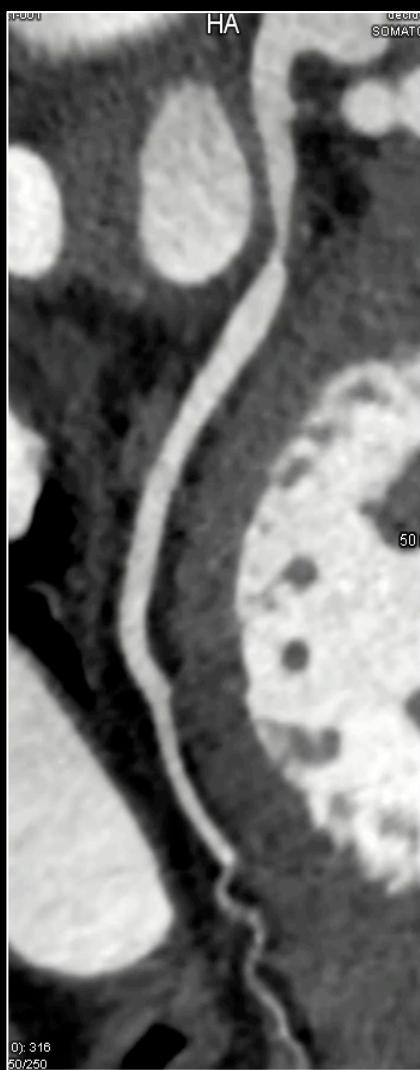
Hypothesis: A CT-guided PCI strategy is *non-inferior* to IVUS guided PCI with respect to **MACE**



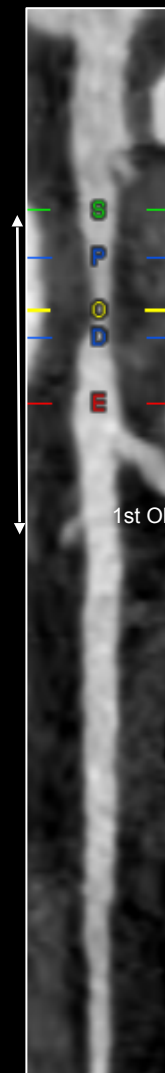
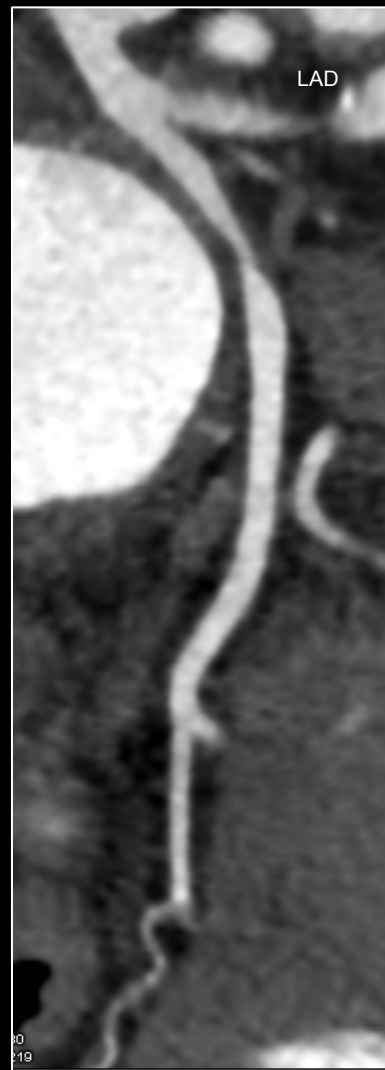
Coronary CTA: 3D Angio



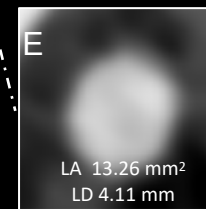
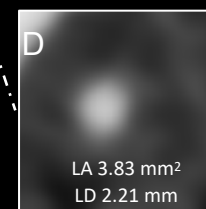
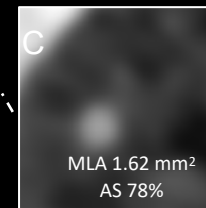
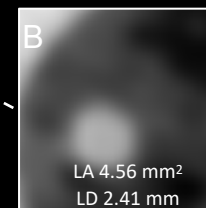
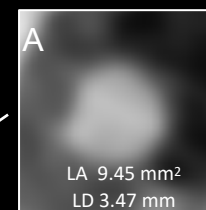
Left circum flex (LCx)



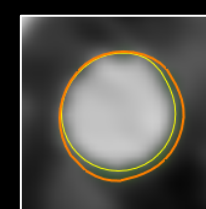
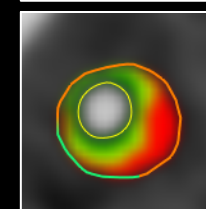
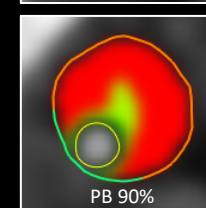
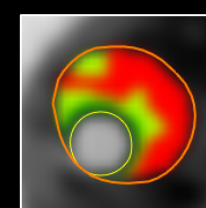
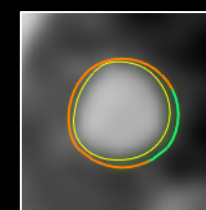
Curved Multiplanar Reconstruction (Curved MPR)



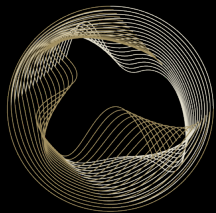
Straight MPR



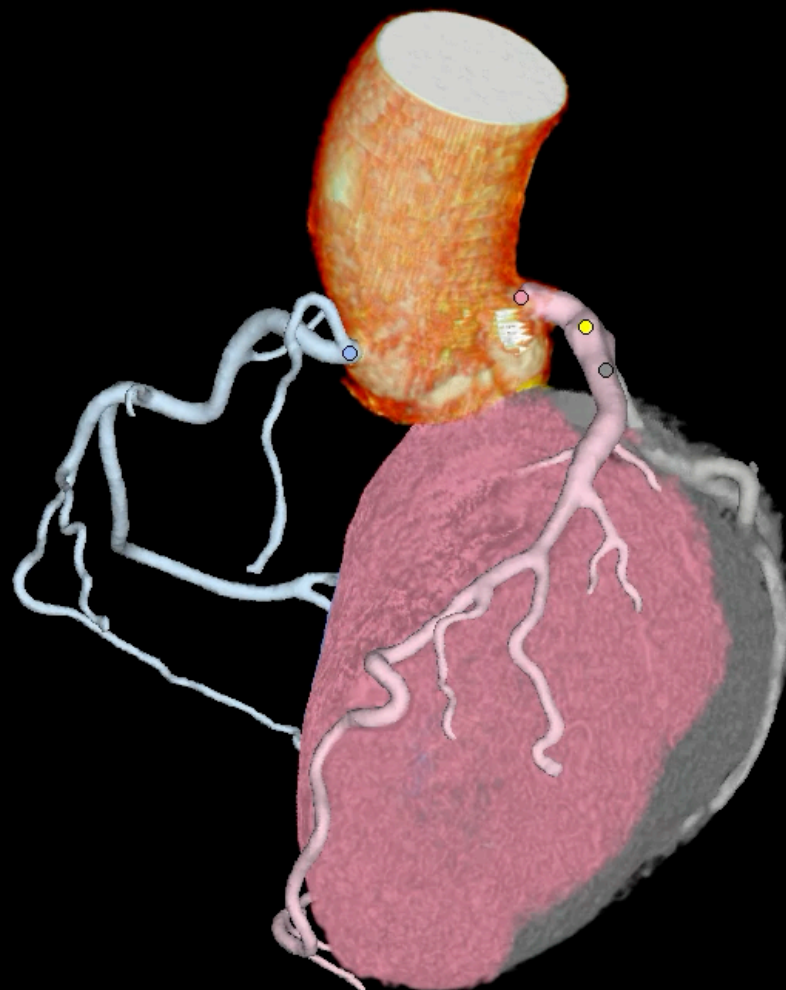
Cross-sections



- Fibrous Fatty
- Fibrous
- Necrotic Core
- Calcium



Myocardial Mass at Risk

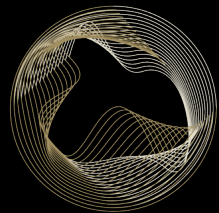


LCx 44.5%**

LAD 42.8%*

* Percentage myocardial mass subtended by LAD

** Percentage myocardial mass subtended by RCA

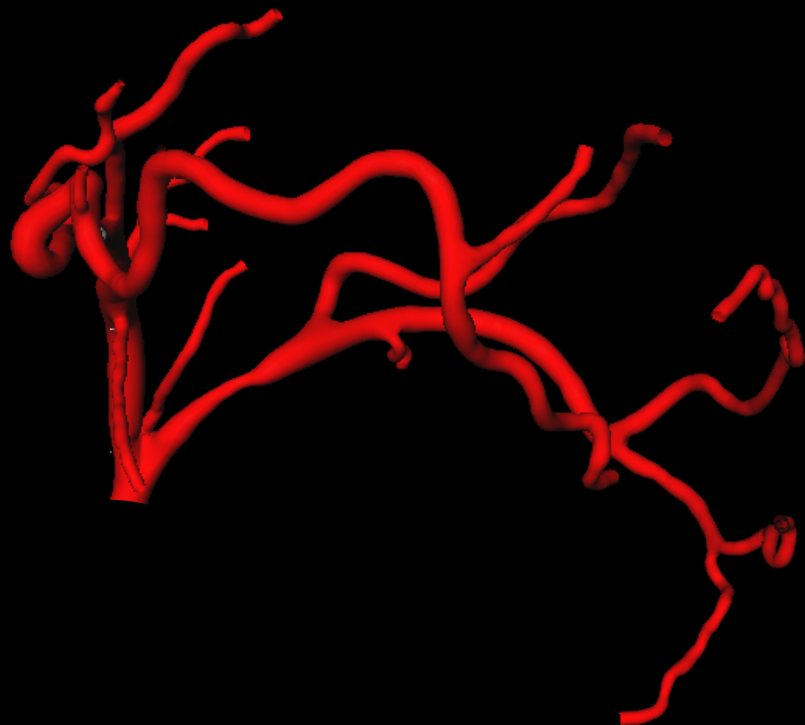


Best Projections

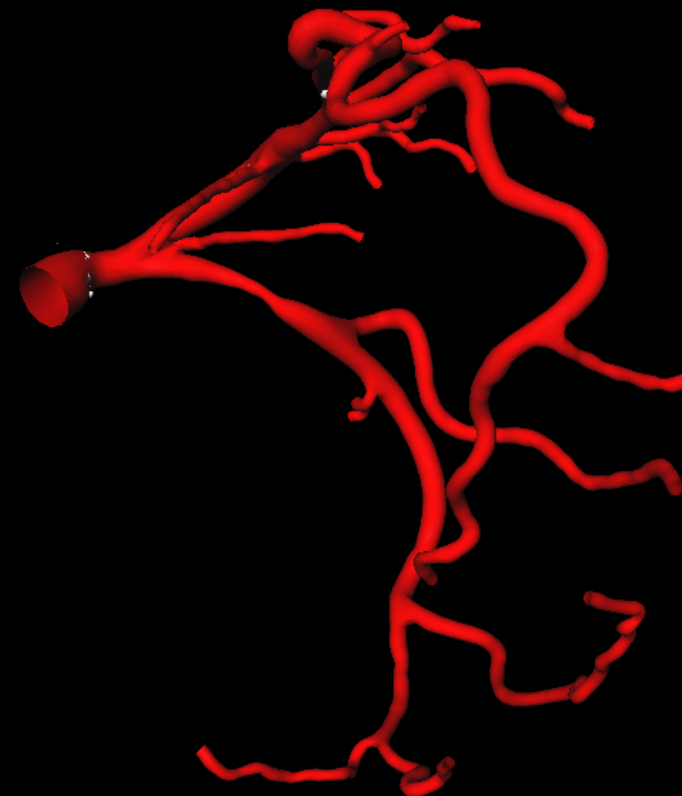
LCx



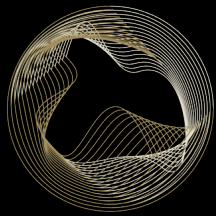
CT-guided PCI



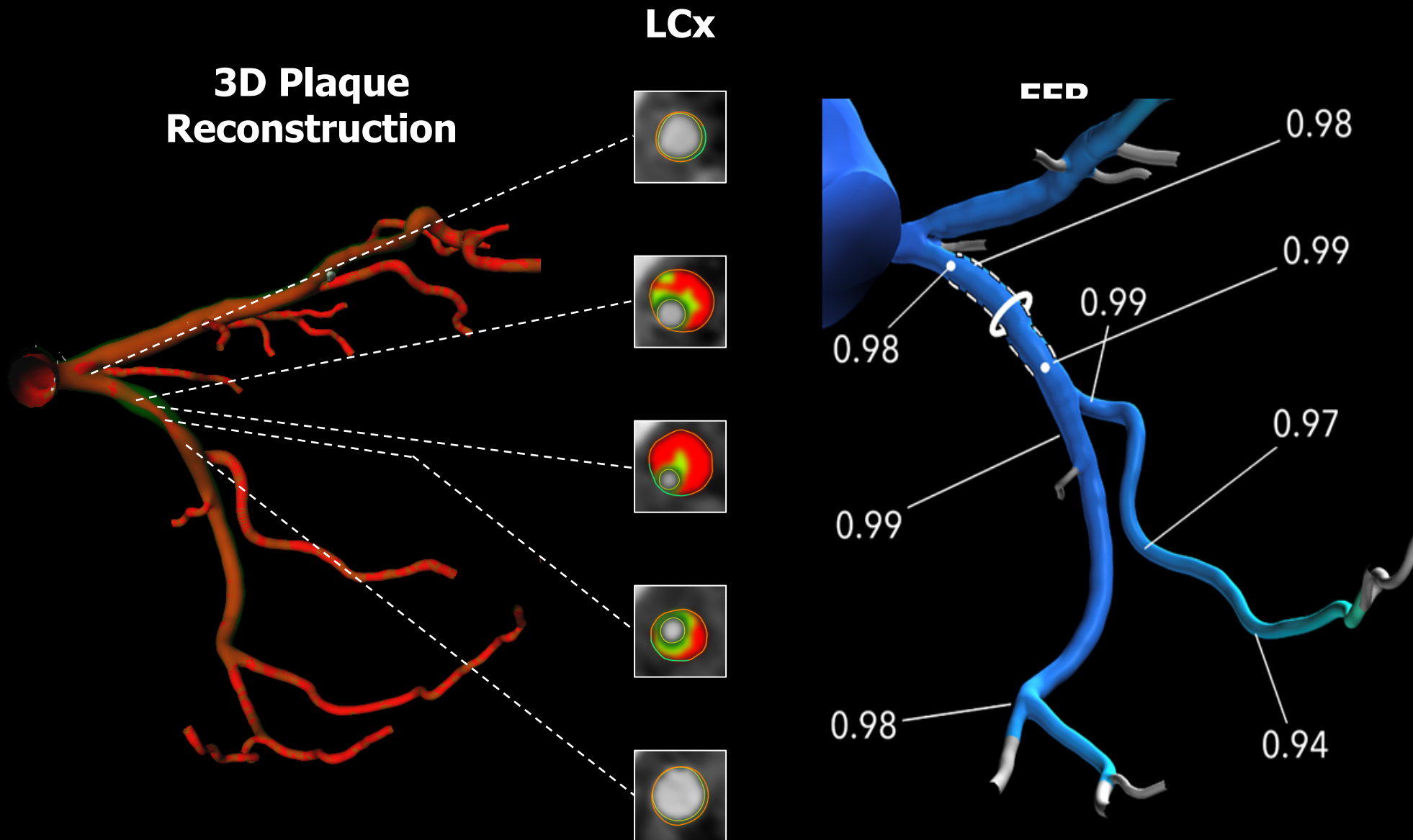
LAO 10
CAU 35

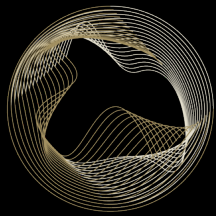


AP 0
CAU 38



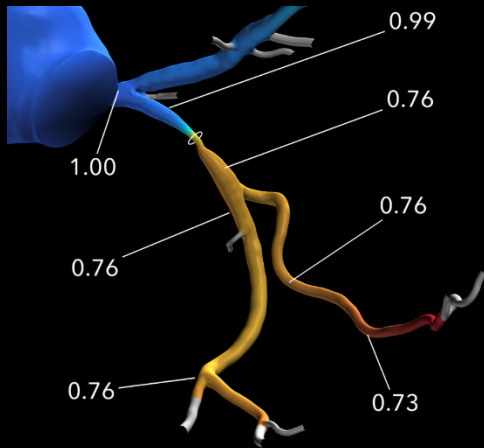
CT Plaque morphology and FFR_{CT}



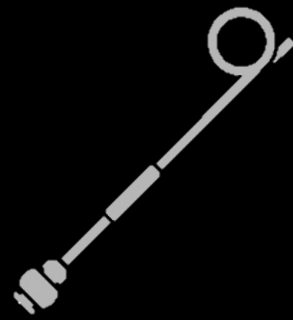


Recommendation strategy CT Guided PCI

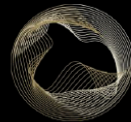
Lesion: LCx



PCI for LCx

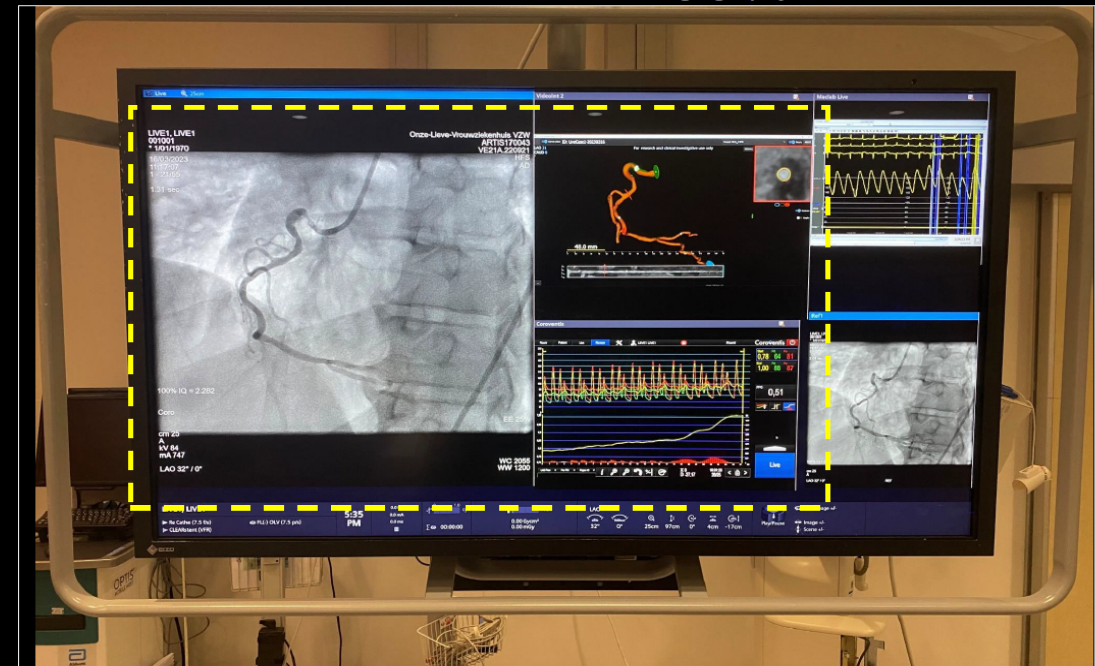


JL or EBU



Cath Lab Set Up

Position of CT model next to angiography

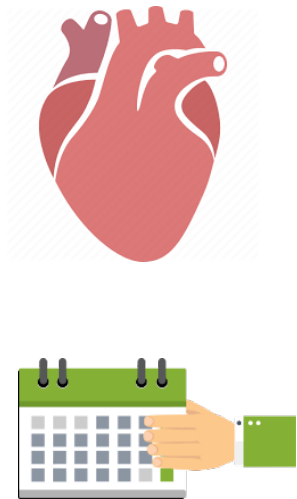


Cardiac Magnetic Resonance



Impact of Artificial Intelligence?

Indications & Patient Scheduling



Acquisition

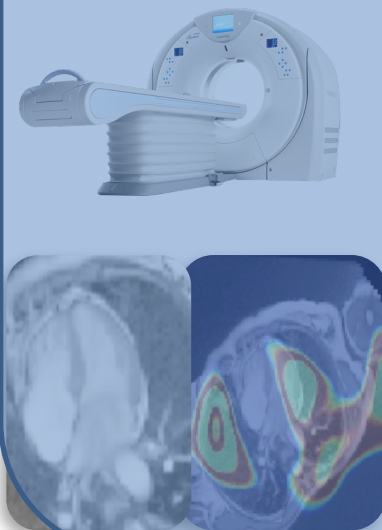
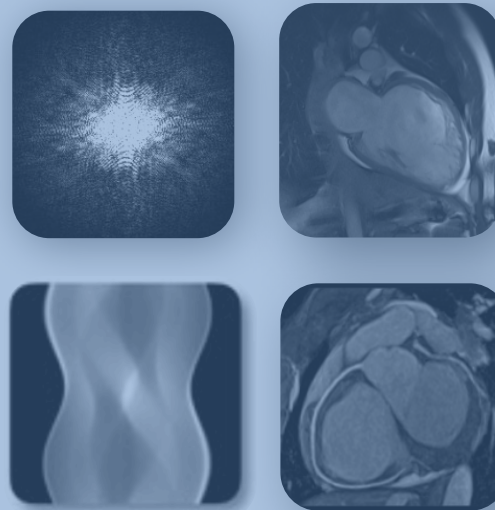
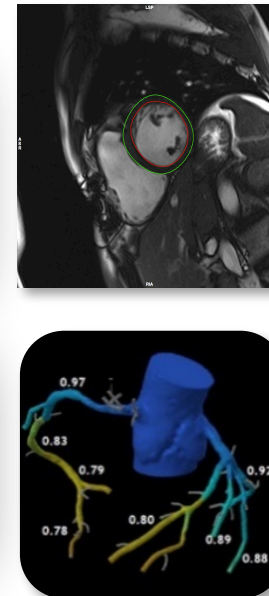


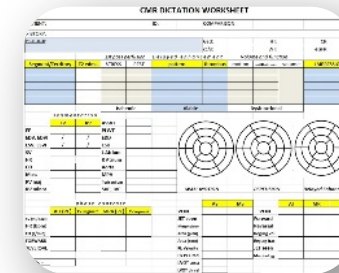
Image Reconstruction & Image Quality



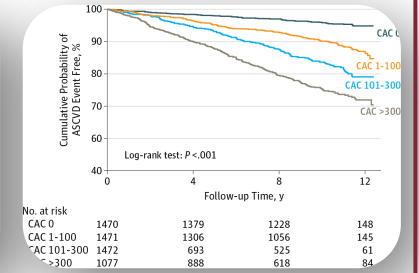
Segmentation & Quantification



Classification & Reporting

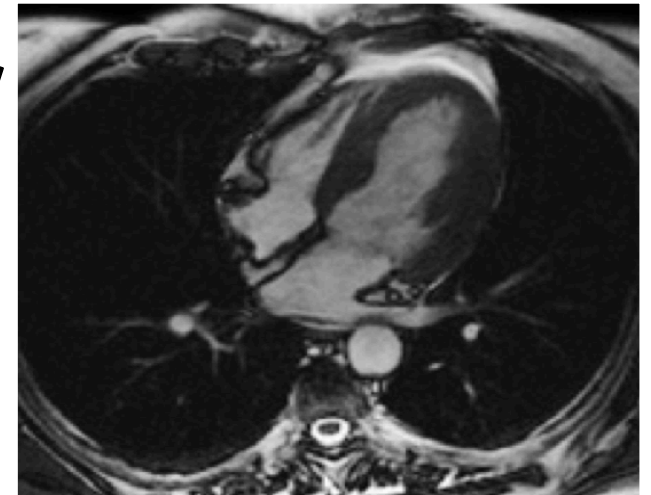
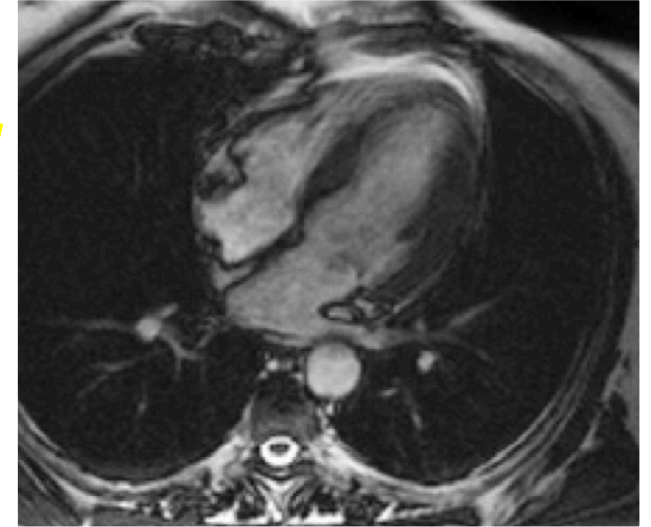
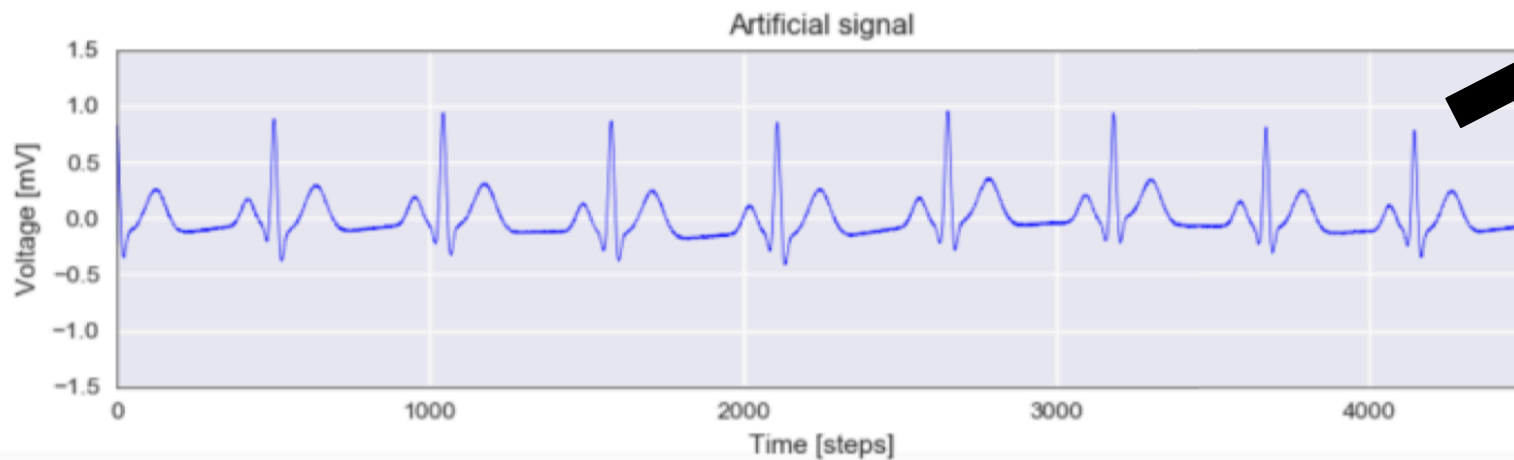
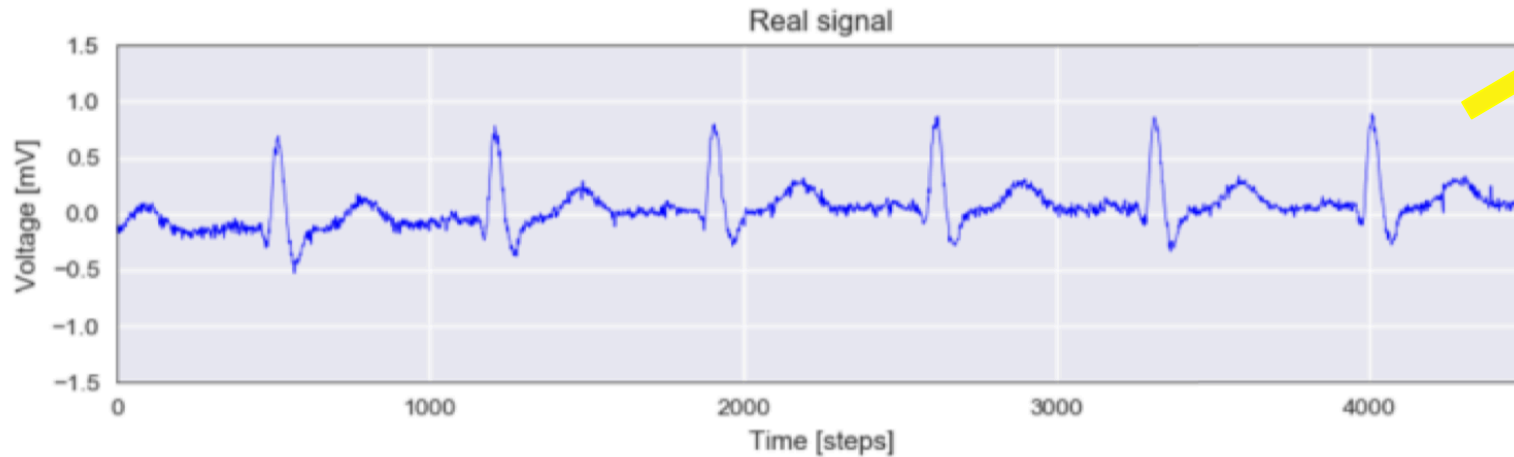


Prognosis

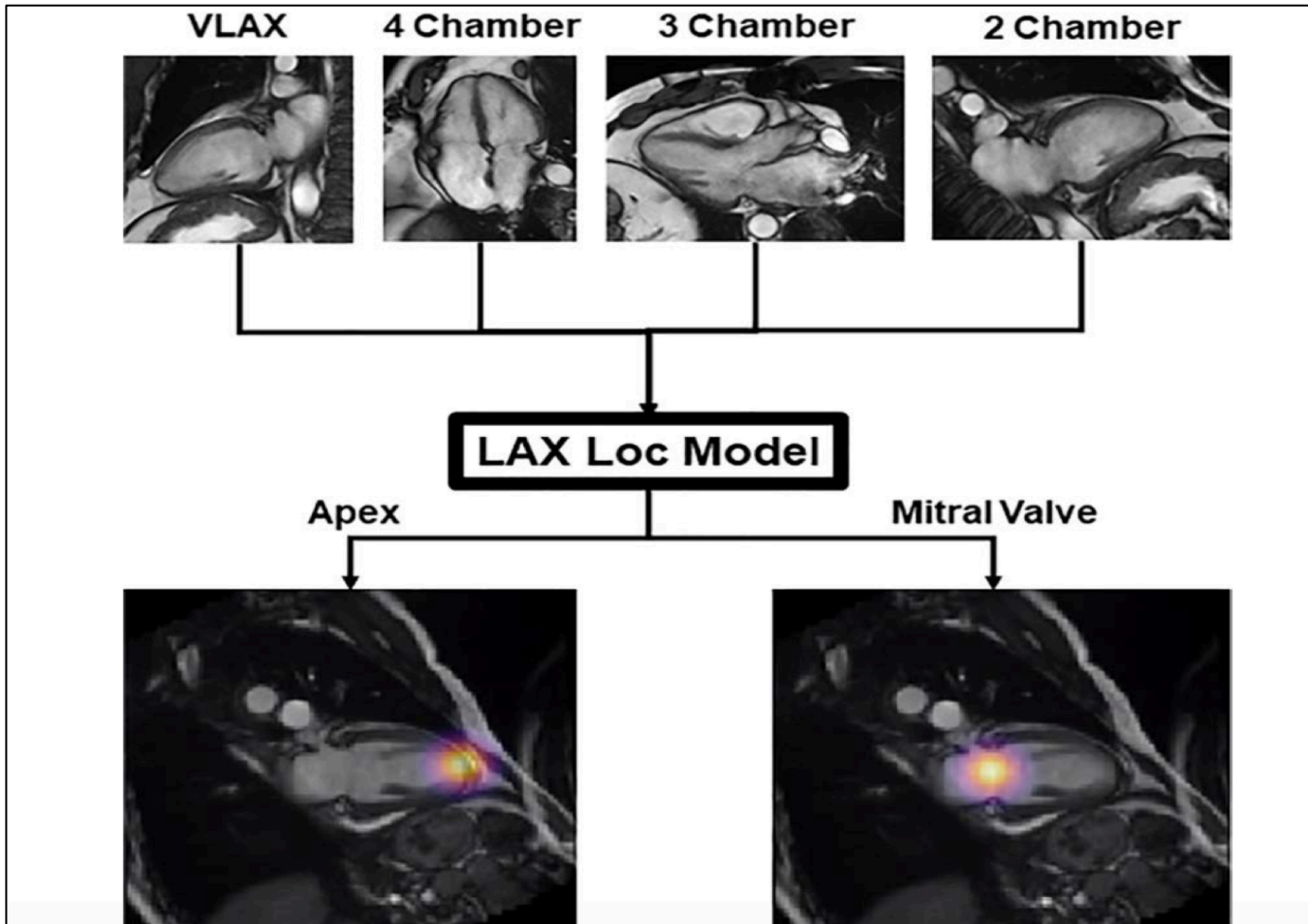


Deep NN for ECG Signal Denoising

Image quality and SNR strongly influenced by ECG-signal



Deep Learning–based Prescription of Cardiac MRI Planes



Annotated landmarks on 892 LAX and 493 SAX

Specialty technologist and physician training is a limiting factor for the availability of CMR,

Automated cardiac planes acquisition

Plane angulations from DL compared with those prescribed by the technologist

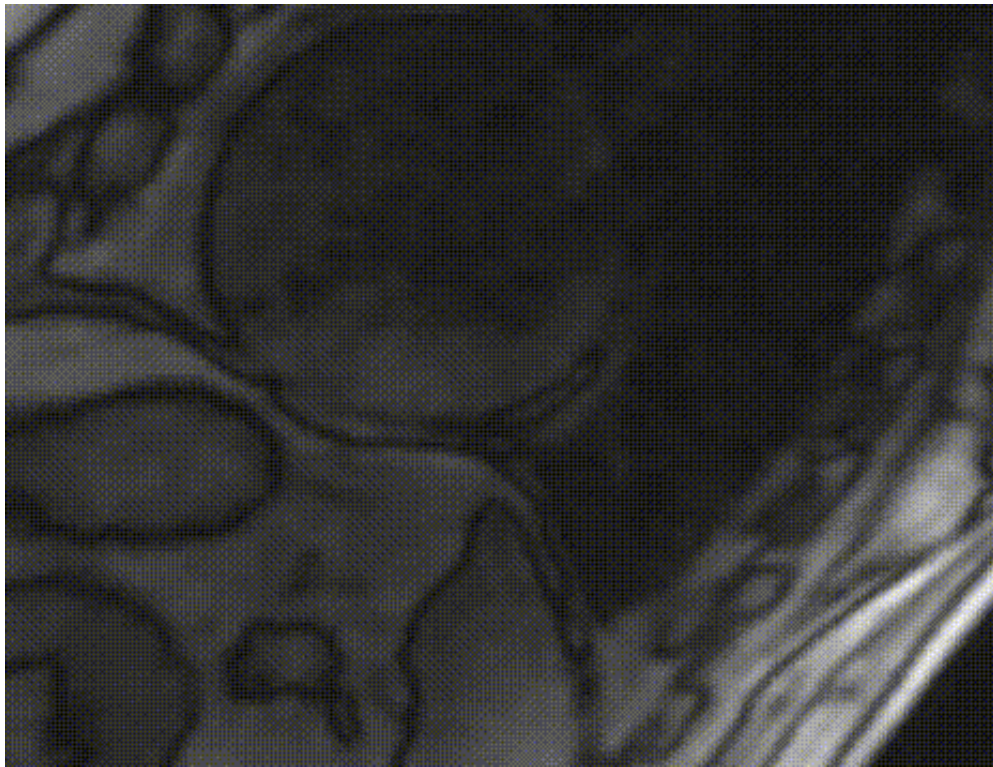
Aim: robust, reproducible, easy to perform

CNN trained to identify these landmarks

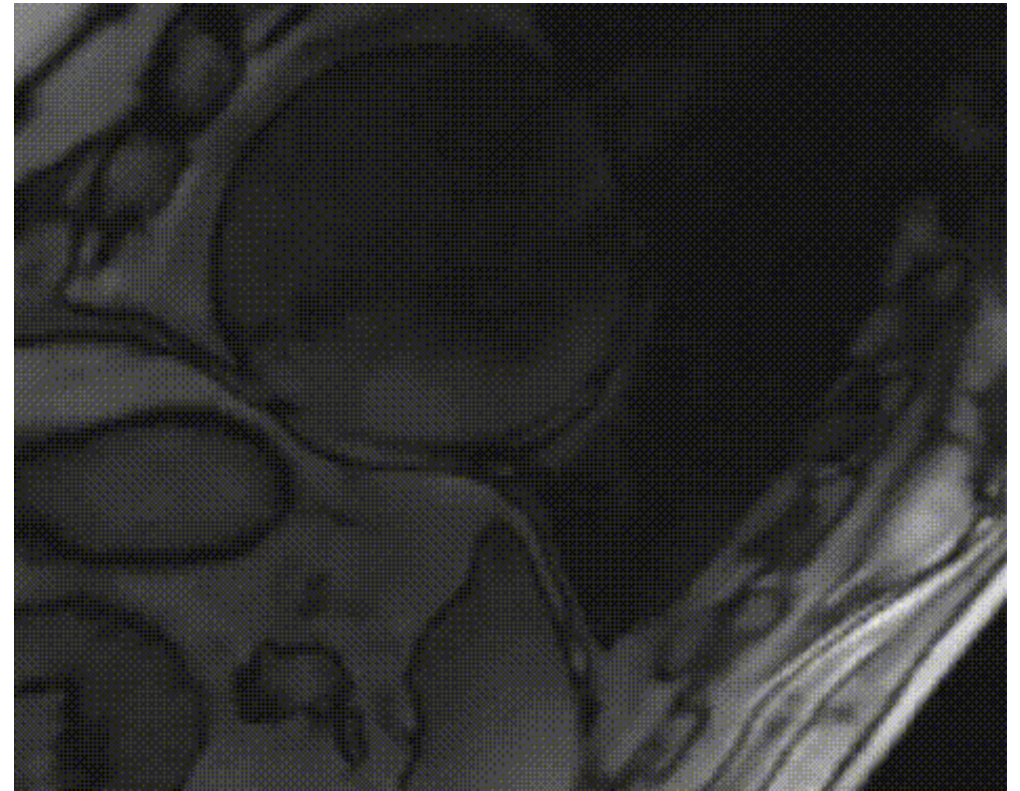
Conclusion: DL-based anatomic localization is a feasible strategy for planning cardiac MRI planes. This approach can produce imaging planes comparable to those defined by ground truth landmarks.

DL in CV-MRI Applications: reconstruction Time

Cardiac perfusion: leveraging image quality



**Standard MR Reconstruction
IQ**



DL Reconstruction 50% By DL Recon

#Fast Protocol

International Journal of Cardiology 449 (2026) 134197



Contents lists available at ScienceDirect

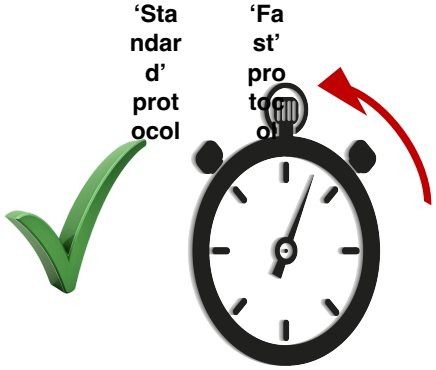
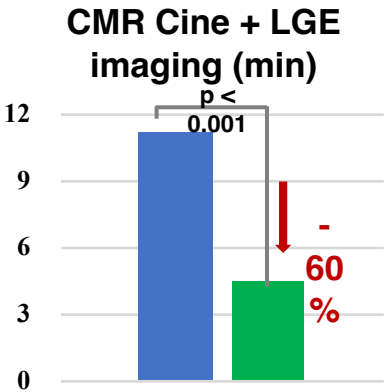
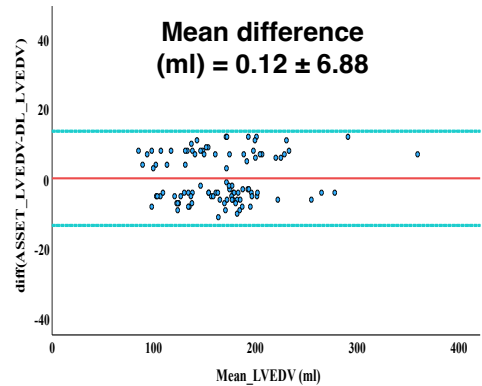
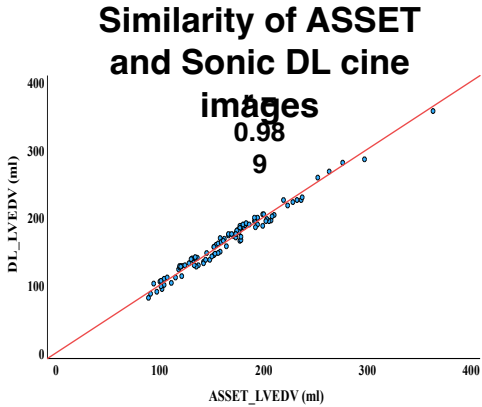
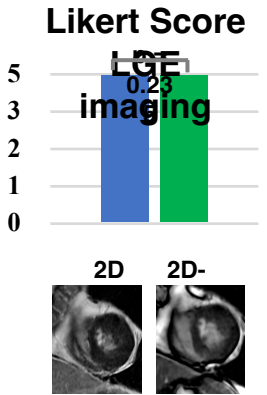
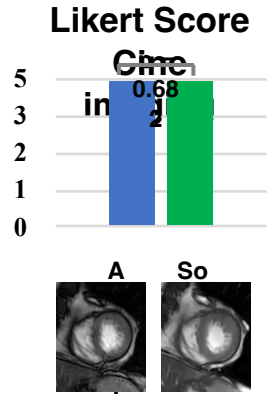
International Journal of Cardiology

journal homepage: www.elsevier.com/locate/ijcard



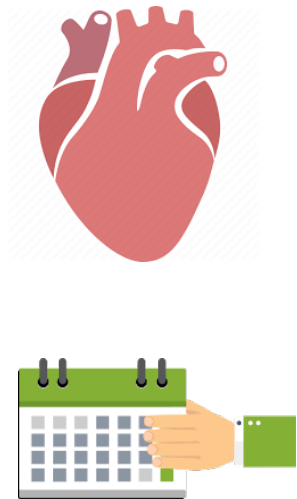
Fast cardiac magnetic resonance (CMR) protocol for biventricular functional assessment and tissue characterisation

Andrea Baggiano^a, Federica Rocca^b, Andrea Daniele Annoni^a, Francesco Cannata^a, Maria Ludovica Carerj^a, Fabrizio Celeste^a, Nicola Cosentino^a, Alberico Del Torto^a, Fabio Fazzari^a, Alberto Formenti^a, Antonio Frappampina^a, Laura Fusini^a, Sarah Ghulam Ali^a, Paola Gripari^a, Daniele Junod^a, Margherita Celeste Licastro^c, Anna Maltagliati^a, Maria Elisabetta Mancini^a, Valentina Mantegazza^a, Riccardo Maragna^a, Francesca Marchetti^a, Francesco Paolo Sbordone^a, Kamil Stankowski^a, Luigi Tassetti^a, Alessandra Volpe^a, Carlo Martinoli^b, Andrea Igoren Guaricci^d, Martin A. Janich^e, Manuela Muratori^a, Luca Saba^f, Saima Mushtaq^a, Gianluca Pontone^{a,g,*}



Impact of Artificial Intelligence?

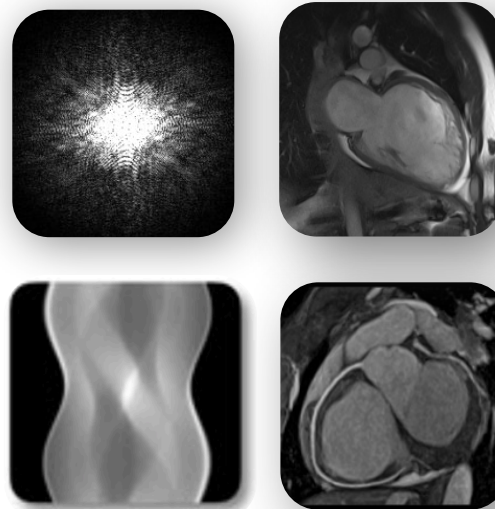
Indications & Patient Scheduling



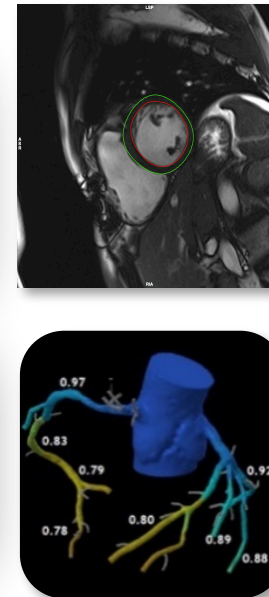
Acquisition



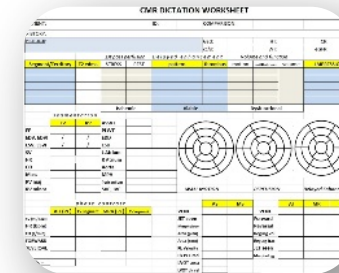
Image Reconstruction & Image Quality



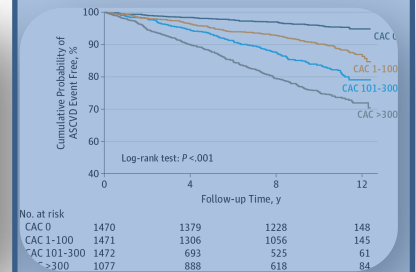
Segmentation & Quantification



Classification & Reporting



Prognosis



Dilated cardiomyopathy phenotype - ICM

ORIGINAL RESEARCH

Cardiac Magnetic Resonance for Prophylactic Implantable-Cardioverter Defibrillator Therapy in Ischemic Cardiomyopathy

The DERIVATE-ICM International Registry

Gianluca Pontone, MD, PhD,^{a,b,*} Andrea Igoeren Guaricci, MD, PhD,^{c,*} Laura Fusini, MD,^{a,d} Andrea Baggiano, MD,^a Marco Guglielmo, MD,^a Giuseppe Muscogiuri, MD, PhD,^a Alessandra Volpe, MD,^a Raffaele Abete, MD,^f Giovanni Aquaro, MD,^g Andrea Barison, MD,^g Jan Bogaert, MD, PhD,^h Giovanni Camastra, MD,ⁱ Samuela Carigi, MD, PhD,^j Nazario Carrabba, MD,^k Grazia Casavecchia, MD,^l Stefano Censi, MD,^m Gloria Cicala, MD,ⁿ Carlo N. De Cecco, MD, PhD,^o Manuel De Lazzari, MD,^p Gabriella Di Giovine, MD,^f Mauro Di Roma, MD,^q Monica Dobrovie, MD,^h Marta Focardi, MD, PhD,^r Nicola Gaibazzi, MD, PhD,^s Annalaura Gismondi, MD,^r Matteo Gravina, MD,^t Chiara Lanzillo, MD, PhD,^u Massimo Lombardi, MD, PhD,^v Valentina Lorenzoni, MSc, PhD,^w Jordi Lozano-Torres, MD,^x Chiara Martini, MSc,^{y,z} Francesca Marzo, MD,^j Ambra Masi, MD,^{aa} Riccardo Memeo, MD,^b Claudio Moro, MD,^{bb} Alberto Nese, MD,^{cc} Alessandro Palumbo, MD,ⁿ Anna Giulia Pavon, MD,^{dd} Patrizia Pedrotti, MD,^{aa} Martina Perazzolo Marra, MD,^p Silvia Pica, MD,^{v,†} Silvia Pradella, MD,^{ee} Cristina Presicci, MD,ⁿ Mark G. Rabbat, MD,^{ff,gg} Claudia Raineri, MD,^e José F. Rodriguez-Palomares, MD, PhD,^x Stefano Sbarbati, MD,^{hh} U. Joseph Schoepf, MD,ⁱⁱ Angelo Squeri, MD,^m Nicola Sverzellati, MD, PhD,ⁿ Rolf Symons, MD, PhD,^h Emily Tat, MD,^{ff} Mauro Timpani, MD,^{jj} Giancarlo Todiere, MD,^g Adele Valentini, MD,^{kk} Akos Varga-Szemes, MD, PhD,ⁱⁱ Pier-Giorgio Masci, MD, PhD,^{ll} Ingrid Schwitter, MD,^{dd,mm}

Table 4. Multivariate TTE and CMR analysis of MAACE

	Multivariate Analysis	
	HR (95% CI)	p value
TTE Model		
LVEDVi, mL/m ²	1.007(1.000-1.013)	0.045
LVEF, %	0.968(0.942-0.996)	0.023
CMR Model		
LVEDVi, mL/m ²	1.005(1.000-1.011)	0.050
LVEF, %	0.972(0.945-0.999)	0.045
LGE mass, g	1.010(1.002-1.018)	0.015

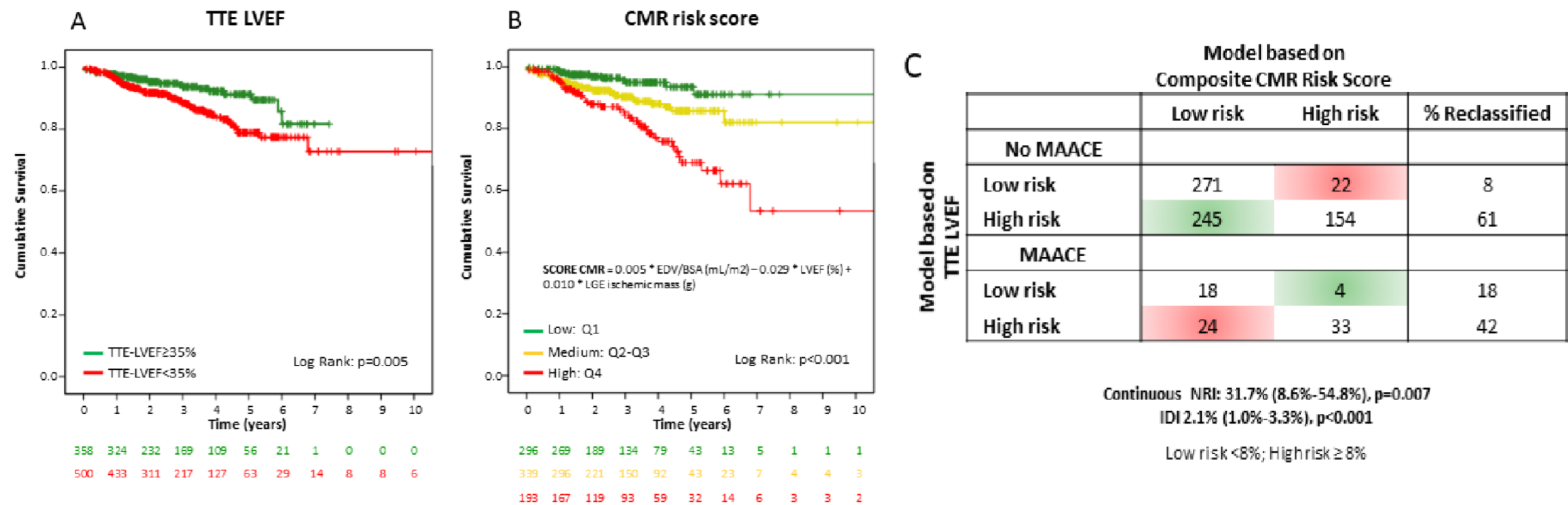
TTE score: [0.007 * EDV/BSA (mL/m2) – 0.032 * LVEF (%)]

CMR score: [0.005 * EDV/BSA (mL/m2) – 0.029 * LVEF (%) + 0.010 * LGE ischemic mass (g)],

Dilated cardiomyopathy phenotype - ICM

CarDiac MagnEtic Resonance for Prophylactic Implantable-CardioVerter DefibrillAtor ThErapy International
Study in Ischemic Cardiomyopathy
Short Title: DERIVATE-ICM Study

Figure 2A. Comparison between CMR risk score versus model based on a TTE-LVEF cut-off of 35%



Dilated cardiomyopathy phenotype - ICM

Radiology

ORIGINAL RESEARCH • CARDIAC IMAGING

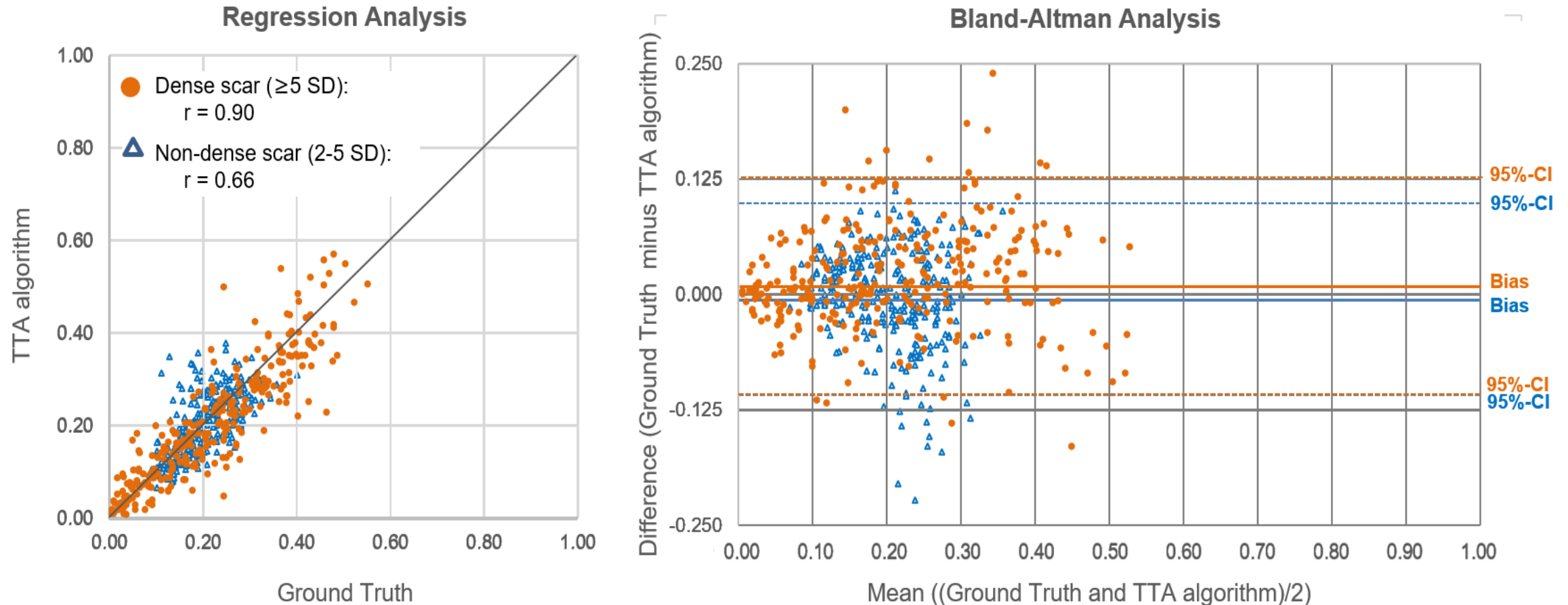
AI Cardiac MRI Scar Analysis Aids Prediction of Major Arrhythmic Events in the Multicenter DERIVATE Registry

Fahime Ghanbari, MD • Thomas Joyce, PhD • Valentina Lorenzoni, PhD • Andrea I. Guaricci, MD • Anna-Giulia Pavon, MD • Laura Fusini, MD • Daniele Andreini, MD • Mark G. Rabbat, MD • Giovanni Donato Aquaro, MD • Raffaele Abete, MD • Jan Bogaert, MD, PhD • Giovanni Canastra, MD • Samuela Carigi, MD • Nazario Carrabba, MD • Grazia Casavecchia, MD • Stefano Censi, MD • Gloria Cicala, MD • Carlo N. De Cecco, MD, PhD • Manuel De Lazzari, MD • Gabriella Di Giovine, MD • Mauro Di Roma, MD • Marta Focardi, MD • Nicola Gaibazzi, MD, PhD • Annalaura Gismondi, MD • Matteo Gravina, MD • Chiara Lanzillo, MD, PhD • Massimo Lombardi, MD, PhD • Jordi Lozano-Torres, MD • Ambra Masi, MD • Claudio Moro, MD • Giuseppe Muscogiuri, MD, PhD • Alberto Nese, MD • Silvia Pradella, MD • Stefano Sbarbati, MD • U. Joseph Schoepf, MD • Adele Valentini, MD • Gérard Crelier, PhD • Pier Giorgio Masci, MD, PhD • Gianluca Pontone, MD • Sebastian Kozerke, PhD • Juerg Schwitter, MD

Dilated cardiomyopathy phenotype - ICM

Figure 2

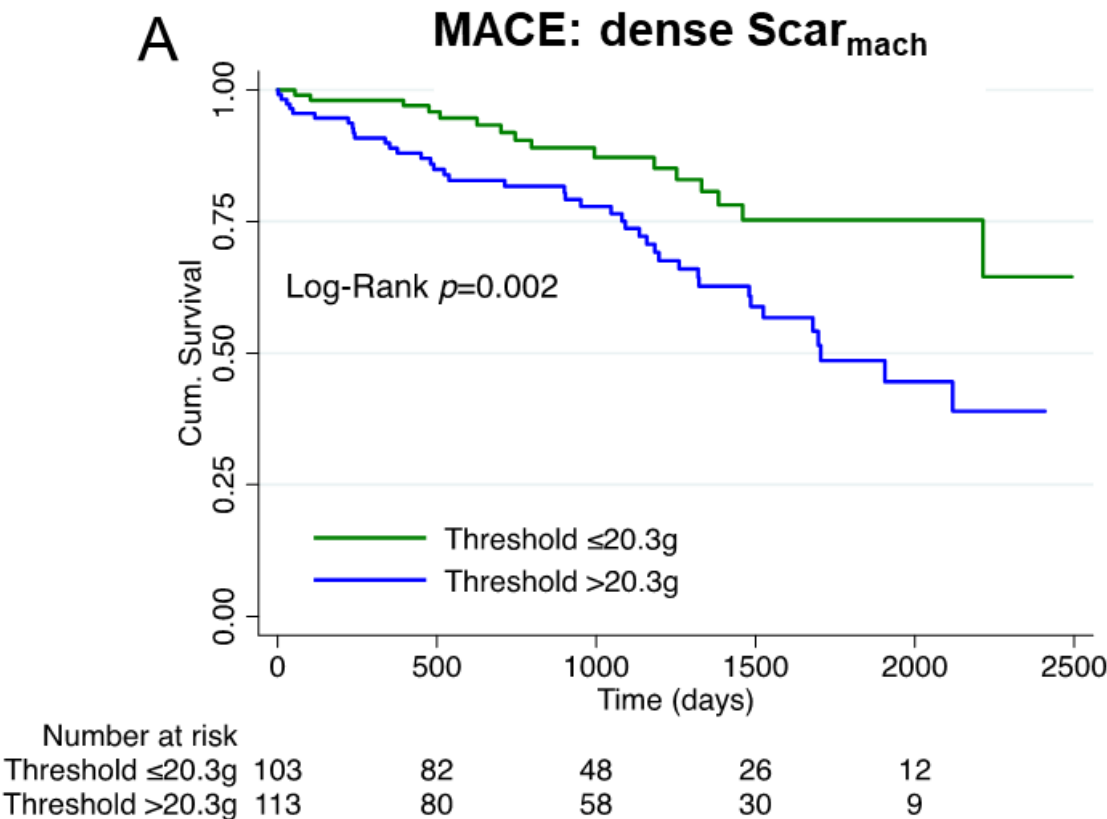
Ground Truth versus fully automatic TTA algorithm



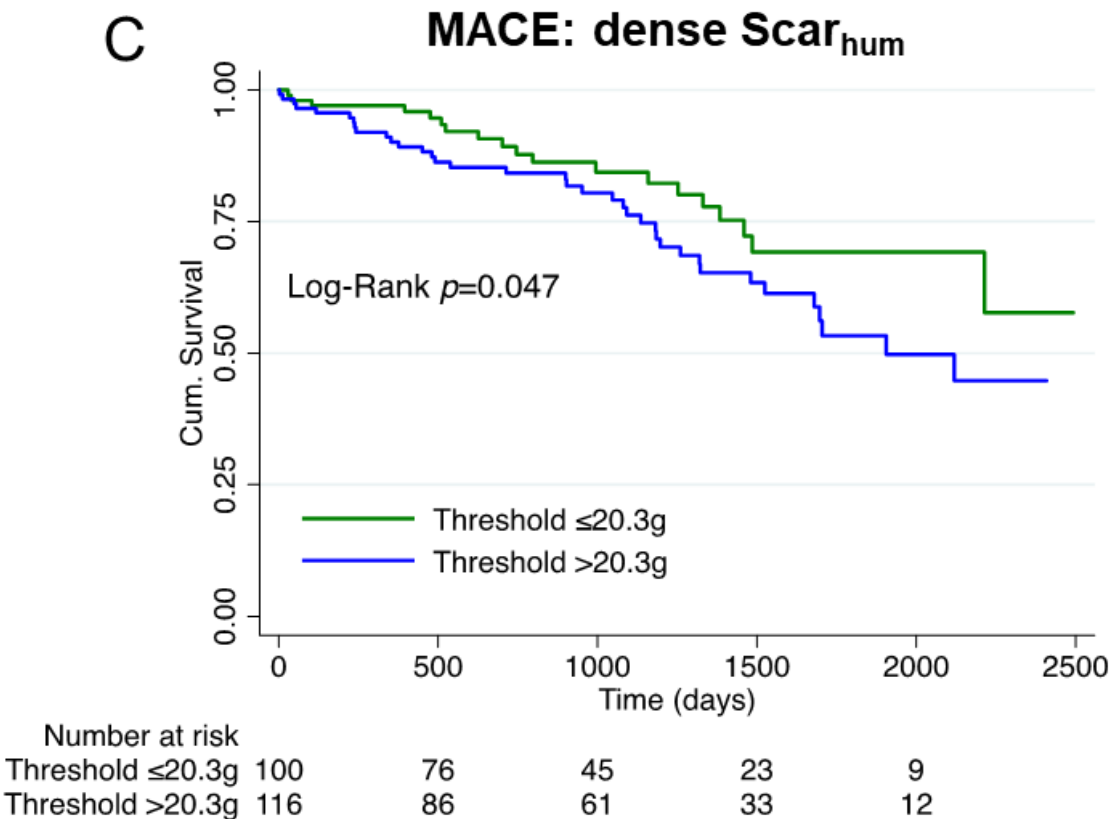
The presented ML-based algorithm can analyse multicenter CMR scar data fully automatically yielding scar mass that correlate with human-generated GT. Such a tool could facilitate the quantification of CMR scar imaging in clinical routine cardiology as it eliminates human observer variability and can handle large data sets.

Dilated cardiomyopathy phenotype - ICM

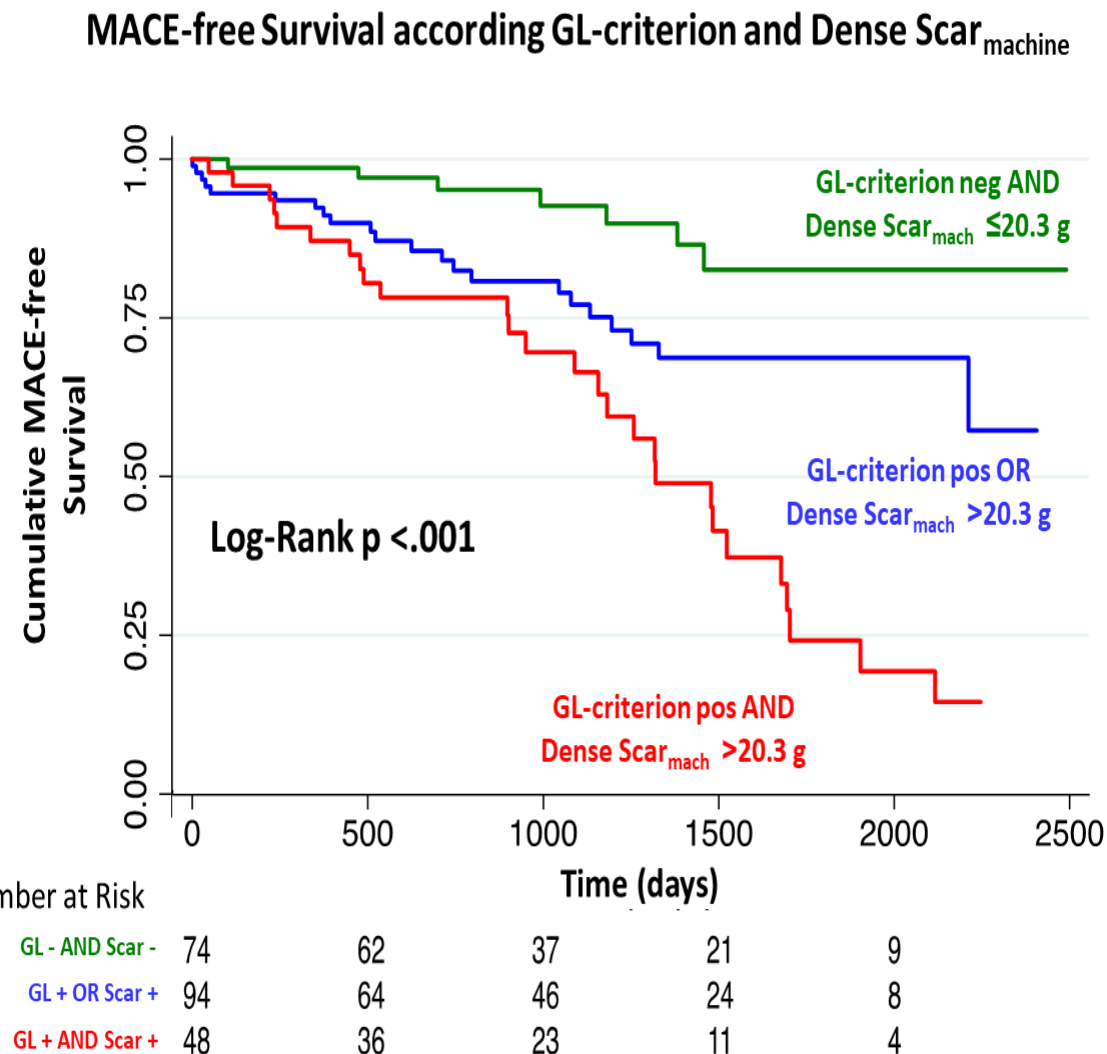
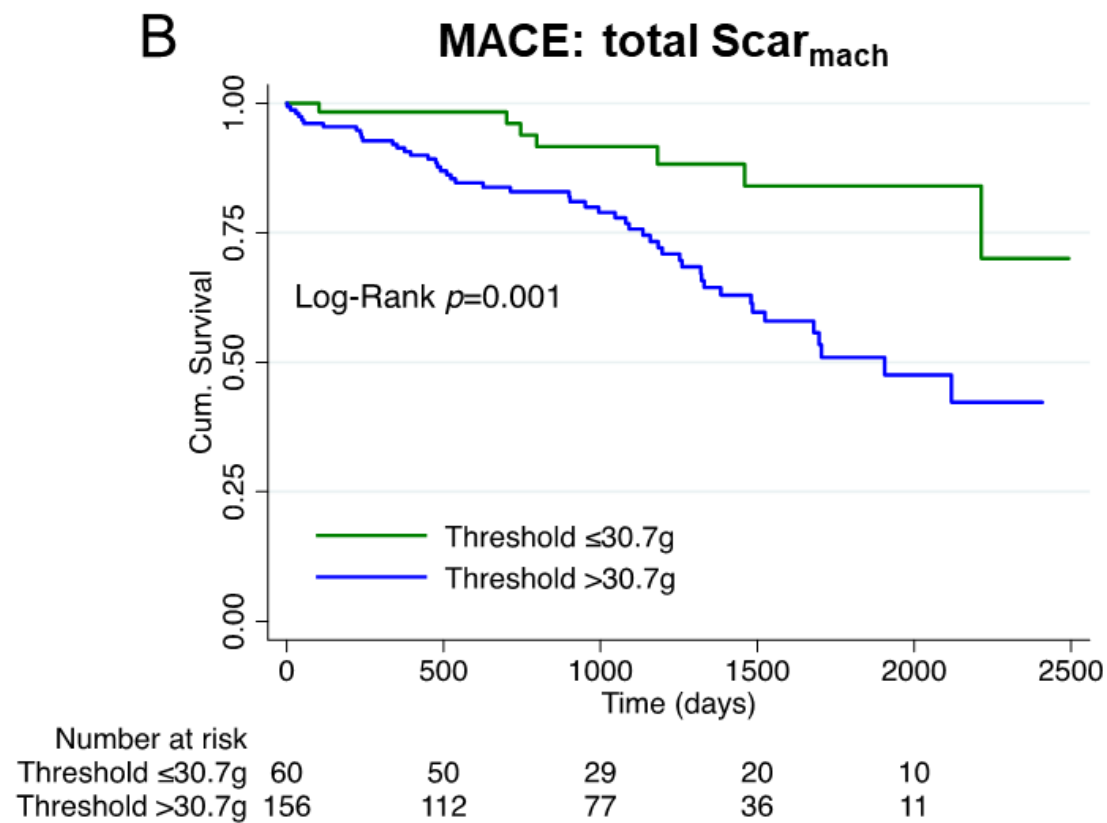
MACE: Machine Analysis



MACE: Human Analysis



Dilated cardiomyopathy phenotype - ICM



2019

“A 49-year-old patient notices a painless rash on his shoulder. Months later, his wife asks him to see a doctor, who diagnoses a seborrheic keratosis. Later, when the patient undergoes a screening colonoscopy, a nurse notices a dark macule on his shoulder and advises him to have it evaluated. One month later, the patient sees a dermatologist, who obtains a biopsy specimen of the lesion. The findings reveal a noncancerous pigmented lesion. Still concerned, the dermatologist requests a second reading of the biopsy specimen, and invasive melanoma is diagnosed. An oncologist initiates treatment with systemic chemotherapy. A physician friend asks the patient why he is not receiving immunotherapy”

A 49-year-old patient takes a picture of a rash on his shoulder with a smartphone app that recommends an immediate appointment with a dermatologist. His insurance company automatically approves the direct referral, and the app schedules an appointment with an experienced nearby dermatologist in 2 days. This appointment is automatically cross-checked with the patient's personal calendar. The dermatologist performs a biopsy of the lesion, and a pathologist reviews the computer-assisted diagnosis of stage I melanoma, which is then excised by the dermatologist

2029 ?

ECM

MONZINO IMAGING ACADEMY

Multimodality imaging in Interventional Cardiology

1st edition 5th- 6th march 2026

Course Director

Gianluca Pontone

Deputy Scientific Director and Head of the Department
of Perioperative Cardiology and Cardiovascular Imaging,
Centro Cardiologico Monzino, University of Milan, Italy

Manuela Muratori

Head of Echo Unit, Department of Perioperative
Cardiology and Cardiovascular Imaging, Centro
Cardiologico Monzino IRCCS, Milan, Italy

Venue

Novotel Milano Linate

Via Mecenate, 121 - Milano

ECM

MONZINO IMAGING ACADEMY

Cardiac Magnetic Resonance Course

1st edition 8th-12th June 2026

2nd edition 9th-13th November 2026

Course Director

Gianluca Pontone

Deputy Scientific Director and Head of the Department
of Perioperative Cardiology and Cardiovascular Imaging,
Centro Cardiologico Monzino, University of Milan, Italy



Venue

Novotel Milano Linate

Via Mecenate, 121 - Milano

ECM

MONZINO IMAGING ACADEMY

Cardiac Computed Tomography Course

1st edition 22nd-26th June 2026

2nd edition 5th-9th October 2026

Course Director

Gianluca Pontone

Deputy Scientific Director and Head of the Department
of Perioperative Cardiology and Cardiovascular Imaging,
Centro Cardiologico Monzino, University of Milan, Italy



Venue

Novotel Milano Linate

Via Mecenate, 121 - Milano

ECM

MONZINO IMAGING ACADEMY

Echo3D Course

22nd-23th October 2026

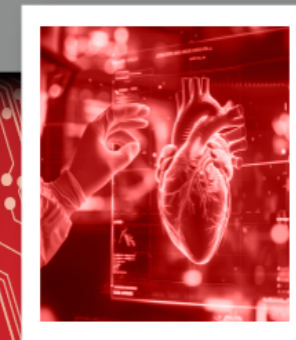
Course Director

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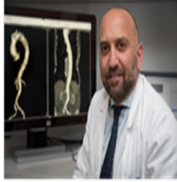
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Dept of Peri Operative Cardiology and Cardiovascular Imaging

Prof. Gianluca Pontone, Director



ECHOCARDIOGRAPHY
UNIT

RADIOLOGY
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UNIT

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Monzino SPORT



HEART TEAM CARDIOSPORT VIA WEB OGNI MERCOLEDÌ 12.30

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